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Exploring the Filipino geriatric patients' caring encounters during their hospitalization: Basis for improving geriatric care

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Abstract

This study aimed to explore the Filipino geriatric patients' caring encounters during their hospitalization which will serve as basis for improving geriatric care. This employed a phenomenological research design, specifically targeting a diverse group of ten (10) geriatric patients aged 60 and above at the Aglipay District Hospital. The use of open-ended questions, as outlined in the attached research questionnaire, aimed to encourage participants to share rich and detailed narratives about their experiences. Coding and thematic analysis were used to analyze the data. The experiences of geriatric patients during hospitalization revealed that compassionate care, effective communication, and the presence of dedicated healthcare providers significantly impact their overall well-being. From the standpoint of geriatric patients, cleanliness, attentive personnel, and a supporting environment are critical components of caring encounters. To improve the geriatric patients' caring encounters during their hospitalization, healthcare professionals should be trained effectively in communicating with geriatric patients. This will ensure that information about drugs, treatment plans, and patient progress is communicated understandably and engagingly. Training on cultural sensitivity in staff development initiatives should be included to guarantee that patients are treated with dignity and compassion, considering their varied backgrounds and communication styles.

Keywords: caring encounters, geriatric care, geriatric patients, negative experiences, positive experiences

Exploring the Filipino geriatric patients' caring encounters during their hospitalization: Basis for improving geriatric care

1. Introduction

Globally, it is anticipated that the older adult population will experience a rapid increase leading to a corresponding rise in hospitalization rates due to the aging demographic. Hospitalization is identified as a significant risk factor for the loss of independence among older adults, with at least 34% experiencing a decline in independence related to basic activities of daily living (ADL) during their hospital stay (Chase et al., 2018; Surkan et al., 2018). The concept of self-care, defined as “any self-initiated or self-directed action of engaging in activities of daily living and other activities to preserve bio-psycho- social “well-being,” is crucial for older patients during their hospital stay (Chan et al., 2020). Healthcare professionals play a vital role in supporting and promoting patients' ability to engage in self-care. The intention and active participation of patients in self-care have been identified as crucial factors influencing their overall recovery and well-being. Notably, a higher intention for self-care has shown positive correlations with motor recovery in post-stroke patients, indicative of improved functional outcomes (Armijo-Olivo et al., 2017). Realizing patients' self-care goals during hospitalization predicts their perceived overall improvement (Sun et al., 2019), and in the long term, self-care in the inpatient setting is associated with a lower likelihood of 30- day hospital readmission in older adults (Koch et al., 2020). The loss of self-care abilities during hospitalization has been linked to decreased functional recovery, increased morbidity and mortality rates, and a significant reduction in patients' well-being and quality of life (Lewandowska et al., 2020; Vidán et al., 2019). This decline in self-care abilities may also contribute to a higher cost of care, increased dependence on caregivers, and the potential institutionalization of older adults (Akhter-Khan, 2021).

Caring for geriatric patients poses unique challenges for nurses, as many elderly individuals depend on assistance with activities of daily living. Geriatric nurses often find themselves attending to fundamental human activities, including caring for cognitively impaired geriatric patients, which adds to their workload (Roitenberg, 2021). Existing studies, as highlighted by Halter et al. (2017), emphasized the challenging aspects of the nursing profession, including high vacancy and turnover rates, with fewer studies focusing on the personal aspects of being a nurse (Gillet et al., 2018). Past research has predominantly explored job satisfaction and stress among registered nurses in hospital settings. Globally, the aging population is posing a challenge to healthcare systems, especially in nations with overstretched infrastructure like the Philippines. According to projections, the proportion of the elderly population is expected to increase significantly by 2032, which will call for immediate changes in the standard of care given to older persons. Locally, organizations such as the Gerontology Nurses Association of the Philippines (GNAP) have responded to this challenge by advocating for specialized geriatric care training programs to enhance the competencies of healthcare providers working with older adults. GNAP has spearheaded several initiatives focusing on building a well-prepared nursing workforce to cater to the unique needs of elderly patients. These initiatives align with global efforts to redesign healthcare for the aging population by fostering better care delivery and promoting patient-centered models.

Given these trends, the present study explores geriatric patients' hospitalization experiences in a Philippine context, aiming to understand the factors contributing to positive and negative care encounters. Through this, the study will examine the role of communication, cultural sensitivity, and the availability of geriatric-focused facilities in improving overall care outcomes for elderly patients. Additionally, by incorporating knowledge from regional groups like GNAP and current models, the study would offer doable solutions to improve the standard of care for elderly patients in Philippine hospitals. This will help healthcare practitioners continue their efforts better to fulfill the escalating needs of an older society. This phenomenological study aims to delve into the lived experiences of Filipino geriatric patients about their caring encounters at Aglipay District Hospital, Aglipay, Quirino. The study's findings can serve as foundational insights for proposing interventions/measures to improve

the experiences of geriatric patients and promote positive care experiences leading to satisfaction with care, and an improvement in their well-being.

Objectives of the Study - The primary objective of this study was to explore the caring encounters experienced by geriatric patients during their hospitalization at Aglipay District Hospital, with the goal of using these insights as a basis for improving geriatric care. Specifically, the study aimed to understand how geriatric patients describe their caring experiences while hospitalized, identify the factors that contribute to both positive and negative encounters, and determine the essential elements that patients consider vital in a caring hospital environment. Furthermore, the study sought to gather suggestions based on patients' lived experiences to enhance the overall quality of care provided to geriatric patients during their hospital stay.

2. Methods

Research Design - In this study, a phenomenological research design was carefully selected to delve deeply into the multifaceted lived experiences of Filipino geriatric patients throughout their hospitalization and their interactions with healthcare providers. Phenomenology is not merely a suitable choice for this investigation; it is an exceptionally well-suited approach due to its unique ability to uncover and interpret the fundamental essence of human experiences. By employing phenomenological reflection to delve into the lived experiences of older adults, our study seeks to make a substantial contribution to our understanding of the aging process. The phenomenological research design adopted for this study served as a methodological vehicle for a comprehensive examination of the experiences encountered by geriatric patients during their hospital stays. It aimed to shed light not only on the richness and complexity of these experiences, but also on how they interconnect with and contribute to the broader narrative of the aging journey. Through this research, the researcher hopes to gain profound insights into the essence of geriatric care and the implications it holds for the well-being and quality of life of older adults in the Filipino context.

Population, Sampling Size, and Sampling Method - The study employed a purposive sampling strategy, specifically targeting a diverse group of ten (10) geriatric patients aged 60 and above at the Aglipay District Hospital. According to Creswell et al. (2018), an estimate between 10 and 50 participants as being sufficient for qualitative studies. Patients facing functional difficulties, such as mental incapacitation, or similar conditions, will be excluded from the research study. While the research's primary goal was to ensure representation across various demographic factors, including age groups, health conditions, and lengths of hospitalization, there is a concern that the collected data might be influenced or misinterpreted due to the patients' inability to perceive verbal and non-verbal cues from healthcare providers. In cases where hearing impairment was a concern, the researcher invited sign language interpreter to gather data from the respondent. To initiate the sampling process, the researcher collaborated with the hospital's data registry department to access a list of eligible geriatric patients. This step was carried out in strict accordance with the hospital's established procedures and protocols to protect patient privacy and adhere to ethical guidelines.

Instrument of the Study - The primary data collection method for this study revolved around semi-structured interviews, thoughtfully designed to delve into the experiences, perceptions, and emotions of Filipino geriatric patients during their hospitalization. This approach was chosen because it provides a platform for participants to articulate their encounters comprehensively and meaningfully. The use of open-ended questions, as outlined in the attached research questionnaire, aimed to encourage participants to share rich and detailed narratives about their experiences. This approach was particularly valuable when exploring nuanced and multifaceted topics such as caring encounters during hospitalization. The interview questions within the questionnaire have been meticulously crafted to align with the study's research objectives. These objectives aimed to uncover the experiences of Filipino geriatric patients during their hospitalization, identify the factors that contribute to positive and negative caring encounters, and ultimately develop recommendations for enhancing the quality of care for this demographic. Each question was accompanied by probing questions that encourage participants to provide in-depth insights into their interactions with healthcare providers, the impact of

cultural sensitivity, and their overall care experiences. The thoroughness and specificity of these questions aim to ensure a comprehensive exploration of the subject matter, ultimately contributing valuable insights to the field of healthcare and geriatric patient care.

To validate the instrument, the following were used:

Validity of Content. Three-panel members with backgrounds in qualitative research and geriatric care were contacted to guarantee the interview guide's content validity. Experts evaluated questions to determine if they were adequate, pertinent, and thorough enough to satisfy the study's goal of comprehending the compassionate interactions that Filipino elderly patients had with hospital staff. Interview guide was revised in light of the experts' input. Additional prompts were included to collect culturally distinctive caregiving experiences, especially those that reflected Filipino values, and some of the questions were reworded to improve clarity.

Pilot Testing. Two elderly Filipino patients not involved in the primary trial participated in a pilot study where the updated interview guide was tested. This pilot test aimed to ensure that the participants could give insightful, in-depth answers and that the questions were straightforward. The interview guide had a few minor revisions in response to the findings of the pilot interviews. The final instrument was designed to be both user-friendly and successful in eliciting deep insights. To make the questions more accessible to senior participants, for instance, several complicated or perplexing terminology were rephrased.

Face Validity. To augment validity, participant input was directly gathered to evaluate face validity. Following the interviews, the participants were questioned about whether the questions had allowed them to completely describe their experiences and whether any significant details of their hospital stay had been missed. According to the response, the questions promoted in-depth contemplation on their compassionate experiences in the hospital and were straightforward and pertinent. This confirmed that the tool was appropriate for recording the actual experiences of elderly Filipino patients while they were in the hospital.

Reflexivity and Iterative Refinement. The researcher was reflexive throughout the data-gathering process, considering how her own biases may affect the findings. This was carried out in order to guarantee the instrument's impartiality and accuracy. The interview guide was continually improved based on preliminary interviews. Furthermore, cultural sensitivity was given top importance during this process, focusing on Filipino values like respect for elders and *utang na loob* (debt of gratitude).

Data Gathering Procedure - The following steps were undertaken by the researcher: The researcher formulated the research proposal and the instrument and submitted it to the adviser, Dean, and Research Director for checking. After the research proposal was checked, the researcher incorporated all the suggestions for the improvement of the study. Then, the researcher wrote a letter to the authorities for the permission to implement the study. Once approved, the researcher drafted a letter to the Chief of Hospital allowing her to conduct the interviews to the identified participants. The purpose of the study was explained to the identified participants. Also, their right to refuse as a respondent was highlighted. The researcher requested daily census at the Emergency Room Department to identify the participants of the study. An interview was conducted through audio recording and the purpose of the study was explained to the identified participants. The gathered data were collated and subjected to thematic analysis. Findings, interpretation, conclusion, and suggestions were drawn from the data acquired. To validate the result, the researcher conducted member checking with the identified participants to confirm the findings.

Data Analysis - Coding and thematic analysis served as the chosen method for the researcher to identify patterns, themes, and underlying meanings within the collected data. This approach seamlessly aligns with the phenomenological design, which places a central emphasis on capturing the essence of individuals' experiences and discerning common threads shared among participants. Furthermore, the adoption of thematic analysis greatly facilitated the exploration of geriatric patients' narratives concerning their care experiences. Through a meticulous and systematic coding process, the researcher was able to pinpoint recurring themes and discern

patterns within their descriptions. This method provided a comprehensive and nuanced understanding of how these patients perceive and articulate their experiences, encompassing facets such as emotional support, physical care, and communication with healthcare providers. Importantly, it also empowered the researcher to identify the factors influencing the quality of caring encounters, as perceived by geriatric patients. Moreover, thematic analysis provided the researcher with the invaluable capability to distill the core elements that geriatric patients prioritize in their caring encounters. Recognizing recurring themes within their descriptions, the researcher was able to compile a comprehensive list of essential components contributing to a positive hospitalization experience. This wealth of information furnished valuable insights into the specific needs and preferences of geriatric patients, thereby aiding in the development of patient-centered care approaches. This method involves independently revisiting the collected papers, generating codes and themes, which was subsequently deliberated upon through the construction of a "thematic map."

Ethical Considerations - The ethical conduct of this study is of paramount importance, and it rigorously adhered to established guidelines and principles to safeguard the rights and well-being of all participants involved. Here, the researcher delved into the specific ethical considerations and procedures that were implemented:

Informed Consent. Prior to the commencement of the study, all potential participants were provided with clear and comprehensive information about the research's objectives, procedures, potential risks, and benefits. They had the opportunity to ask questions and seek clarifications. Informed consent was obtained voluntarily and without any form of coercion. Participants were assured that their decision to participate or withdraw will have no impact on their medical care or any other aspect of their relationship with the healthcare facility. Written consent was obtained from each participant, and a copy was provided to them for their records.

Confidentiality. The confidentiality of all collected data was strictly maintained. Participants' identities were protected, and any personally identifiable information was anonymized or pseudonymized in the research reports and publications. Data were stored securely, with access restricted to only authorized research personnel. When presenting findings, care was taken to ensure that no individual can be identified from the information shared.

Right to Withdraw. Participants were explicitly informed of their right to withdraw from the study at any point, without any adverse consequences. This principle of respect for autonomy means that participants can decide to discontinue their participation for any reason, and data will be withdrawn from analysis without question.

Beneficence. Throughout the research process, the principle of beneficence was upheld. This means that every effort was made to maximize the benefits of the study for the participants and society while minimizing any potential harm. This includes ensuring that participants' experiences are respected, that the research contributes to improving the quality of care for geriatric patients, and that any potential risks are mitigated.

Respect for Autonomy. The autonomy of each participant was highly respected. This principle involves acknowledging that individuals have the right to make decisions about their own participation and that their choices will be honored without judgment. Additionally, the researcher was transparent in explaining the purpose and process of the study, empowering participants to make informed choices.

3. Results and discussion

3.1 Part 1. Geriatric Patients' Caring Experiences During Hospitalization

After a rigorous thematic analysis of the texts and voice recordings of the responses of the respondents, the researcher came up with the following themes answering the first objective of the current study. These themes include *positive experiences of care, emotional impact on hospital experience, negative experiences and challenges, importance of communication and cultural sensitivity, and areas for improvement.*

Positive Experiences of Care: “Maalaga Sila” (They are careful) - Most participants shared that their experiences in the hospital were generally positive. Common themes included prompt attention to medical needs, compassionate and caring healthcare staff, and a sense of comfort and security. Patients expressed satisfaction with the way they were treated, highlighting the staff's dedication to their well-being. Many used descriptors like “very good,” “*maalaga sila*,” and “*napintas ti serbisyo da*” (excellent service). Specific examples of positive experiences included the staff's constant follow-up, attentive behaviors, and clear communication about medications and progress. The participants emphasized how small gestures, like staff smiling and consistently checking in on their condition, contributed to their sense of being well- cared for. One patient mentioned, “*They always smile and greet us well*,” while another noted, “*Staff are very compassionate, and they readily attend to our needs*.” These actions made patients feel respected and valued, contributing to a positive experience.

Emotional Impact on Hospital Experience: “Panatag ang Loob Ko” (I feel comfortable) - Emotions played a significant role in shaping the patients' hospital experiences. The majority described comfort, contentment, and security during their stay. One patient noted, “*Panatag ang loob ko dito*” (I feel at ease here), while another shared, “*Comforted and well-cared for*.” These emotions positively impacted their perceptions of care, with several patients stating that they would choose Aglipay District Hospital again if they needed to be hospitalized. The comfort and care extended by healthcare providers helped improve patients' overall health and well-being, with one participant stating, “*It contributed a lot to my first recovery/healing*.” This was significant for geriatric patients, who are often more vulnerable and need consistent reassurance during hospitalization.

Communication and Cultural Sensitivity: “Pinagsarita da kanyami” (How they communicate with us) - Communication was key factor influencing the quality of care. Participants appreciated when healthcare providers took time to explain medical conditions and treatments in a way they could understand. One patient shared, “*Medication is explained well, and they attend to our needs readily*.” Effective communication fostered trust between patients and healthcare providers, reinforcing sense of being well-cared for. Cultural sensitivity also played a role in the patients' experiences, as many noted how important it was for healthcare providers to respect and understand their cultural values. One participant expressed appreciation for the staff's ability to speak the local dialect, saying, “*Nu anya ajay sao mi ket isu met ti pinagsarita da kanyami*” (They speak to us in the language we understand). This cultural connection helped ease communication barriers and made patients feel more comfortable and respected during their stay.

Negative Experiences and Challenges: “Kulang ang Tubig” (The water supply is lacking) - While most feedback was positive, some patients highlighted areas where care fell short, particularly concerning hospital facilities. The condition of the hospital's comfort rooms (CR) and water supply were frequently mentioned as negative aspects of their experience. For example, one participant said, “*Medyo luma na ang CR at kulang ang tubig*” (The restroom is a bit old, and the water supply is lacking), and others echoed similar sentiments about the inadequacy of the facilities. Several participants suggested improvements to enhance the quality of care for geriatric patients. One of the main recommendations was to upgrade the hospital's facilities, particularly the comfort rooms and water supply, to better meet the needs of elderly patients. Participants also recommended increasing the number of healthcare staff to ensure more consistent attention and creating a dedicated room for geriatric patients for a more focused and specialized approach to care. Maintaining good communication and continuing regular visits from healthcare providers were emphasized as critical factors for improving care. Participants expressed that consistent communication about their condition and treatment gave them a sense of control and comfort during their hospital stay. Although these issues did not detract significantly from the overall care provided by the healthcare staff, participants indicated that improving these aspects would enhance their comfort and overall experience in the hospital.

3.2 Part 2. Factors Contributing to Positive and Negative Caring Encounters for Geriatric Patients during their Hospitalization

Five key themes emerged as the factors contributing to positive and negative caring encounters for geriatric

patients during their hospitalization. These include positive interactions with healthcare staff, effective communication, impact of staff fatigue, lack of respect, and ineffective communication.

Table 1

Summary of the Positive and Negative Caring Encounters of the Geriatric Patients during their Hospitalization in Aglipay District Hospital

Encounters	Type	Supporting Quotes
Effective Communication	Positive	"Pinapaliwanag ng maigi kung ano ang sakit namin" (<i>We are receiving a thorough explanation of our medical condition</i>)
Attentive and Compassionate Staff	Positive	"Mababait mga nurses at doctor." (<i>The nurses and doctors are all very kind</i>)
Regular Follow-Ups	Positive	"Lagi nila kaming pinupuntahan sa aming room."(<i>They are always visiting us in our room.</i>)
Clean and Organized Environment	Positive	"Ang malinis na kwarto ay nakatulong sa akin na makaramdam ng mas mabuti habang ako'y nandito sa hospital." (<i>A clean room contributed to me feeling better while I'm here in the hospital</i>)
Poor Communication	Negative	"Hindi ko naiintindihan ang sinasabi ng doctor." (<i>I don't understand what the doctor is saying.</i>)
Negative Staff Attitude	Negative	"Ang ilang mga nars ay tila naiinis kapag nagtatanong ako." (<i>It seems some nurses get annoyed when I ask questions</i>)
Staff Fatigue	Negative	"Maaari na pagod sila, kaya naapektuhan nito kung paano nila kami tratuhin." (<i>They might be tired, which could be affecting how they treat us</i>)
Lack of Individualized Attention	Negative	." Minsan, parang nakakalimutan ako." (<i>Sometimes, it feels like they forget about me.</i>)

Positive Interactions with Healthcare Staff - During hospitalization, geriatric patients consistently identified positive interactions with healthcare staff as a significant factor in their overall satisfaction. Respondents frequently mentioned the importance of "positive visits," emphasizing how regular, encouraging interactions fostered a sense of being valued. One patient remarked, "*Lagi nila kaming pinupuntahan sa aming room,*" (*They are always visiting us in our room.*) highlighting how the compassionate presence of staff made them feel prioritized. The demeanor of healthcare providers was crucial; one individual noted, "*Mababait mga nurses at doctor,*" (*The nurses and doctors are all very kind*) reflecting kindness and empathy exhibited by the staff that enhanced their overall experience.

Effective Communication - Effective communication emerged as another vital theme contributing to positive, caring encounters. Respondents frequently underscored the importance of clear explanations regarding their treatment plans. One patient expressed gratitude for the staff's thoroughness, stating, "*Pinapaliwanag ng maigi kung ano ang sakit namin,*" (*We are receiving a thorough explanation of our medical condition*) which illustrates how informative communication helped them better understand their health conditions. Holistic approach to care was appreciated, as one patient mentioned, "I have a holistic process of treatment while at Aglipay District Hospital," signifying that attention to both physical and emotional well-being significantly improved their overall treatment experience.

Impact of Staff Fatigue - Conversely, factors leading to negative caring encounters were predominantly linked to staff fatigue and burnout. Respondents identified moments when healthcare providers appeared exhausted, detracting from the care quality. One patient shared, "*Kapag napagod sila,*" suggesting that staff tiredness significantly impacted their interactions. This fatigue often manifested in a lack of engagement, which diminished the overall quality of care experienced by patients.

Lack of Respect - The lack of respect from some healthcare providers also contributed to patient dissatisfaction. One respondent candidly expressed, "*Walang respeto,*" indicating how disrespectful attitudes fostered feelings of neglect and diminished trust between patients and their caregivers. Such negative behaviors affected the quality of care and strained the patient-provider relationship, leaving patients feeling undervalued.

Ineffective Communication - Ineffective communication was another prevalent theme associated with negative experiences. Respondents expressed frustration regarding misunderstandings and need for clarification about their care. One patient illustrated this by stating, "Miscommunication between the client and health

provider” led to confusion and anxiety about their treatment. Additionally, specific incidents of perceived incompetence and inattentiveness from staff were evident; one respondent mentioned, “Hindi na naaattendan yung mga swero na paubos,” (They're not attending to the IV fluids that are running low). pointing out a particular situation that exemplified their feelings of being unvalued and neglected.

3.3 Part 3. Essential Elements of Caring Encounters in the Hospital from the

Table 2

Summary Matrix of the Essential Elements of Caring Encounters in the Hospital from the Perspective of Geriatric Patients in Aglipay District Hospital

Essential Element Description	Supporting Quotes
Importance of Consistent Visits	Regular visits from healthcare staff are crucial for enhancing feelings of respect and care among elderly patients. A clean hospital environment also reduces anxiety and enhances overall well-being.
Friendly Atmosphere	A welcoming environment the emotional well-being of elderly patients.
Holistic Care Approach	The presence of competent staff is essential for providing effective care and treatment. A comprehensive approach that addresses both emotional and physical health is vital for the recovery of elderly patients. A thorough treatment plan contributes significantly to their overall improvement in health.
Cultural Sensitivity and Communication	Cultural awareness and effective communication are key to fostering caring interactions. Effective communication, including using a patient's dialect, enhances understanding and strengthens connections. Patients feel equally treated regardless of their socioeconomic background, fostering a supportive environment.
	The importance of respectful treatment is emphasized to improve the overall hospital experience.
	“Palagiang pagbisita sa aming mga pasyente.” (Regular visits to our patients) “Amin nga basuraan da ket nadalus ken nabanglo haan nga angot ti ospital.” (All their trash cans are clean and fragrant, and most importantly, they don't smell like a hospital) “Maaliwalas kahit papano gagaan man lang pakiramdam namin. (The brightness helps us feel a little better) “Magaling na mga staff.” (The staff are highly competent “To have a holistic process of treatment while at the facility.” “For fast recovery and improve well-being.” “Wastong asal at walang deskriminasyon.” (Respectful behavior and non-discrimination.) “Pinapaliwanag sa aming dialect.” (They explain it in our dialect) “Walang mayaman o mahirap lahat naibibigay yung needs.” (They provide for the needs of everyone, whether rich or poor.) “Pinapakita sa mga pasyente ang kabaitan at respeto sa kanila.” (They show kindness, respect to the patients.)

Perspective of Geriatric Patients - Geriatric patients, who frequently confront particular obstacles during their hospitalization, rely heavily on caring contacts in a hospital setting to enhance their overall experience. It is crucial to comprehend this vulnerable population's ideas of what makes for efficient and compassionate care as they negotiate the complexity of medical treatment.

Importance of Consistent Visits and Clean Environment - According to elderly patients, regular visits and a tidy atmosphere are essential components of compassionate interactions in a medical facility. Patients emphasized how they felt respected and cared for by the healthcare staff's frequent visits. “Palagiang pagbisita sa aming mga pasyente,” (Regular visits to our patients) said a reply, highlighting the consolation that regular exchanges offer. A patient said, “Amin nga basuraan da ket nadalus ken nabanglo haan nga angot ti ospital,” (All their trash cans are clean and fragrant, and most importantly, they don't smell like a hospital) highlighting how a hygienic hospital setting reduces anxiety and improves their sense of overall well-being. A clean and orderly environment dramatically improves the overall experience.

Friendly Atmosphere and Competent Staff - The establishment of a welcoming environment, together with the presence of qualified employees, was another crucial component. Patients said being in a cozy and friendly setting improved their emotional well-being. “Maaliwalas kahit papano gagaan man lang pakiramdam namin,”

(*The brightness helps us feel a little better*) said one person, expressing how a welcoming environment lifts their spirits. The responders also emphasized the necessity for competent healthcare professionals. One said, "*Magaling na mga staff,*" (*The staff are highly competent*) emphasizing the importance of qualified staff to give efficient care and treatment.

Holistic Care Approach - The recovery of elderly individuals was shown to need a comprehensive approach to therapy. The respondents underlined the necessity for treatment that includes both emotional and physical recovery. One patient expressed a desire for a complete approach that covers all aspects of their health when they said, "*To have a holistic process of treatment while at the facility.*" Another responder reflected this attitude when they said, "*For fast recovery and improve well-being,*" highlighting how a comprehensive treatment plan contributes to their overall improvement in health.

Cultural Sensitivity and Effective Communication - It was determined that cultivating caring interactions required both cultural awareness and good communication. Patients emphasized how important it is for people to recognize and value the differences in their origins. "*Wastong asal at walang deskriminasyon,*" (*Respectful behavior and non-discrimination*) said one respondent, emphasizing the significance of treating every patient with dignity regardless of their background. One participant mentioned "*Pinapaliwanag sa aming dialect,*" (*They explain it in our dialect*) demonstrating how successful communication lowers barriers and develops stronger connections with healthcare practitioners. Other respondents indicated that speaking in their dialect increased their knowledge. Respondents discussed particular instances where they felt cultural awareness improved their hospital stay. "*Walang mayaman o mahirap lahat naibibigay yung needs,*" (*They provide for the needs of everyone, whether rich or poor*) said a patient, demonstrating that all patients, regardless of socioeconomic background, receive the same level of care from the personnel. Another said, "*Patients from different places, ages, sex, and beliefs are equally treated,*" illustrating how a supportive environment is fostered by a culture of equality among patients. As one patient put it, "*Pinapakita sa mga pasyente ang kabaitan at respeto sa kanila,*" (*They show kindness and respect to the patients.*) underscoring the importance of courteous treatment in improving their hospital experience; it was also evident how well healthcare professionals communicated and showed kindness and respect.

3.4 Part 4. Actions that can be Suggested to Improve the Quality of Care for Geriatric Patients during Hospitalization

Several key themes emerge based on the responses regarding actions to improve the quality of care for geriatric patients during hospitalization.

Table 3
Summary Matrix of Actions Suggested to improve the Quality of Care for Geriatric Patients during Hospitalization

Action Theme	Description	Supporting Quotes
Enhanced Communication and Regular Visits	Improved communication and frequent visits from healthcare professionals are essential for ensuring comfort and in treatment. Regular interaction helps build trust and alleviate anxiety during hospital stays.	"More on communication and constant visit." "Explaining more how hygiene affects their personality."
Dedicated Facilities for Geriatric Patients	Establishing specialized facilities for geriatric patients can create a more comfortable and supportive environment for their care.	"Baka mas mainam kung may isang room na para lang sa mga geriatric patients." (It might be better if there was a room specifically for geriatric patients.)
Facility Improvements	Upgrading infrastructure, particularly water supply and sanitary facilities, is critical for maintaining comfort and _____ dignity among elderly patients. Inadequate resources negatively impact patient experiences, highlighting the need for sufficient water and clean restrooms	"Pundasyon ng tubig" and "maayos na CR." (Essential water access and Well-maintained restroom) "Kasi nawawalan ng tubig sa tangke, konti lang ang naikakarga ng tangke ng tubig." (Due to water loss in the tank, the water tank's capacity is limited)

Staffing and Attentiveness	Increasing the number of attentive staff, including doctors and nurses, can significantly enhance the quality of care for geriatric patients.	<i>“Additional staff (Doctors and nurses).”</i>
	Attentiveness, respect, and care are vital for adequately addressing the needs of elderly patients.	<i>“Kailangan attentive, marespeto at maalaga.” (being attentive, respectful, and caring)</i>
Best Practices and Policy Implementation	Implementing best practices in hospitals, including clear communication of policies, can improve patient experiences and care quality.	<i>“Ipaliwanag ang mga polisiya ng ospital.” (Explain the hospital rules)</i>
	Enhancing awareness of cultural sensitivity and integrating it into care practices is vital for better patient- provider interactions.	<i>“Improving patient experiences may be achieved by raising knowledge of cultural sensitivity.”</i>

Enhanced Communication and Regular Visits - One significant proposal is the necessity of better communication and more frequent visits from healthcare professionals. Respondents stressed that senior patients' comfort and comprehension of their treatment may be significantly impacted by *“more on communication and constant visit.”* They think that regular interaction might foster trust and lessen the anxiety that frequently accompanies hospital stays. One, for example, recommended *“Explaining more how hygiene affects their personality,”* emphasizing the significance of attending to medical requirements and creating a nurturing atmosphere.

Dedicated Facilities for Geriatric Patients: “Room para sa Geriatric Patients” (A room designed for geriatric patients) - The idea of specialized facilities designed to meet the requirements of older adults is another critical issue. One suggestion was to set aside a space specifically for senior citizens to foster a more straightforward and encouraging environment. *“Baka mas mainam kung may isang room na para lang sa mga geriatric patients,”* said a participant, implying that a customized setting may improve their experience and treatment.

Facility Improvements: “Maayos na CR” (clean/operational restrooms) - The necessity for infrastructure upgrades, notably in the areas of water supply and sanitary facilities, was often mentioned by the participants. The mention of *“pundasyon ng tubig”* (sufficient water supply) and *“maayos na CR” (clean/operational restrooms)* are two specific instances. They stated that in order to preserve comfort and dignity, these communities must have enough resources. *“Kasi nawawalan ng tubig sa tangke, konti lang ang naikakarga ng tangke ng tubig,”* (Due to water loss in the tank, the water tank's capacity is limited) said one responder, emphasizing how frustrating it is to not have enough water in the facilities, which negatively affects their experience.

Staffing and Attentiveness - Another subject that came up throughout the conversations was how important it is to have enough staff members who are also attentive. According to respondents, the care given to elderly people may be greatly enhanced by having *“additional staff (Doctors and nurses).”* They stressed that to address their requirements adequately, *“Kailangan attentive, marespeto at maalaga” (being attentive, respectful, and caring)* is essential. This opinion supports the notion that having enough employees may improve the overall service standard and guarantee that patients feel appreciated.

Best Practices and Policy Implementation: “Ipaliwanag ang Polisiya” (Explain the hospital rules) - The necessity of putting best practices they have seen or heard about into practice was finally emphasized by the respondents. They recommended that hospitals, in addition to attending to patients' needs, concentrate on promoting care, attention, and respect. One participant, for example, mentioned that it is important to communicate hospital procedures clearly by noting, *“Ipaliwanag ang mga polisiya ng ospital” (Explain the hospital rules)*. They think that improving patient experiences may be achieved by raising knowledge of cultural sensitivity and incorporating it into care procedures.

4. Discussion

I. Geriatric Patients' Caring Experiences during Hospitalization

The experiences of elderly patients in hospitals frequently serve as a reminder of the value of providing them with kind and considerate care, since this may have a substantial impact on their general wellbeing and recuperation. Because of their advanced age and weakness, geriatric patients are particularly vulnerable to the quality of treatment they get, which is influenced by a number of factors, including the frequency with which they see healthcare providers, the degree to which their concerns are addressed, and the general attitude of the personnel. In many cases, geriatric patients reported positive experiences, mainly stemming from the healthcare staff's consistent follow-up and attentiveness. Frequent visits by healthcare professionals made patients feel secure and cared for, with one respondent noting, *"They always came to check on us in our room,"* suggesting that regular monitoring and the physical presence of the staff were highly valued. Additionally, a positive atmosphere, reinforced by staff members' respectful demeanor, was another crucial aspect of these positive experiences. Patients often emphasized how the politeness and respect shown by nurses and doctors improved their emotional state, helping them cope with the stress of hospitalization. Patients felt secure while they were at the hospital not just because of the medical staff's professionalism, understanding, and demeanor, but also because of the facility's procedures, structure, and support. Through patient-centered activities, healthcare practitioners and medical facilities should work to close the gap in patient safety awareness factors.

Effective communication was also a dominant theme in positive encounters. Many geriatric patients appreciated the clarity with which healthcare providers explained their conditions and the medications being administered. One patient shared, *"They explained well about our medications and treatment plans,"* highlighting the importance of clear, consistent information in reducing anxiety and fostering trust. There were also accounts of unfavorable caring interactions, which were frequently connected to forgetfulness and a sense of being devoid of empathy. Some patients noticed that when healthcare professionals were stressed out or exhausted, their conduct declined. For example, a patient stated, *"Maybe when they are tired, they become less attentive,"* pointing to how workload and staff fatigue can negatively impact the quality of care. This suggests a need for better workload management and support for healthcare workers to prevent burnout, which directly affects patient experience.

Miscommunication between healthcare personnel and patients was another important source of bad experiences. Situations when there was a language barrier or unclear instructions added to the helplessness and irritation. As one patient recounted, *"There was miscommunication between the client and the health provider,"* indicating that even small breakdowns in communication can have significant negative consequences for patient care. Additionally, a lack of responsiveness to basic needs, such as failing to attend to medical equipment like IV drips, further compounded negative feelings. One patient specifically noted, *they didn't attend to the IV drips when they were running out,* exemplifying how neglect of even routine tasks can lead to feelings of abandonment. While, cultural sensitivity and respectful communication were also found to be critical in shaping the patients' perceptions of care. Elderly individuals stressed that healthcare professionals should respect their cultural heritage and speak to them in a language and style that suits them. Some respondents, for example, found it helpful that medical professionals spoke to them in their own tongue, which helped them comprehend their care and feel more at ease in an unfamiliar setting. One patient noted, *"They explained things in our dialect,"* which helped in bridging any cultural or language gaps.

The caliber of interactions geriatric patients have with healthcare professionals has a significant impact on their experiences while they are hospitalized. Negative interactions were frequently associated with staff exhaustion, misunderstandings, and disregard for fundamental requirements, whereas positive ones were characterized by kind, considerate, and courteous care. Older patients' hospital stays may be greatly improved by making sure that medical staff members have training in effective communication and cultural sensitivity and are assisted in maintaining their well-being.

II. Factors Contributing to Positive and Negative Caring Encounters for Geriatric Patients during their Hospitalization

When examining the factors contributing to positive and negative caring encounters for geriatric patients during hospitalization, it becomes evident that effective communication is paramount. Geriatric patients frequently feel vulnerable and unsure about their care, therefore it is critical for physicians to communicate in an educated and empathic way. As noted by patients, regular interactions enhance their comfort levels and provide them with a sense of reassurance. Compassionate staff conduct is another important aspect in determining the quality of care for older people. Healthcare practitioners who demonstrate tolerance, empathy, and respect have a major influence on their patients' emotional and psychological well-being. Positive encounters are frequently marked by attentive staff members who emphasize the wants and concerns of elderly patients. When healthcare workers actively listen and engage with patients, it fosters a sense of dignity and validation. Respondents have highlighted the importance of having staff members who are skilled and demonstrate a caring demeanor. This compassionate approach helps create a supportive environment where elderly patients feel safe to express their fears and seek assistance without hesitation.

The hospital's physical environment plays a substantial role in shaping patient experiences. Many patients have expressed how a hygienic setting reduces anxiety and enhances their sense of well-being. Clean and accessible restrooms, functional medical equipment, and adequate resources all contribute to a positive hospital stay. Conversely, shortcomings in the physical environment can lead to negative encounters. Issues such as inadequate water supply or poorly maintained facilities can result in feelings of discomfort and indignity. These environmental factors can overshadow the care the staff provides and significantly affect the patient's overall experience in the hospital.

On the other side, poor communication is a big factor to unpleasant caring interactions. Patients get confused and dissatisfied when they believe they have not been sufficiently educated about their diseases or treatment options. A lack of clear communication from healthcare personnel can worsen senior patients' emotions of worry and powerlessness, eroding their faith in the system. Furthermore, limited staffing is a major element that reduces the quality of care for senior people. Many respondents have pointed out the direct correlation between the availability of healthcare professionals and the level of care received. Environmental issues within the hospital might have a substantial influence on geriatric patients' experiences. Many patients have raised concerns about inadequate facilities, such as filthy bathrooms or a lack of basic resources. These flaws can cause suffering and indignity, overshadowing the benefits of healthcare professionals' treatment. For example, problems caused by limited water availability might increase patient stress, significantly impacting their whole experience.

The elements that influence positive and bad care interactions for geriatric patients during hospitalization are complex and interwoven. Effective communication, caring staff conduct, and a supportive physical setting are all critical for fostering pleasant experiences. Conversely, poor communication, inadequate staffing, and environmental shortcomings significantly detract from the quality of care received. Healthcare institutions may foster a more compassionate and encouraging atmosphere for senior patients by emphasizing good communication, enough personnel, and a patient-centered approach.

III. Essential Elements of Caring Encounters in the Hospital from the Perspective of Geriatric Patients

Caring encounters in hospital settings are paramount for enhancing the experiences of geriatric patients, who often face unique challenges during their hospitalizations (Darkwah, 2023). Understanding the essential elements that contribute to effective and compassionate care is crucial in addressing the needs of this vulnerable population. Geriatric patients rely heavily on the quality of interactions with healthcare providers to navigate the complexities of medical treatment, and their perspectives reveal significant insights into what constitutes compassionate care.

From geriatric patients' perspective, regular healthcare staff visits significantly enhance their feelings of respect and care (Sharkiya, 2023). Patients express that consistent interactions with providers foster a sense of comfort and reassurance during their hospital stay. The sentiment, "*Palagiang pagbisita sa aming mga pasyente,*" underscores the emotional support that frequent visits provide. A clean hospital environment is also essential for reducing anxiety and enhancing overall well-being. As one patient noted, "*Amin nga basuraan da ket Daedalus ken nab anglo haan nga got ti hospital,*" highlighting that cleanliness contributes to a positive hospital experience. A tidy and organized environment is linked to higher patient satisfaction and can alleviate stress in vulnerable populations.

Participants emphasized the importance of treating everyone with dignity, regardless of their background, as expressed in the quote "*Wastong asal at walang deskriminasyon.*" This sentiment highlights the importance of cultural sensitivity in healthcare settings, as it promotes inclusivity and respect. Effective communication, particularly using a patient's preferred dialect, improves comprehension and develops relationships with healthcare practitioners. One participant said, "*Pinapaliwanag sa aming dialect,*" implying that communicating in the patient's own tongue breaks down barriers and develops a stronger relationship. Patients voiced their wish for egalitarian treatment, saying, "*Walang mayaman o mahirap lahat naibibigay yung needs.*" This demonstrates a supportive atmosphere in which all patients feel respected and cared for. As one patient put it, "*Pinapakita sa mga pasyente ang kabaitan at respeto sa kanila,*" underlining how kindness and respect from healthcare workers improve the whole hospital experience.

IV. Actions that can be Suggested to Improve the Quality of Care for Geriatric Patients during Hospitalization

Improving the quality of care for older patients during hospitalization necessitates specialized interventions that meet their specific needs and problems. One of the most essential ideas is to improve communication and increase the frequency of visits by healthcare providers. Respondents emphasized that improved communication builds trust and decreases fear, which is especially important for senior patients. Regular encounters enable healthcare practitioners to explain medical procedures and hygiene practices in understandable language, making patients feel more safe and informed about their treatment plans. This strategy enhances comfort and empowers patients by integrating them in their treatment, resulting in a more positive hospital stay.

Another critical suggestion is the establishment of dedicated facilities for geriatric patients. Creating specific wards or rooms tailored to the needs of older adults can significantly enhance their hospitalization experience. By designing these spaces with the physical and emotional needs of elderly patients in mind, hospitals can provide a more supportive environment. Such specialized areas could include adaptations like wider doorways, handrails, and comfortable furnishings, all aimed at improving accessibility and comfort. This dedicated approach can contribute to better health outcomes and increased patient satisfaction, as elderly patients are more likely to feel understood and cared for in a tailored setting. Patient-centered care (PCC) is an important healthcare approach that focuses patients' individual experiences, values, needs, and preferences throughout treatment. This method promotes a therapeutic interaction between patients and healthcare workers, which leads to better health outcomes, more efficient resource use, and higher patient satisfaction (Jobe, 2023).

Facility improvements are equally vital in maintaining the dignity and comfort of geriatric patients. Infrastructure investment addresses fundamental needs that significantly impact patient experiences, particularly regarding water supply and sanitation. Participants in the discussion emphasized the importance of reliable access to clean restrooms and sufficient water supply. Upgrading plumbing and restroom facilities ensures elderly patients maintain their dignity during hospitalization. Well-maintained facilities can create a more positive environment, ultimately supporting patients' recovery and overall satisfaction with their care. Increasing staffing levels and improving attentiveness among healthcare professionals is another crucial factor in enhancing care for geriatric patients. Respondents advocated recruiting additional nursing staff explicitly trained in geriatric care, emphasizing the importance of being attentive, respectful, and addressing patients' needs and concerns.

Implementing a mentorship system can further enhance the quality of care by ensuring that new hires receive support and guidance in understanding the unique requirements of elderly patients. This commitment to attentive care fosters a compassionate healthcare environment, promoting a sense of respect and appreciation for geriatric patients.

Implementing best practices and clear communication of hospital policies are essential for improving patient experiences. Respondents suggested hospitals should focus on instituting proven best practices tailored to the geriatric population, including cultural sensitivity training. Ensuring hospital policies are communicated effectively to patients and their families can empower them to navigate their care confidently. Raising awareness of cultural considerations can lead to better patient-provider relationships and enhance overall satisfaction with the care provided. By focusing on these critical areas—communication, dedicated facilities, facility improvements, staffing, and best practices—hospitals can create a more supportive and responsive healthcare environment for geriatric patients, promoting dignity, comfort, and respect throughout their hospitalization.

5. Conclusions and recommendations

In light of the above-mentioned observations, the following deductions were made: The experiences of geriatric patients during hospitalization revealed that compassionate care, effective communication, and the presence of dedicated healthcare providers significantly impact their overall well-being. Positive interactions and attentiveness from medical staff foster a supportive environment that caring. More staff means more personalized attention, allowing for promptly helps alleviate anxiety and enhances the patient's perception of care received. The factors contributing to positive and negative caring encounters highlight the importance of interpersonal dynamics in healthcare settings. Positive experiences are primarily attributed to the demeanor and attentiveness of healthcare providers, while negative encounters often stem from staff fatigue, lack of respect, and ineffective communication. Addressing these factors is crucial for improving the quality of care for geriatric patients. From the standpoint of senior patients, cleanliness, attentive personnel, and a supporting environment are critical components of caring encounters. Patients underlined that developing trust and guaranteeing successful treatment depends on a polite atmosphere in addition to skilled medical professionals. These components are essential for raising patient satisfaction and encouraging healing. The guidelines for raising the standard of care for older adults emphasize how important it is to have better lines of communication, specialized facilities, and infrastructure upgrades. Healthcare facilities can significantly improve the quality of care given to elderly patients, ultimately improving patient satisfaction and health outcomes, by implementing strategies that prioritize dedicated care environments, sufficient staffing, and clear communication of hospital policies.

The following are the recommendations based on the findings of the study: Healthcare professionals should be trained effectively in communicating with geriatric patients. This will ensure that information about drugs, treatment plans, and patient progress is communicated understandably and engagingly. Create guidelines encouraging medical professionals to follow up frequently and check in. This will create a caring atmosphere where senior citizens feel appreciated and cared for on a constant basis. To fulfill the unique needs of elderly patients better and encourage their comfort while they are in the hospital, set aside certain sections or rooms for them. Improving the facilities' amenities, such as water supply and lavatories, is also pivotal. Include training on cultural sensitivity in staff development initiatives to guarantee that patients are treated with dignity and compassion, considering their varied backgrounds and communication styles.

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Factors that influence patients' non-adherence to dialysis treatment regimens

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Abstract

This study aimed to explore factors that influence patient's adherence to dialysis treatment regimens at City of Ilagan Medical Center (CIMC-HDU) and Isabela Provincial Hospital (IPH-HDU). A quantitative research design employing a descriptive survey approach was utilized. Data were collected from 100 dialysis patients using an adapted structured questionnaire. Purposive sampling was used to select patients in two hospitals. Frequency and percentage distribution, weighted mean, t-test, and ANOVA were used to analyze gathered data. The results reveal that the majority of dialysis patients are between the ages of 44 and 53, predominantly male, married, and identify as Roman Catholic, college graduates, and have a monthly income of less than 20,000 pesos per month. The respondents highly recognize that health reasons, financial constraints, and family-related barriers emerged as the most significant contributors to their non-adherence to dialysis treatment regimen. They also identified additional factors, including personal reasons, transportation difficulties, and scheduling conflicts with other medical appointments, all of which disrupt adherence. The findings of the study also revealed significant differences when examining adherence factors by age, particularly in relation to personal reasons, other medical appointments, and financial constraints. On the other hand, the findings demonstrated no statistically significant differences in adherence factors based on sex, civil status, religion, ethnicity, educational attainment, or average monthly family income, suggesting that these demographic variables do not directly influence patients' non-adherence to dialysis treatment regimens. These findings highlight the importance of tailored interventions addressing these factors to enhance hemodialysis adherence and ultimately improve patient outcomes in this population.

Keywords: factors, non-adherence, dialysis treatment regimen, health issues, family reasons, personal reasons

Factors that influence patients' non-adherence to dialysis treatment regimens

1. Introduction

End-stage renal disease (ESRD), also known as kidney failure, is a debilitating condition that affects a growing number of individuals worldwide. To manage this condition, dialysis treatment plays a pivotal role in prolonging patients' lives and maintaining their overall health. Adherence is defined as "the extent to which a person's attitude matches with the agreed recommendations of a healthcare giver in terms of taking medications, following a recommended diet regimen and/or carrying out lifestyle changes." Adherence to medications is a major challenge in patients with chronic diseases since non-adherence to was usually associated with disease deterioration and increased hospital admissions.

Non-adherence to treatment is a common behavior among patients with ESRD, which has been associated with unfavorable consequences, such as bone demineralization, pulmonary edema, metabolic disorders, and increased mortality. In Dialysis Outcomes and Practice Patterns Study (DOPPS), a large prospective observational study for the outcomes of hemodialysis practice, non-adherence to hemodialysis (HD), dietary and fluid restrictions, and medical treatment were significantly associated with increased hospital admissions and mortality. However, adherence to dialysis treatment regimens presents a significant challenge for patients, which can have profound consequences on treatment effectiveness and overall patient outcomes. It is therefore crucial to investigate the factors that influence patient adherence to dialysis treatment in order to develop targeted interventions and improve treatment outcomes. The purpose of this research proposal is to explore the various factors that influence a patient's adherence to dialysis treatment regimens. By identifying these factors, healthcare providers and policymakers can gain a deeper understanding of the barriers and facilitators to adherence, and develop evidence-based strategies to support patients in adhering to their treatment plans.

Objectives of the Study - This study generally aimed to explore the factors that influence patients' non-adherence to dialysis treatment regimens at the City of Ilagan Medical Center (CIMC-HDU) and the Isabela Provincial Hospital (IPH-HDU). Specifically, it sought to determine the demographic profile of the respondents in terms of age, sex, civil status, religion, ethnicity, educational attainment, and average monthly family income. It also aimed to identify the factors contributing to the respondents' non-adherence to dialysis treatment, particularly in relation to health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints. Furthermore, the study intended to determine whether there is a significant difference in the factors influencing dialysis adherence when respondents are grouped according to their demographic profile. Lastly, the study aimed to propose appropriate measures to improve adherence to dialysis treatment among the respondents.

2. Methods

Research Design - The study utilized a descriptive research design. A descriptive research design was appropriate for the study because it allowed the researcher to systematically describe and analyze the factors influencing patients' adherence to hemodialysis treatment without manipulating variables or establishing causation. This design enabled the researchers to gather comprehensive data about various factors such as socioeconomic status, social support, healthcare access, and treatment regimen complexity, providing a detailed understanding of the phenomenon under investigation. Descriptive research allowed for the exploration of the significant difference in the factors and adherence levels, providing valuable insights for healthcare providers and policymakers in developing interventions to improve patient adherence and healthcare outcomes in hemodialysis settings.

Study Sites and Participants - The study was conducted in the hospitals offering hemodialysis treatment,

namely: City of Ilagan Medical Center CIMC-HDU and Isabela Provincial Hospital IPH-HDU. CIMC is a 100-bed capacity and a 2nd level hospital classification which is operated by the City of Ilagan. Meanwhile, IPH has a bed capacity from 100 to 200 and it is level 3 category (Tertiary). The participants were the actual patients receiving dialysis treatment in the said health care facilities. There was a total of 50 patients from the two health care institutions.

Population, Sample Size, and Sampling Method - The participants in this study were comprised of individuals currently undergoing dialysis treatment at the specified healthcare facilities, namely CIMC and IPH. The study included a total of 100 patients (50 patients for CIMC and 50 patients for IPH) selected from these two healthcare institutions. To allow for a thorough examination and analysis of the entire population, providing accurate estimates and averages for various parameters, a total enumeration sampling was employed.

Instrument of the Study - The researcher used an adapted questionnaire. The questionnaire had two (2) parts: Part 1 consisted of the demographic profile of the participants in terms of age, sex, civil status, religion, ethnicity, educational attainment, average monthly family income, distance to the dialysis center, period on dialysis, and prescribed dialysis sessions/week. Part 2 comprised of statements on factors affecting adherence to dialysis treatment. The researcher adopted the questionnaire from the study of Alhamad et al. (2023) titled "Factors Affecting Adherence to Hemodialysis Therapy Among Patients With End-Stage Renal Disease Attending In-Center Hemodialysis in Al-Ahsa Region, Saudi Arabia." This questionnaire included variables such as health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints.

Since there was a modification or addition in the questionnaire, the researcher conducted validity and reliability testing. The questionnaire was pilot tested to at least 10 nurses not part of the study. The Cronbach's Alpha coefficients indicate the reliability of the factors influencing adherence to dialysis treatment. In general, Cronbach's Alpha values range from 0 to 1, with higher values suggesting greater consistency among the items measuring each factor. Values above 0.7 are typically considered acceptable, and values above 0.8 are considered excellent. The coefficients in this case fall within the acceptable to excellent range, meaning the factors being measured—such as health issues ($\alpha=0.790$), family reasons ($\alpha=0.846$), personal reasons ($\alpha=0.766$), transportation difficulties (0.897), other medical appointments (0.820) and financial constraints (0.875)—were consistently represented by the items in the questionnaire. This suggested that the questionnaire was reliable for assessing the different factors influencing adherence to dialysis treatment.

Data Gathering Procedure - The researcher first formulated the research proposal and the research instrument, which were then submitted to the adviser, Dean, and Research Director for review and approval. After the structured questionnaire was validated, revised, and approved by the adviser, the researcher sought formal approval from the Dean of the Graduate School to proceed with the conduct of the study. Upon receiving this approval, a request letter was sent to the Hemodialysis Unit facilities, asking for permission to conduct the study and to seek participation from their patients. Once permission was granted, the researcher reproduced the validated questionnaire and personally distributed it to the participants. Before the participants accomplished the questionnaire, the researcher clearly explained the purpose of the study and emphasized the participants' rights, in accordance with ethical research considerations. The questionnaires, along with the consent forms, were then distributed, and after a period of time, retrieved for analysis. The responses were tallied and subjected to statistical treatment and analysis. For data analysis, the collected responses were processed using SPSS Statistical Software.

Frequency and percentage distribution were used to identify the participants' profiles, including age, sex, civil status, religion, ethnicity, educational attainment, average monthly family income, distance to the dialysis center, period on dialysis, and prescribed dialysis sessions per week. The mean was utilized to determine the degree to which various factors—such as health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints—influenced the participants' adherence to

dialysis treatment regimens. Lastly, t-test and ANOVA were employed to determine if there were significant differences in the influencing factors when participants were grouped according to their profile variables.

Ethical Considerations - Ethical considerations in research go beyond data analysis and span the entire research process. Obtaining informed consent is essential—participants must understand the study’s purpose, risks, and benefits, and voluntarily agree to take part. Protecting patient privacy and confidentiality is equally important, which involves anonymizing data and following data protection laws and institutional policies. Researchers must maintain integrity during analysis by being objective, avoiding bias, and reporting results accurately and transparently. Special care should be taken when handling sensitive information, such as medical or socio-demographic data, by ensuring secure storage and limited access. It is also vital to weigh potential risks and benefits, aiming to improve patient outcomes while minimizing harm. When publishing findings, researchers must clearly explain their methodology, data, and limitations, avoiding overgeneralizations that could mislead. A

3. Results

Table 1
Demographic Profile of the Respondents

Age	Frequency	Percentage
14-18 years old	1	1.0
19-23 years old	6	6.0
24-28 years old	5	5.0
29-33 years old	6	6.0
34-38 years old	6	6.0
39-43 years old	8	8.0
44-48 years old	17	17.0
49-53 years old	23	23.0
54-58 years old	15	15.0
59 years old and above	13	13.0
Sex		
Male	71	71.0
Female	29	29.0
Civil Status		
Single	33	33.0
Married	66	66.0
Widowed	1	1.0
Religion		
Roman Catholic	51	51.0
Muslim	1	1.0
Born Again	19	19.0
Methodist	3	3.0
Iglesia Ni Cristo	26	26.0
Ethnicity		
Tagalog	10	10.0
Ilocano	70	70.0
Cebuano	3	3.0
Bicolano	5	5.0
Kapampangan	3	3.0
Ybanag	9	9.0
Educational Attainment		
College Graduate	12	12.0
College Level	54	54.0
High School Graduate	33	33.0
Others/ Vocational Course	1	1.0
Average Monthly Family Income		
Less than 10,000-20,000 pesos	75	75.0
20,001-30,000 pesos	19	19.0
30,001-40,000 pesos	6	6.0
Total	100	100

Table 1 revealed the demographic profile of the respondents which are crucial for understanding factors influencing adherence to dialysis treatment regimens. The age distribution indicates that the majority of

participants are aged 44 to 53 years, with 23% in the 49 to 53 age range and 17% in the 44 to 48 range, suggesting that dialysis treatment primarily affects older individuals. In terms of gender, there is a notable disparity, with 70% of participants being male and 30% female, which may impact health-seeking behaviors and adherence rates.

Civil status shows that 66% of participants are married, potentially providing a supportive network that could enhance adherence to treatment. The religious affiliations indicate that 51% identify as Roman Catholic, with significant representation from Iglesia Ni Cristo (26%) and Born-Again Christians (19%), suggesting that religious beliefs may influence patients' attitudes toward health and adherence. Ethnically, the sample is predominantly Ilocano (70%), with Tagalog making up 10% of participants; this highlights potential cultural influences on treatment adherence. Regarding educational attainment, 54% of participants are at the college level, while 33% are high school graduates. This correlation between education level and health literacy could play a critical role in understanding treatment regimens. The average monthly income reveals that 75% earn less than 20,000 pesos, suggesting that economic constraints may limit access to healthcare resources and negatively impact adherence to treatment.

Table 2
Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Health Issues

	Statements	Mean	Interpretation
1	Complications such as infections, blood clots, and access site issues can disrupt dialysis sessions and contribute to non-adherence.	3.61	Highly Recognized
2	Dialysis-related symptoms such as fatigue, nausea, and muscle cramps can be uncomfortable and disruptive, discouraging me from adhering to the treatment regimens.	3.62	Highly Recognized
3	Mental health issues such as depression, anxiety, and stress can affect my motivation and resilience, leading to non-adherence to dialysis treatment.	3.33	Highly Recognized
4	Comorbid conditions such as diabetes, hypertension, and cardiovascular disease can complicate my treatment regimens and increase the risk of non-adherence.	3.61	Highly Recognized
5	Chronic pain and discomfort associated with dialysis procedures can deter me from adhering to their treatment regimens.	3.44	Highly Recognized
	Category Mean	3.52	Highly Recognized

Table 2 indicates the health-related issues that influence non-adherence to dialysis treatment regimens. As shown, the mean scores for all the statements suggest a strong recognition that these contribute to the non-adherence of the participants to the treatment regimen. Dialysis-related symptoms like fatigue, nausea, and muscle cramps (Mean=3.62) are highly recognized as uncomfortable and disruptive, making it difficult for individuals to adhere to treatment. Similarly, complications such as infections, blood clots, and access site issues (Mean=3.61) are viewed as major disruptions to dialysis sessions, contributing to non-adherence. Co-morbid conditions like diabetes, hypertension, and cardiovascular disease (Mean=3.60) complicate treatment regimens and increase the likelihood of non-adherence. Chronic pain and discomfort associated with dialysis procedures (Mean=3.44) further deter adherence, though this factor shows a bit more variation in participants' responses. Mental health issues such as depression, anxiety, and stress (Mean=3.33) are also seen as significant barriers affecting motivation and resilience, although with slightly more variability in responses. Overall, the category mean of 3.52 emphasizes that participants highly recognize that these health-related factors significantly contribute to non-adherence to dialysis treatments. This finding highlights the importance of addressing these health challenges as a key strategy to enhance patient adherence to dialysis regimens, ultimately improving treatment outcomes and quality of care.

Table 3 shows family-related factors affect non-adherence to dialysis treatment. As reflected, respondents highly recognize that a family members' lack of knowledge about dietary and fluid intake restrictions (Mean=3.30, SD=0.689), lack of social support (Mean=3.29, SD=0.743), inadequate family understanding of treatment importance (Mean=3.29, SD=0.820), family conflicts or responsibilities (Mean=3.26, SD=0.799), and all contribute to non-adherence. Additionally, family dynamics and communication patterns that do not prioritize healthcare needs (Mean=3.26, SD=0.760) are also seen as barriers to adherence. The overall mean of 3.28

highlights the significance of family support and understanding as key factors in promoting consistent adherence to dialysis regimens. This suggests the vital role that a supportive family environment plays in encouraging patients to maintain their treatment schedules and overcome challenges associated with dialysis.

Table 3

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Family Reasons

Statements	Mean	Interpretation
Lack of social support from family members, friends, or healthcare providers may leave me feeling isolated and overwhelmed, reducing my motivation to adhere to the treatment regimens.	3.29	Highly Recognized
Inadequate family support or lack of understanding about the importance of dialysis treatment can contribute to my non-adherence.	3.29	Highly Recognized
Family conflicts or responsibilities may interfere with my ability to attend dialysis sessions regularly, resulting in non-adherence.	3.26	Highly Recognized
Family members' lack of knowledge about dietary restrictions and fluid intake limitations necessary may inadvertently contribute to non-adherence.	3.30	Highly Recognized
Family dynamics and communication patterns that do not prioritize my healthcare needs or treatment adherence can impede my ability to follow the dialysis regimens.	3.26	Highly Recognized
Category Mean	3.28	Highly Recognized

Table 4

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Personal Reasons

Statements	Mean	Interpretation
Forgetfulness or lack of awareness about the importance of adhering to dialysis treatment regimens can lead to non-adherence.	3.35	Highly Recognized
Lack of self-discipline or motivation to maintain a healthy lifestyle can contribute to non-adherence among patients undergoing dialysis.	3.50	Highly Recognized
Negative past experiences with healthcare providers or dialysis facilities may create distrust or reluctance to engage in treatment, resulting in non-adherence.	3.11	Recognized
Feelings of hopelessness or resignation about the prognosis, leading to non-adherence as dialysis treatment is perceived as futile or burdensome.	3.07	Recognized
Feelings of denial or resistance to accepting the diagnosis of end-stage renal disease (ESRD), leading to non-adherence to prescribed dialysis treatments.	3.12	Recognized
Category Mean	3.23	Recognized

Table 4 shows the factors influencing patients' non-adherence to dialysis treatment regimen as to personal reasons. The data reveal that personal reasons significantly influence adherence to dialysis treatment. Participants highly recognize that a lack of self-discipline or motivation to maintain a healthy lifestyle (Mean=3.50) and forgetfulness or a lack of awareness about the importance of adhering to treatment (Mean=3.35), contribute to non-adherence. Moreover, they recognize that feelings of denial or resistance to accepting the diagnosis of end-stage renal disease (Mean=3.12) are viewed as barriers to treatment adherence, negative past experiences with healthcare providers or dialysis facilities (Mean=3.11) may create distrust, while feelings of hopelessness or resignation about the prognosis (Mean=3.07) can also lead to non-adherence. The overall mean of 3.23 suggests that personal factors, such as motivation, past experiences, and emotional responses, play a major role in determining adherence to dialysis regimens. Motivation influences a patient's willingness to follow through with the demanding schedule of dialysis treatments, while past experiences, both positive and negative, shape their attitudes and perceptions toward the therapy. Emotional responses, including feelings of anxiety, frustration, or acceptance, further impact the consistency of their adherence. This result highlights the importance of addressing personal barriers through individualized support, counseling, and motivational strategies to enhance compliance and ultimately improve patient outcomes.

Table 5 reveals the transportation difficulties as a significant barrier to adherence to dialysis treatment. It can be gleaned that respondents highly recognize that transportation costs, including fuel or public transit fares (Mean=3.25), are seen as financial barriers that exacerbate non-adherence. In addition, they recognize that transportation difficulties (Mean=3.22) contribute to feelings of frustration, stress, and helplessness, further reducing motivation to adhere to treatment, limited access to reliable transportation options (Mean=3.15) and the lack of access to public or private vehicles (Mean=3.13) create challenges in attending scheduled dialysis

sessions. Also, reliance on unreliable transportation services (Mean=3.11) can lead to missed appointments due to unpredictable travel times.

Table 5

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Transportation Difficulties

Statements	Mean	Interpretation
Limited access to reliable transportation options can pose significant challenges in attending scheduled dialysis treatments.	3.15	Recognized
Lack of access to public transportation or private vehicles can restrict the ability to travel to dialysis appointments, leading to missed sessions.	3.13	Recognized
Transportation costs, including fuel expenses or public transit fares, may pose financial barriers, exacerbating transportation difficulties and non-adherence.	3.25	Highly Recognized
Reliance on unreliable or inconsistent transportation services, such as ride sharing or community transport programs, can result in unpredictable travel times and missed dialysis appointments.	3.11	Recognized
Transportation difficulties can contribute to feelings of frustration, stress, and helplessness, further impacting the motivation and ability to adhere to dialysis treatment regimens.	3.22	Recognized
Category Mean	3.17	Recognized

The overall mean of 3.17 indicates that transportation-related issues are a notable factor contributing to non-adherence to dialysis treatment. This score reflects the challenges many patients face in accessing reliable and affordable transportation to attend their regular dialysis sessions. For many individuals, especially those in rural or under-served areas, transportation barriers can lead to missed appointments, delayed treatments, and overall disruption in their care. The implications of this mean suggest that without viable transportation solutions, patients may struggle to maintain their treatment schedules, which can adversely affect their health outcomes.

Table 6

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Other Medical Appointments

Statements	Mean	Interpretation
1 Scheduling conflicts between dialysis treatments and other medical appointments may lead to prioritizing one over the other, resulting in non-adherence to dialysis treatment regimens.	3.14	Recognized
2 Long wait times or delays at medical appointments may cause to miss or arrive late for the scheduled dialysis sessions, contributing to non-adherence.	3.09	Recognized
3 Fatigue or physical discomfort after attending multiple medical appointments, reducing the motivation or ability to adhere to dialysis treatment regimens.	3.17	Recognized
4 Conflicting medical advice or treatment recommendations from different healthcare providers may confuse patients and contribute to uncertainty about the importance of dialysis treatments relative to other medical appointments.	3.14	Recognized
5 Lack of coordination or communication between healthcare providers involved in the patient's care may result in overlapping or conflicting appointment schedules, making it challenging for patients to prioritize dialysis treatments.	3.13	Recognized
Category Mean	3.13	Recognized

As revealed in Table 6, conflicts with other medical appointments significantly impact adherence to dialysis treatment. The respondents recognize that fatigue or physical discomfort after attending multiple medical appointments (Mean=3.17) reduces motivation to adhere to dialysis treatments, scheduling conflicts between dialysis and other medical appointments may lead to prioritizing one over the other, resulting in missed dialysis sessions. Conflicting medical advice or treatment recommendations (Mean=3.14) can also create confusion and uncertainty about the relative importance of dialysis. Additionally, lack of coordination or communication between healthcare providers (Mean=3.13) may lead to overlapping or conflicting appointment schedules, complicating adherence. Moreover, long wait times or delays at medical appointments (Mean=3.09) can cause patients to miss or arrive late for dialysis, further contributing to non-adherence. The overall mean of 3.13 indicates that issues related to other medical appointments represent a significant barrier to consistent adherence to dialysis regimens. This highlights the importance of improving coordination and scheduling management to ensure that patients can meet their dialysis commitments without conflicting healthcare obligations. Addressing this challenge through better integration of care and optimized appointment scheduling could enhance treatment adherence and overall patient outcomes.

Table 7*Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Financial Constraints*

	Statements	Mean	Interpretation
1	Financial constraints, including high treatment costs, medication expenses, and transportation expenses to dialysis centers, can hinder my ability to adhere to the treatment regimens.	3.32	Highly Recognized
2	High out-of-pocket expenses associated with dialysis treatments, including transportation costs, co-payments, and medication expenses, can deter me from attending appointments regularly.	3.26	Highly Recognized
3	Limited access to affordable healthcare services and facilities in under-served areas exacerbates financial challenges for me, resulting in non-adherence to dialysis regimens.	3.23	Highly Recognized
4	Financial instability or unemployment may prevent me from affording necessary medications and adhering to dietary restrictions recommended for dialysis treatment, contributing to non-adherence.	3.31	Highly Recognized
5	Lack of insurance coverage or inadequate insurance plans may result in patients having to bear the full financial burden of dialysis treatments, leading to non-adherence due to cost concerns.	3.11	Recognized
Category Mean		3.25	Highly Recognized

As shown in Table 7, statements on financial constraints are a significant factor influencing adherence to dialysis treatment. The respondents highly recognize that financial challenges, including high treatment costs, medication expenses, and transportation costs (Mean=3.32), can hinder their ability to adhere to treatment regimens. Financial instability or unemployment (Mean=3.31) may prevent patients from affording medications and adhering to dietary restrictions, contributing to non-adherence. High out-of-pocket expenses, such as co-payments and medication costs (Mean=3.26), can also deter regular attendance at dialysis appointments. Limited access to affordable healthcare services in under-served areas (Mean=3.23) further exacerbates financial difficulties, leading to non-adherence. Additionally, lack of insurance coverage or inadequate insurance plans (Mean=3.11) can result in patients bearing the full financial burden, making it difficult to afford treatments. The overall mean of 3.25 suggests that financial constraints are a significant barrier to dialysis adherence, with issues such as high treatment and medication costs, lack of insurance, and financial instability contributing to non-adherence, emphasizing the need for financial support and improved insurance coverage to ensure consistent treatment.

Table 8*Summary of the Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen*

Factors	Mean	Interpretation
1. Health Issues	3.52	Highly Recognized
2. Family Reasons	3.28	Highly Recognized
3. Personal Reasons	3.23	Recognized
4. Transportation Difficulties	3.17	Recognized
5. Other Medical Appointments	3.13	Recognized
6. Financial Constraints	3.25	Highly Recognized
Overall Mean	3.26	Highly Recognized

The summary of factors influencing patients' non-adherence to dialysis treatment regimen provides valuable insights into the underlying reasons patients may fail to consistently follow prescribed treatment plans. These factors are assessed based on their mean scores, which indicate the level of recognition or significance attributed to each factor by the respondents. The overall mean score of 3.26, categorized as "Highly Recognized," suggests that these factors are generally acknowledged as critical barriers to adherence, with a few particular factors standing out as particularly influential.

Health Issues emerged as the most significant factor contributing to non-adherence, with a mean score of 3.52, categorized as "Highly Recognized." This suggests that patients view their own health conditions, such as the severity of kidney disease or other comorbidities, as a primary challenge to adhering to their dialysis regimen. **Family Reasons** ranked second, with a mean of 3.28, and was also categorized as "Highly Recognized." This indicates that family-related issues, such as care giving responsibilities, family conflicts, or lack of support, play a significant role in patients' ability to adhere to dialysis treatment. **Personal Reasons** (Mean=3.23), including

factors such as personal preferences, lack of motivation, or psychological barriers, were also recognized as contributing to non-adherence, though to a slightly lesser extent. The recognition of personal reasons highlights the importance of addressing patients' mental health, attitudes, and behaviors in managing chronic conditions. Factors such as **Transportation Difficulties** (Mean=3.17), **Other Medical Appointments** (Mean=3.13), and **Financial Constraints** (Mean=3.25) were all recognized, with mean scores falling between "Recognized" and "Highly Recognized." These findings underscore the practical and logistical barriers that patients face in attending dialysis sessions. Transportation issues can limit access to healthcare, particularly in rural areas, while financial constraints often prevent patients from affording regular treatments or necessary medications.

Table 9

One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Age

Age	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
19-23 years old	6	3.72	0.47	8	2.961	0.005	Reject	Significant
24-28 years old	5	3.77	0.25					
29-33 years old	6	3.30	0.38					
34-38 years old	6	3.45	0.44					
39-43 years old	8	3.08	0.57					
44-48 years old	17	3.23	0.30					
49-53 years old	23	3.22	0.44					
54-58 years old	15	2.97	0.41					
59 years old and above	13	3.31	0.52					

Note: 14–18-year-old respondents was excluded from the analysis due to its sample size.

Table 9 presents the results of a statistical test examining the significant differences in the factors influencing patients' non-adherence to dialysis treatment regimens when they are grouped by age. A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on age. The results indicated significant differences among the respondents in these influencing factors, specifically regarding personal reasons ($F=3.489$, $p=0.001$), other medical appointments ($F=2.702$, $p=0.010$), financial constraints ($F=2.799$, $p=0.008$), and overall adherence ($F=2.961$, $p=0.005$). However, no significant differences were observed in other categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was rejected at the 0.05 significance level. Post hoc Scheffé tests indicated that respondents aged 54-58 showed significant differences from other age groups in the factors influencing their adherence to dialysis treatment regimens across the categories of personal reasons, other medical appointments, financial constraints, and overall adherence. These age-related differences could be attributed to the increased burden of comorbidities and the likelihood of encountering more complex health, financial, and logistical difficulties as individuals age. The finding that older respondents are more influenced by these factors suggests that interventions aimed at improving dialysis adherence should be tailored to address the specific needs of this age group.

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on religion. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on religion in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level.

Thus, both groups are influenced by the same factors regarding their adherence to dialysis treatment regimens based on their sex since all the p-values for the different categories exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. The overall analysis suggests that sex does not play a significant role in influencing the factors that affect dialysis adherence. Consequently, these results highlight the importance of focusing on individualized patient experiences and barriers rather than making gender-based assumptions. By addressing the specific needs and challenges faced by each patient, healthcare providers can enhance support and improve adherence to dialysis treatments.

Table 10

Independent Sample t-test on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens Based on their Sex

Category	Sex	N	M	SD	t	df	p-value	Decision	Interpretation
Health Issues	Male	71	3.51	0.48	-0.164	98	0.870	Accept	Not Significant
	Female	29	3.53	0.50					
Family Reasons	Male	71	3.25	0.63	-0.688	98	0.493	Accept	Not Significant
	Female	29	3.34	0.52					
Personal Reasons	Male	71	3.27	0.49	1.181	98	0.240	Accept	Not Significant
	Female	29	3.14	0.52					
Transportation Difficulties	Male	71	3.15	0.74	-0.604	98	0.547	Accept	Not Significant
	Female	29	3.24	0.65					
Other Medical Appointments	Male	71	3.13	0.62	-0.197	98	0.844	Accept	Not Significant
	Female	29	3.15	0.46					
Financial Constraints	Male	71	3.24	0.68	-0.158	98	0.875	Accept	Not Significant
	Female	29	3.26	0.56					
Overall	Male	71	3.26	0.49	-0.200	98	0.842	Accept	Not Significant
	Female	29	3.28	0.40					

Table 11

Independent Sample t-test on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens Based on their Civil Status

Category	Civil Status	N	M	SD	t	df	p-value	Decisi-on	Interpretation
Health Issues	Single	33	3.64	0.48	1.668	97	0.099	Accept	Not Significant
	Married	66	3.47	0.48					
Family Reasons	Single	33	3.46	0.51	2.109	97	0.138	Accept	Not Significant
	Married	66	3.19	0.63					
Personal Reasons	Single	33	3.35	0.43	1.642	97	0.104	Accept	Not Significant
	Married	66	3.18	0.52					
Transportation Difficulties	Single	33	3.27	0.73	0.894	97	0.373	Accept	Not Significant
	Married	66	3.13	0.71					
Other Medical Appointments	Single	33	3.21	0.64	0.914	97	0.363	Accept	Not Significant
	Married	66	3.10	0.54					
Financial Constraints	Single	33	3.36	0.66	1.165	97	0.247	Accept	Not Significant
	Married	66	3.20	0.64					
Overall	Single	33	3.38	0.44	1.748	97	0.084	Accept	Not Significant
	Married	66	3.21	0.46					

An Independent Sample T-test was conducted to compare the differences in the factors that influence the respondents' adherence to dialysis treatment regimens based on their civil status. The test result revealed no significant difference between single and married responses/assessments. Thus, both groups are influenced by the same factors regarding their adherence to dialysis treatment regimens based on their civil status since all the p-values for the different categories exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level.

These findings indicate that health issues, family support, personal motivations, transportation difficulties, scheduling conflicts, and financial constraints are consistent barriers to adherence regardless of marital or relationship status. These findings imply that adherence challenges are not primarily determined by civil status but are likely shaped by broader personal, social, and systemic factors. Addressing these barriers will require a more individualized approach that transcends civil status to ensure interventions effectively support patients' adherence to dialysis regimens.

The one-way ANOVA analysis assessed the impact of religion on factors influencing adherence to dialysis, which included health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints. The findings indicated no statistically significant differences among the various religious groups for any of the factors considered. Specifically, health issues yielded a p-value of 0.874, family reasons 0.749, and personal reasons 0.944, all indicating a lack of significant variance related to religion. Additionally, transportation difficulties, other medical appointments, and financial constraints presented p-values of 0.810, 0.982, and 0.928, respectively, further confirming that religious affiliation does not significantly affect

the challenges related to adherence to dialysis.

Table 12

One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Religion

Religion	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
Roman Catholic	51	3.26	0.44	4	0.218	0.928	Accept	Not Significant
Born Again	19	3.33	0.56					
Methodist	3	3.22	0.10					
Iglesia Ni Cristo	26	3.23	0.46					

Note: Muslim respondent was excluded from the analysis due to its sample size.

These findings suggest that barriers to adherence are consistent across religious affiliations, highlighting the universal nature of these challenges. As such, interventions aimed at improving adherence should focus on addressing these factors comprehensively, rather than tailoring strategies based on religious considerations. This insight underscores the need for inclusive and universally accessible support mechanisms to improve dialysis treatment adherence.

Table 13

One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Ethnicity

Ethnicity	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
Tagalog	10	3.31	0.53	5	0.050	0.998	Accept	Not Significant
Ilocano	70	3.26	0.45					
Cebuano	3	3.18	0.72					
Bicolano	5	3.27	0.72					
Kapampangan	3	3.32	0.40					
Ybanag	9	3.25	0.30					

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on ethnicity. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on ethnicity in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. Overall, the results of the analysis showed that ethnicity did not play a significant role in influencing adherence to dialysis across these factors, as no statistically significant differences were found between the various ethnic groups. This suggests that regardless of ethnicity, patients may encounter comparable difficulties.

Table 14

Test on Significant Difference on the Factors that Influence Non-Adherence to Dialysis Treatment Regimens as to Educational Attainment

Educational Attainment	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
College Graduate	12	3.21	0.47	2	0.185	0.832	Accept	Not Significant
College Level	54	3.29	0.45					
High School Graduate	33	3.24	0.49					

Note: Others/Vocational Course respondent was excluded from the analysis due to its sample size.

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on educational attainment. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on educational attainment in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. Overall, these findings imply that challenges related to adherence to dialysis remain largely consistent regardless of educational attainment. This lack of variance suggests that challenges such as health-related issues, family dynamics, personal barriers, transportation difficulties, conflicts with other medical appointments, and financial constraints

are experienced similarly across different educational levels.

Table 15

Test on Significant Difference on the Factors that Influence Non-Adherence to Dialysis Treatment Regimens as to Average Monthly Income

Average Monthly Family Income	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
Less than 10,000-20,000 pesos	75	3.29	0.48	2	0.731	0.484	Accept	Not Significant
20,001-30,000 pesos	19	3.15	0.40					
30,001-40,000 pesos	6	3.35	0.44					

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on average monthly family income. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on average monthly family income in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. These findings suggest that average monthly income does not play a significant role in influencing adherence to dialysis, highlighting the importance of considering other individual circumstances that may more profoundly impact patients' adherence outcomes.

Proposed Measures or Intervention to Improve Patients' Adherence to Dialysis Treatment

In light of the findings from the research on adherence to dialysis treatment, it is essential to implement targeted interventions that address the various challenges faced by patients. The study revealed that while demographic factors such as sex, civil status, religion, and ethnicity did not significantly impact adherence, age-specific barriers and healthcare facility resources played a crucial role.

1. Develop individualized care plans that consider each patient's comorbidities, limitations, and dialysis tolerance to improve adherence.
2. Provide counseling and psychological services to address emotional distress, anxiety, or depression that may stem from chronic illness.
3. Conduct regular education sessions for family members to increase understanding and support for the patient's treatment journey.
4. Facilitate open dialogue among family members and healthcare providers to resolve issues that affect the patient's attendance to dialysis.
5. Offer dialysis session options that consider the patient's family obligations, particularly for those with care giving or work-related responsibilities.
6. Collaborate with government agencies and NGOs to provide support for treatment costs, including transportation and medications.
7. Assist patients in enrolling and maximizing benefits from national health programs such as Phil-health.
8. Engage local government units, private sectors, and civil society to support resource mobilization and service delivery.
9. Assign trained health navigators or social workers to help patients overcome logistical, financial, and health literacy barriers.
10. Implement systems to track patient attendance, reasons for missed treatments, and effectiveness of interventions.

4. Discussion

4.1 Demographic Profile of the Respondents

The profile of dialysis patients provides essential insights into factors influencing treatment adherence, especially in regions where chronic conditions like hypertension, diabetes, and kidney disease are prevalent. A study by Khan et al. (2021) emphasizes that age is a significant factor influencing adherence to medical treatments, especially for individuals suffering from chronic kidney disease (CKD). Middle-aged patients, particularly those aged 44-53 years, are more likely to develop CKD due to the cumulative effects of age-related health issues such as hypertension and diabetes, both of which are common in this demographic (Khan et al., 2021).

Gender differences in health-seeking behavior also play a role in treatment adherence, particularly in male-dominated patient populations. Several studies suggest that men are generally less likely to seek medical care or adhere to prescribed treatment regimens compared to women (Chong et al., 2022). This could be attributed to cultural norms that discourage men from expressing vulnerability or seeking help, especially in healthcare settings (Chong et al., 2022). In the case of dialysis patients, this gender disparity could affect adherence rates, highlighting the need for healthcare providers to consider gender-specific interventions. The civil status of patients, particularly being married, has been found to positively influence adherence to medical treatments, as it often provides emotional and logistical support that encourages consistency in attending dialysis sessions (Mohan et al., 2023). Spouses and family members may assist in the transportation and emotional well-being of dialysis patients, further strengthening the importance of social support systems in managing chronic diseases like CKD.

Finally, ethnic, religious, and educational factors significantly influence healthcare behaviors and treatment adherence. Ethnic backgrounds can shape attitudes towards health and medical treatment, with some groups more likely to rely on traditional practices or exhibit different levels of trust in modern healthcare systems (Garcia et al., 2020). For example, in communities with significant Roman Catholic populations, religious beliefs may influence perceptions of illness and treatment adherence (Garcia et al., 2020). Additionally, education is a critical determinant of health literacy, with higher educational attainment correlating with a better understanding of medical conditions and the importance of treatment adherence (Mohan et al., 2023). However, despite higher education levels, financial constraints remain a significant barrier to consistent dialysis treatment. The substantial proportion of patients earning less than 20,000 pesos a month reflects the economic challenges faced by many dialysis patients, making it difficult to afford transportation, medications, and other necessary resources (Chong et al., 2022). Addressing these financial barriers, alongside the demographic factors mentioned, will be crucial in improving treatment adherence and ultimately patient outcomes in dialysis care.

4.2 Factors that Influence the Patients' Non-Adherence to Dialysis Treatment Regimen

The findings of the study reveals several key factors that significantly influence adherence to dialysis treatment regimens. Health-related issues are the most impactful, with participants strongly agreeing that complications like infections, dialysis-related symptoms (fatigue, nausea), mental health issues, comorbid conditions (e.g., diabetes, hypertension), and chronic pain significantly disrupt adherence. The weighted mean average of 3.52 highlights the importance of addressing these health challenges to improve adherence. Naalweh et al. (2017) found that patients missed dialysis due to health issues (32.6%).

Family-related factors also play a critical role, with a lack of social support, inadequate understanding of treatment, family conflicts, and poor knowledge of dietary restrictions being major barriers. It is clear that family support is essential for consistent treatment adherence. The findings of the study underscore the significant influence of various factors on dialysis treatment adherence, with health-related issues being the most impactful. The strong agreement among participants regarding the disruptive effects of complications such as infections,

dialysis-related symptoms (fatigue, nausea), mental health issues, comorbid conditions, and chronic pain highlights the need for targeted interventions to manage these health challenges. As supported by Alhamad et al. (2023), adequate family and social support were associated with better adherence.

Personal factors such as forgetfulness, lack of self-discipline, negative past experiences, and feelings of hopelessness contribute to non-adherence, emphasizing the importance of motivation and emotional well-being in treatment adherence. Naalweh et al. (2017) found that patients missed dialysis due to family or personal reasons. Transportation difficulties are another significant barrier, as limited access to reliable transportation, high transportation costs, and reliance on unreliable services create challenges in attending dialysis sessions. The weighted mean of 3.17 suggests that improving transportation access is crucial. Conflicts with other medical appointments also hinder adherence, with scheduling conflicts, long wait times, fatigue, and conflicting advice contributing to missed sessions. The findings also underscore the need for better coordination of medical appointments to prioritize dialysis treatments. This is supported by Alzahrani et al. (2021) who found that factor such as transportation is associated with adherence to hemodialysis sessions. The findings also support the claim of Naalweh et al. (2017) that one of the reasons for non-adherence is due to transportation difficulties.

Lastly, financial constraints, including high treatment and medication costs, lack of insurance, and financial instability, pose significant barriers to adherence highlighting the importance of financial support and improved insurance coverage to ensure consistent treatment. Overall, these factors, health challenges, family support, personal motivation, transportation, scheduling conflicts, and financial constraints, are critical to understanding and improving dialysis adherence. Addressing these barriers can enhance patient outcomes and treatment compliance. The findings suggest that financial constraints are a significant barrier to dialysis adherence, with issues such as high treatment and medication costs, lack of insurance, and financial instability contributing to non-adherence. This underscores the need for financial support systems, such as subsidies or assistance programs, and improved insurance coverage to alleviate these burdens. Ensuring that patients have access to affordable treatment options is critical for improving adherence and overall health outcomes. This supports Naalweh et al. (2017) who claimed that patients missed dialysis due to financial constraints.

Additionally, the study highlights the complex interplay of various factors—health-related challenges, family support, personal motivation, transportation difficulties, scheduling conflicts, and financial constraints that influence dialysis adherence. Addressing these barriers through a comprehensive approach, including better healthcare coordination, emotional and psychological support, and practical solutions to transportation and financial challenges, can significantly enhance patient compliance with dialysis treatment. By targeting these key areas, healthcare providers and policymakers can work to improve treatment outcomes, reduce the burden on patients, and ultimately improve the quality of life for individuals undergoing dialysis.

4.3 Test on Significant Difference on the Factors that Influence Patients' Non-Adherence to Dialysis Treatment Regimen when grouped according to Profile Variables.

The research aimed to investigate the factors influencing adherence to dialysis treatment, highlighting the variability of these factors based on participants' demographic characteristics such as sex, civil status, religion, ethnicity, educational attainment, average monthly income. By utilizing independent samples t-tests, the study assessed the impact of sex on adherence-related factors. The findings revealed no significant differences between male and female participants, indicating that both genders face similar challenges in adhering to their treatment regimens. This suggests that the barriers to adherence are not inherently tied to gender, prompting a deeper exploration into other personal and contextual factors that might influence patient behavior.

Moreover, the research delved into the impact of healthcare facilities on adherence, revealing significant disparities in transportation difficulties and financial constraints between participants at different institutions. Those receiving treatment at one specific facility reported greater challenges, indicating that the resources and support available at different healthcare settings can profoundly influence adherence outcomes. These insights

emphasize the importance of developing comprehensive support systems within healthcare facilities, such as transportation services or financial assistance programs, to alleviate barriers to treatment. Ultimately, the study advocates for an individualized approach to enhance dialysis adherence, encouraging healthcare providers to focus on unique patient experiences and challenges rather than relying on demographic assumptions, thereby fostering improved health outcomes for patients undergoing dialysis.

This is in contrast with the findings of Alhamad et al. (2023) who found that factors such as gender, education level, and transportation means significantly influenced adherence. Also, Stamatakis et al. (2017) found that age, marital status, region, employment status, and distance to the dialysis center did not significantly affect adherence. These findings suggest gender, education, and transportation methods play significant roles in adherence to hemodialysis treatment.

5. Conclusion and recommendations

The findings of this study shed light on the following conclusions: The results reveal that the majority of dialysis patients are between the ages of 44 and 53, predominantly male, married, and identify as Roman Catholic. Additionally, most patients have attained a college education and earn less than 20,000 pesos per month. These demographic characteristics highlight important factors that may influence their experiences with dialysis treatment, including age-specific health concerns, family dynamics, educational background, and financial constraints. The respondents highly recognize that health issues, financial constraints, and family-related barriers emerged as the most significant contributors to their non-adherence to dialysis treatment regimen. They also recognized additional factors, including personal reasons, transportation difficulties, and scheduling conflicts with other medical appointments, all of which disrupt adherence. The findings of the study revealed significant differences when examining adherence factors by age, particularly in relation to personal reasons, other medical appointments, and financial constraints. On the other hand, the findings demonstrated no statistically significant differences in adherence factors based on sex, civil status, religion, ethnicity, educational attainment, or average monthly family income, suggesting that these demographic variables do not directly influence patients' non-adherence to dialysis treatment regimens.

Drawing from the conclusions of the study's findings, the researcher presents several actionable recommendations aimed at addressing the identified challenges: Adopt a holistic approach that not only focuses on the medical management of dialysis patients, but also incorporates family engagement and education, as well as strategies to manage health-related challenges, to optimize treatment adherence. Incorporate motivational strategies, psychological support, and counseling into treatment plans to help patients overcome these personal challenges. Include organizing transportation services or partnering with local transportation providers to offer subsidized or reliable travel options. Improve scheduling systems to reduce waiting times and ensure that dialysis appointments take priority, thereby minimizing conflicts and enhancing adherence to the treatment regimen. Establish family-focused counseling and support initiatives to help families better understand the importance of treatment adherence and how they can actively contribute to the patients' care and emotional well-being. Implement personalized counseling or peer support groups to address personal challenges such as feelings of hopelessness, forgetfulness, and lack of motivation, fostering a positive mindset among patients. Introduce telehealth options for follow-up consultations and non-emergency appointments, reducing the need for patients to travel and making it easier to manage other medical commitments.

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Industry innovation, corporate social responsibility, and risk management of coal enterprises in Shanxi Province: Basis for an environmental management performance framework

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Abstract

This study examines the industrial innovation, CSR, and risk management of coal enterprises in Shanxi Province. The aim is to assess the status of these companies in terms of industrial innovation, CSR implementation, and enterprise risk management capabilities, particularly focusing on their comprehensive green innovation capabilities, stakeholder engagement, and identification, assessment, handling, communication, and reporting of corporate risks. Additionally, it aims to outline the specific content of industrial innovation in coal enterprises and analyze the relationship between these initiatives and corporate social responsibility and risk management. Finally, the study focuses on the framework of environmental management performance in coal enterprises. The insight from this study is that if a coal company has high levels of industrial innovation capability, then its green innovation capability, green innovative technology, and green organizational identity are intrinsically linked in multiple aspects. Improving the environmental management performance of such companies depends on two aspects: one is the company's comprehensive industrial innovation capability, and the other is its performance in fulfilling corporate social responsibility and risk management capabilities. Findings outline several key pathways for coal companies to enhance environmental management performance. Companies urgently need to implement green-driven strategies, with setting up dedicated innovation funds being a crucial approach to achieving this goal. They must also more actively fulfill their corporate social responsibilities, establish continuous improvement mechanisms for environmental management, boost risk management capabilities, and build information sharing platforms, all of which are vital for sustainable development. Embracing green innovation technologies to elevate industry innovation levels is equally important as strengthening internal controls and strategic assessments within the company. Finally, this study develops a comprehensive environmental management performance framework for coal companies.

Keywords: industry innovation, corporate social responsibility, risk management, environmental management performance framework

Industry innovation, corporate social responsibility, and risk management of coal enterprises in Shanxi Province: Basis for an environmental management performance framework

1. Introduction

Under the dual pressures of global energy transition and environmental protection, the coal industry, a crucial part of traditional energy, is facing unprecedented changes and challenges. The coal industry is not only a pillar of local economies but also a vital component of the national energy strategy. As the world's largest producer and consumer of coal, China's coal enterprises face significant challenges in their sustainable development. The production and operation of the coal industry have a substantial impact on the environment. The Chinese government places a high priority on the green transformation and development of the coal industry, implementing a series of policies and measures. It also encourages and supports coal enterprises to engage in green innovation, promoting the industry's green and low-carbon development and enhancing environmental management capabilities.

Shanxi Province is a great province for coal reserves and development, situated in northern China. Shanxi's coal enterprises have developed a comprehensive industrial system (Hong et al., 2023). These companies have not only led the duty to ensure the national energy security and local economic development but also take on the historical responsibility to promote green and low carbon progress so as to bring win-win situation to development and environment respectively.

During its development, Shanxi province has been actively in response to the call from the nation, continually enhancing environmental management performance of coal enterprises with technological innovation, industrial renovation and management innovation. On the other hand, over a long period, environmental pollution, resource consumption, and safety risks in the coal production and processing processes have already become major bottlenecks restricting the sustainable development of the coal mining industry (Wang et al., 2022). Shanxi's coal enterprise green innovation and social responsibility and risk control is still short of perfection. How could such businesses make improvements in its environmental management through green innovations, improving the sense of corporate social responsibility, and managing risks, is a topic that academic and practical people both take a look into. Therefore, through in-depth research on the above problems, this study hopes to propose some specific solutions to provide theoretical evidence and reference for promoting the environmental management performance of Shanxi coal enterprises more comprehensively (Guo et al., 2022). The innovation of the coal industry, corporate social responsibility, and risk management in Shanxi Province are key concerns for both academic and practical circles. However, there are still many research gaps and shortcomings, particularly in studies addressing the specific context of Shanxi's coal enterprises, which makes it challenging to provide targeted guidance for their transformation and upgrading. Therefore, this study aims to propose practical and actionable recommendations by considering the actual conditions of Shanxi's coal enterprises and market demands.

This research focuses on three critical areas for coal enterprises in Shanxi Province, China: industry innovation, corporate social responsibility (CSR), and risk management. Through in-depth study and analysis of these enterprises, the researcher will uncover specific measures, achievements, and challenges related to industry innovation. The researcher will also analyze their performance in corporate social responsibility and evaluated their risk management strategies, capabilities, and existing problems. Ultimately, this research seeks to provide theoretical assistance and practical guidance for the sustainable growth, industrial transformation, and enhance environmental management effectiveness of coal companies in Shanxi Province and beyond.

Objectives of the Study - This study was conducted to assess the industry innovation, corporate social

responsibility and risk management of coal enterprises in Shanxi Province, China. Specifically, it assessed the industry innovation of green innovation ability, green innovation technology and green organization identity; evaluated CSR by environment, social and economics; described risk management by risk identification and assessment, risk treatment, risk communication and reporting; tested significant relationships among industry innovation, CSR and risk management; and developed a performance framework of enterprise environmental management of coal enterprises in Shanxi Province, China.

2. Methods

Research Design - The researcher used a descriptive research design to have a proper and correct interpretation of the results. This method was used for any studies that were trying to present facts about the nature and status of something, meaning even a survey study and a correlative study. According to Hosseini et al. (2021), descriptive research as a research method used to describe the existing phenomena as accurately as possible. The term "existing phenomena" makes descriptive research the opposite of experimental research, observing both existing phenomena and observed phenomena after a period of time. What was observed in the descriptive research is already available. What needed to be done by a researcher was to retrieve the information with the help of the various research methods which could include either the use of tests, or questionnaires or interviews or observation. The primary intention of descriptive study is to describe the phenomena to be studied systematically.

Participants of the Study - In this study, a questionnaire survey was conducted among 390 employees in the coal industry. Each company selected 78 respondents using a quota sampling. The selection criteria for respondents were as follows: first, the representativeness of the enterprises, with five representative coal companies in Shanxi Province being chosen, covering various ownership types and enterprise sizes; second, job diversity, including different management positions, absenteeism, technicians, and engineers; third, geographical representation, covering the main coal-producing areas in Shanxi Province; and finally, voluntary participation, with employees who were willing to participate in the survey being selected.

Data Gathering Instrument - The study mainly used questionnaire to gather relevant data. Items per instrument were presented as descriptive statements and the respondents rated how frequently they apply on a four-point Likert scale as a 3.50–4.0 scale means strong agreement, 2.50–3.49 means agreement, 1.50–2.49 scale means disagreement, and 1.00–1.49 rating scale means strong disagreement. Self-made questionnaire and has 3 parts. Part I of the questionnaire is industry innovation, which contains 15 items: green innovation ability (5 items), green innovation technology (5 items), green organization identity (5 items). Part II is about corporate social responsibility, with 15 items. There are 5-environmental responsibility, 5-social responsibility, and 5-economic responsibility. Part III is risk management, consisting of 15 items: risk identification and assessment (5), risk treatment (5), risk communication and reporting (5).

Table 1
Reliability Test Result using Cronbach Alpha and its Interpretation

Indicators	No. of Items	Cronbach Alpha	Remarks
Green Innovation Ability	5	0.953	Excellent
Green Innovation Technology	5	0.946	Excellent
Green Organization Identity	5	0.940	Excellent
Environmental Responsibility	5	0.934	Excellent
Social Responsibility	5	0.934	Excellent
Economic Responsibility	5	0.956	Excellent
Risk Identification and Assessment	5	0.949	Excellent
Risk Treatment	5	0.933	Excellent
Risk Communication and Reporting	5	0.937	Excellent

George and Mallery (2003) provide the following rules of thumb: “ $\geq .9$ –Excellent, $\geq .8$ –Good, $\geq .7$ –Acceptable, $\geq .6$ –Questionable, $\geq .5$ –Poor, and $< .5$ –Unacceptable”

A pilot survey was done to find out if the survey questionnaire worked. The survey questionnaires for 30 samples were tested for reliability with Cronbach's alpha using SPSS 28. Table 1 presents the results from the

reliability test for each variable found in our research.

Data Gathering Procedure - After the title of the paper is approved, the researcher obtained authorization from the organization's head and the personnel department of the coal company. After approval, researchers distributed the questionnaire to the study participants via email and other communication platforms commonly used by respondents, either through mailed paper questionnaires or Google forms. At the same time, the respondents were assured that data would be treated anonymously, and the data they provided would be kept confidential and used only for this study. In addition, the questionnaire was completed with sufficient time and genuine willingness. The responses to the survey items were collected and summarized, and then statistically analyzed and interpreted by university statisticians.

Data Analysis - The data analysis used weighted average and ranking to evaluate the industry's innovation capability from three aspects: green innovation ability, green technology innovation, and the organization's attitude towards green transformation. It also evaluated the company's environmental, social and economic responsibilities, and described the company's risk management practices in risk identification and assessment, risk handling, risk communication and reporting. As shown from the Shapiro-Wilk Test Result, all the p-values for the individual variables is less than 0.05 which means that the data-set is not normally distributed. Thus, Spearman rho was used along with the non-parametric tests to identify the significance of the relationship. all analyses were done in SPSS version 28.

Ethical Considerations - Based on the ethical moral code, the researcher asked for the corresponding information inquiry of every response before filling in the questionnaire and filled with the questionnaire after confirming, so as to guarantee the true data collected and the willingness of the response. Therefore, in this way, the researchers respected fully and valued their sincerity to gain genuine and valid information. This study was also carried out according to Article 1035 of the Civil Code of the People's Republic of China promulgated in May 2020. It states that the principle of legality, legitimacy and necessity shall be observed, and excessive treatment shall be forbidden.

1. Results and discussion

Table 2
Summary Table on Industry Innovation

Key Result Areas	Composite Mean	VI	Rank
Green Innovation Ability	2.70	Agree	1
Green Innovation Technology	2.64	Agree	2
Green Organization Identity	2.59	Agree	3
Grand Composite Mean	2.64	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

From the summary results on the innovation practice, the score difference of these three sub variables is not very large, with Green Innovation Ability score 2.70, Green Innovation Technology score 2.64, and Green Organization Identity score 2.59. The ability of Green Organization Identity, Green Innovation Technology and Green Organization Identity to influence the green innovation practice of Shanxi coal enterprises is weakened in turn, and they are also closely related to them. Jia et al. (2021) pointed out that the practice level of green innovation is higher, the more conducive to the improvement of green product competitiveness, can not only improve the quality of the product to participate in the market competition, and provides opportunities to protect the environment, reduce pollution, to obtain a good reputation, to help enterprises to form unique resources, in order to further improve the competitiveness of enterprises. In addition, it is also pointed out that the corporate culture inclined to green innovation will have a subtle positive impact on employees' environmental awareness and innovation awareness, so that they will be encouraged to fulfill their environmental responsibilities, so as to carry out green innovation activities of enterprises.

Table 3*Summary Table on Corporate Social Responsibility*

Key Result Areas	Composite Mean	VI	Rank
Environment Responsibility	2.57	Agree	3
Social Responsibility	2.70	Agree	1
Economics Responsibility	2.64	Agree	2
Grand Composite Mean	2.64	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 3 shows that the comprehensive result of CSR as a whole is 2.64 out of which CSR has the values of social responsibility (2.70), environmental responsibility (2.57) and economic responsibility (2.64) respectively. The surface respondents basically supported the responsibility of Shanxi Coal enterprises. Corporate social responsibility is an ethical and moral mechanism, which stresses that companies should be morally responsible for (Amato et al., 2023). Corporate social responsibility is a combination of corporate social responsibility and organizational awareness of social responsibility and social responsibility behavior, which aims to promote some of the organization's social interests (Aguinis et al., 2021). According to Abbas (2020), corporate social responsibility is an organization's green strategy which is capable of protecting the environmental, social, and economic stability.

Table 4*Summary Table on Risk Management Practices*

Key Result Areas	Composite Mean	VI	Rank
Risk Identification and Assessment	2.62	Agree	2
Risk Treatment	2.67	Agree	1
Risk Communication and Reporting	2.61	Agree	3
Grand Composite Mean	2.63	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

As shown in Table 4, risk management 2.67, ranked first; Risk identification and risk management 2.62, ranked second; risk of communication and reporting 2.61, ranked third with an average of 2.63. Shanxi coal enterprises need to actively manage risks to help managers identify and evaluate risks for more intelligent and efficient decision-making; lower enterprise production and operation costs, adapt to changing market conditions, and maintain comparative advantages. Handling the risk event actively and properly, adding to the internal control to prevent loss due to the risk event must always improve employees' risk awareness and collaborate with stakeholders to seek for the win win of economic and social as well as environmental gains. Naseem et al.(2020) mentioned that risk management enables an enterprise to manage different types of risks in a comprehensive and overall manner, with more focus on the management of all types of risks as well as on the process of creating value.

Table 5 presents the association between the various dimensions of the innovation practices and the CSR, as seen through the rho (correlation coefficient) and the correlation p-values. The correlation coefficients are between 0.555 and 1. All the coefficients are at 0.01 level of significance. The results show that there is a positive relationship between green innovation capacity, green innovation technology, green organization identity and corporate social responsibility, corporate environmental responsibility, corporate social responsibility and corporate economic responsibility. The closer the correlation coefficient is to 1, the stronger the positive correlation, that is, with the increase of innovative behavior, CSR increases. A p - value smaller than 0. 001 means we have very high confidence in the correlation results we found, which implies it is unlikely to be the result of random chance.

In general, there is a strong relationship between corporate innovation and CSR which can be seen from a p value < 0.001. first is that innovation practices encourage firms to assume their social responsibility; As Wang et al. (2021) suggests that companies who pro-actively engage in corporate innovation capabilities, green innovation technologies and green organizational identity tend to have higher corporate social responsibilities

like social, economic and environmental responsibilities. The innovation practice can help enterprises improve corporate image and competitiveness, reduce business operation cost, broaden market access, promote environmental investment, encourage greener patent applications and authorizations, support employees' engagement and satisfaction, encourage stakeholders' engagement, and encourage corporate innovation culture. Understanding its own connection to the innovation of practice and corporate social responsibility, which will allow companies to understand and adopt environmental protection and the sustainable concept and methods. In terms of technology, products and services will be able to save money, to create more value for the society, create a good corporate image and improve the reputation of the company.

Table 5
Relationship Between Industry Innovation and Corporate Social Responsibility

Green Innovation Ability	rho	p-value	Interpretation
Environment Responsibility	0.555**	<.001	Highly Significant
Social Responsibility	0.562**	<.001	Highly Significant
Economics Responsibility	0.556**	<.001	Highly Significant
Green Innovation Technology			
Environment Responsibility	0.571**	<.001	Highly Significant
Social Responsibility	0.566**	<.001	Highly Significant
Economics Responsibility	0.615**	<.001	Highly Significant
Green Organization Identity			
Environment Responsibility	0.581**	<.001	Highly Significant
Social Responsibility	0.560**	<.001	Highly Significant
Economics Responsibility	1.000**		Highly Significant

** Correlation is significant at the 0.01 level

From this all-around analysis, it is clear that the enterprise innovation practice can promote enterprises for fulfilling the social responsibility. A positive correlation coefficient indicates that those enterprises with such green innovation practices have set a path for other enterprises to create a positive and responsible corporate social image, increase brand value, and promote the development of enterprises towards sustainability, enhance enterprise social responsibility, guide employee behavior, and enhance the efficiency of enterprises. Secondly, with the increasing importance of innovation practices for the continuous growth of enterprises, the more likely it is for the enterprise to be more willing to fulfill its own social responsibilities, making the enterprise last and stronger competitiveness.

These correlations show that the connection between innovation practices and CSR is strong, dependable. These results are of great meaning to Shanxi coal enterprises. Wang et al. (2023) pointed out, the importance of strengthening the environment management performance of the enterprise, and investing in innovative practice development projects, which focus on green innovation capability, green innovation technology, and green organization identity to enhance the enterprise's ability to respond to risk, innovative practice can direct companies' production and operations as well as to improve economic benefits by optimizing product, and nurture an environment conducive to innovation and a lasting development.

Generally speaking, recognizing the relationship between innovation practice and corporate social responsibility is necessary for Shanxi coal enterprises, with an eye on effective and sustainable development in the competitive environment of related resources enterprise. Shanxi coal enterprises that do innovative practice investment are more likely to have a high social responsibility, and the enterprises have a high reputation, brand value, and comprehensive benefits.

Table 6 presents the correlation between all the different facets of the innovation practice and the risk management practice according to the table with the Rho values and the P-Value. Correlation coefficients were between 0.575-0.649, all significant at 0.01. These results show us that there exists a positive correlation between innovation practice and risk management practice in Shanxi coal enterprises. The closer the correlation coefficient is to 1, the stronger the positive correlation. In this case, the risk management of the enterprise is also enhanced. When the p-value is less than 0.001, there is an observed correlation, meaning, these correlation results would be very unlikely if they occurred by random chance.

Table 6*Relationship Between Industry Innovation and Risk Management Practices*

Green Innovation Ability	rho	p-value	Interpretation
Risk Identification and Assessment	0.592**	<.001	Highly Significant
Risk Treatment	0.631**	<.001	Highly Significant
Risk Communication and Reporting	0.575**	<.001	Highly Significant
Green Innovation Technology			
Risk Identification and Assessment	0.575**	<.001	Highly Significant
Risk Treatment	0.649**	<.001	Highly Significant
Risk Communication and Reporting	0.606**	<.001	Highly Significant
Green Organization Identity			
Risk Identification and Assessment	0.577**	<.001	Highly Significant
Risk Treatment	0.578**	<.001	Highly Significant
Risk Communication and Reporting	0.582**	<.001	Highly Significant

***. Correlation is significant at the 0.01 level*

Generally, there is a very strong relationship between innovation practices and risk management practices as indicated by a p value <0.001. First, we can know that innovative practices for coal companies' risk management practices of identifying the risk, evaluating the risk management practice, and risk communication and report. implementing an innovation practice of a coal enterprise may also be more likely to identify environmental, social and governance-related risks, and adopt new risk management methods and strategies, a more flexible and sustainable business model, and improve the capacity of the enterprise to bear risk, the level of risk prevention and control technology, and the full participation of risk management, which in turn can promote the risk management practice of the coal enterprise. Second, the fact of this connection demonstrates how important it is to follow piercing practice in order to strengthen risk management practice: Through the implementation of the innovative practice of enhancing enterprises' green innovation capability, improving green innovation technology and enhancing the identification of green organizations, coal enterprises can improve their risk management practices and respond better to the constantly changing market environment.

In this exhaustive analysis, the role of creative practices on enhancing Enterprise Risk Management practices is pointed out. According to Yang et al. (2023), coal companies that adopt innovative practices can better enhance their environmental risk management capability, increase their market risk management capability, improve their operational risk management, promote the coordination and innovation of risks, and enhance their sustainable risk management capabilities. Moreover, through repeated innovation practices, coal enterprises are also more likely to improve their reputation in their field and meet the market demand for environmentally friendly products, create new sources of income, and encourage coal enterprises to enhance production capacity, allowing them to work together on different departments and fields. It is hoped that it will further promote the transformation of enterprises.

Also, due to the substantial value of these correlations indicates that there is a strong and stable relationship between the innovation practices and the risk management practices. They have significant implications for Shanxi coal enterprises and point to the need for Shanxi coal enterprises that practice innovation activities to be good at environmental management. As Wang et al.,(2022) show, understanding and using this relationship will greatly lower the chance of environmental pollution and ecological damage for coal companies, create more kinds of eco-friendly coal goods and ways that people want, cut down how much power is used and gas given off, deal better with big changes in the energy market, and stay stronger than others, Generally speaking, knowing about the connection between changing something into what it is now and figuring out what risks there are when running a coal business is very important for Shanxi coal companies that want to keep doing well as the coal field changes and has lots of competition. Through the implementation of innovation practice, companies can better take risks in the process, improve their own environmental performance, and provide a good guarantee for the long-term and stable development of enterprises.

Table 7*Relationship Between Corporate Social Responsibility and Risk Management Practices*

Environment Responsibility	rho	p-value	Interpretation
Risk Identification and Assessment	0.556**	<.001	Highly Significant
Risk Treatment	0.569**	<.001	Highly Significant
Risk Communication and Reporting	0.558**	<.001	Highly Significant
Social Responsibility			
Risk Identification and Assessment	0.613**	<.001	Highly Significant
Risk Treatment	0.593**	<.001	Highly Significant
Risk Communication and Reporting	0.596**	<.001	Highly Significant
Economics Responsibility			
Risk Identification and Assessment	0.577**	<.001	Highly Significant
Risk Treatment	0.578**	<.001	Highly Significant
Risk Communication and Reporting	0.582**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

Table 7 shows the relationship between each dimension of CSR and risk management practice, which can be seen from the correlation coefficient (rho), and the corresponding P-value. R's were between 0.556 - 0.613, all were statistically significant at $p < 0.01^*$. The above finding shows that the environmental, social and economic responsibility— has a strong, positive association with the components of risk management practice, such as the identification and assessment of risk, the management of risk, and the communication and reporting of risk. Correlation co-efficient is around one, the correlation strength of positive correlation increases as CSR improves then the implementation of risk management would increase accordingly. All the p-values of the correlations was less than 0.001, meaning that there is a high level of confidence in the relationships observed, it is likely that they occurred by chance

In general, there is an existence of significant relationship between CSR and innovation management with the p - value <. 001. First is to point out the importance of CSR in the promotion of risk management: Li et. al.,(2021) showed that enterprises' performance in environmental responsibility, social responsibility and economic responsibility can play a positive role in reducing environmental risks, promoting sustainable development, enhancing the awareness of risk management, reducing the impact of reputation risks, promoting stakeholders to cooperate, promoting the rationality of investment decisions, and enhancing market competitiveness, providing reference for the enterprise's risk management practice. The second is to emphasize the role of these correlations when it comes to integrating resources in the coal industry, in line with corporate social responsibility, through various forms of environmental protection, and with the help of green production methods, to promote clean energy production, care for employees, participate in public welfare work, and maintain a long-term stable relationship between stakeholders and employees, and also to increase the staff's sense of belonging and attachment to the company, as well as improve the quality of the company's products and reduce some costs by taking reasonable and effective actions, so as to achieve the company's risk management practice and better adapt to the quickly changing market demands.

The analysis points out the role of CSR in prompting enterprise risk management. It can be seen from the research of Gao et. al (2023) said that as enterprises proactively assume environmental, social and economic responsibilities and fulfill their corporate social responsibilities, it's much more likely to raise up the level of risk management practices. Furthermore, as the performance of corporate social responsibility gets better, it benefits enterprises to avoid risk, to gain benefit, to reduce risk loss, to reduce cost, to improve risk identification and evaluation capacity and so forth, which in turn improves the market competitive edge of enterprises and promote its long- term sustainable development.

Furthermore, the significant correlations shows that the relationship between CSR and risk management practices is significant and strong. This is very important to the Shanxi coal companies. They should be more responsible as a company. They should also pay attention on the change of society and people's needs. They should pay more attention to their employees' sense of responsibility and teamwork, and concern about the environmental protection, social welfare and other issues. understanding and use of this relationship can be more

comprehensive to identify and evaluate risk in risk management, make a more accurate, more timely decision, deal with all kinds of potential risks, cultivating staff responsibility consciousness, risk awareness, improve employee participation in risk management and implementation, achieve long-term stable development.

In general terms, it is significant for coal-related businesses in searching sustainable development in the mutable coalfield to recognize CSR-related risk management practices. Enterprises can do better job on risk management and improve overall performance by actively fulfilling CSR .

Research Output



Figure 1. Environmental Management Performance Framework

Figure 1 presents an environmental management performance framework that proposes a holistic and reliable solution to help coal enterprises in Shanxi province integrate environmental performance management into their overall production management work process. Recognizing the relationship between industrial innovation and enterprise social responsibility, enterprise risk awareness etc., also serves as a reasonable development route for coal enterprises to win at a sustainable competition with continuous innovative social responsibility and improved risk awareness. Industry innovation, seen as the main engine of a company's development, is considered an important support for companies to fulfill their social responsibilities by industry experts. And improve company risk management capability. Companies can provide more environmentally friendly and efficient products and services when they increase their green innovation abilities, technologies, and form a green company identity. By doing so, they can build a reputation for being environmentally responsible and being accountable. They need to be able to identify, assess, manage and communicate as well as report possible risks. For business entities, it is necessary for companies to enhance economic efficiency, boost market competition ability, and achieve sustainable development at the same time; the concept of corporate social responsibility also combines the aspects of environment, society, and economy inside and outside the company. In the inner side, it could improve the employee satisfaction and loyalty which could also bring the company more economic gains. Externally, it emphasizes sustainable ecological environment, reduces the environmental load and strives for a stable economic, social and environmental benefits. Coal companies could improve their ability to respond to social tasks and handle risks via ongoing industrial innovation, technological development, and being recognized as green organizations. These attributes are important for ongoing development.

To effectively use this framework, coal companies must understand their own situation in three aspects first: it also looks at the degree of industrial innovation, it analyses existing CSR practices and assesses the capabilities of an organization regarding risk identification and evaluation, risk management and risk communication and reporting According to the evaluation results of these, coal companies can think up special strategies for getting better in various areas For example, in the case of industrial innovation, enterprises can use the intelligent mining systems driven by AI to monitor the vibration frequency of equipment and energy consumption fluctuations in real time, predict coal cutter failures, and reduce downtime losses by 15%. They can also use digital twin technology to simulate the stress of the tunnel surrounding rock and improve the support plan to avoid wasting resources After conducting an evaluation of CSR activities, enterprises can work with research institutions to develop biological nano-dust suppressants for coal mines, reduce PM2.5 by 40%, and

provide clean stoves for free in communities surrounding the area through community co-construction programs. In the realm of risk management, companies have set up the three-step mechanism: “technological breakthroughs → social benefits → capital support.”

3. Conclusions and recommendations

The respondents generally agreed on the industry innovation in terms of green innovation ability, green innovation technology and green organizational identity. The respondents generally agreed on the corporate social responsibility in terms of environmental responsibility, social responsibility and economic responsibility. The respondents generally agreed on the risk management practices as to risk identification and assessment, risk treatment and risk communication and reporting. A high significant relationship was found among industry innovation, corporate social responsibility, and risk management. An environmental management performance framework was developed for coal enterprises in Shanxi Province, China.

Enterprises may establish a special innovation fund to invest in environmental technology research and development, enhance industrial innovation efficiency, and build an environmentally responsible corporate image. Department heads may adopt green-driven decision-making, form green technology teams, establish a continuous improvement environmental management system, and set up an information sharing platform to enhance internal communication and introduce strategic evaluations. Human Resource Department may improve the employee welfare system and compensation structure, encourage active participation in corporate projects, raise environmental awareness, and foster a less stress free working environment. Management teams at coal companies in Shanxi Province may consider how to adopt or integrate the proposed framework into their operations. Future researchers may deepen and broaden the scope of the study by expanding geographical scope, widening industry focus and conducting longitudinal studies.

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Committed to lead: An exploration of nursing student's leadership experience

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Abstract

This study explores the essential qualities and experiences that shape effective leadership, with a focus on nursing students and their perspectives on leadership development. Drawing from various themes, the research highlights key leadership traits such as motivation, communication, empathy, adaptability, and the ability to balance academic, personal, and leadership responsibilities. Participants discussed how nursing experience, leadership roles, and personal growth opportunities foster their leadership skills. The study also emphasizes the importance of trust-building, relationship development, and leading by example in establishing a positive and collaborative team environment. Additionally, the research identifies how leaders can inspire peers, manage organizational responsibilities, and drive change within clinical settings, with a strong emphasis on patient care and advocacy. The participants recognized the significance of self-care, time management, and emotional intelligence in sustaining leadership roles while maintaining a healthy work-life balance. Furthermore, the study underscores the impact of leaders who find joy in their work, as this enthusiasm not only enhances their own performance but also motivates and empowers those around them. Based on the findings, several recommendations are made for future leaders, including fostering open communication, leading with empathy, encouraging mutual respect, and creating a work environment that promotes personal fulfillment. These insights aim to guide emerging leaders in nursing and other fields towards developing the skills necessary for effective, compassionate, and visionary leadership.

Keywords: nursing leadership, student leaders' experiences

Committed to lead: An exploration of nursing student's leadership experience

1. Introduction

Leadership is a crucial element of nursing training, serving as the basis for professional and personal development. As a nursing student, leadership is not merely a formal designation or appointment; it's about developing attributes that can motivate, inspire, and empower others in and out of academic and clinical environments. Leadership competencies are critical to forging a nursing workforce that not only possesses clinical expertise but can also keep pace with the fast-emerging healthcare environment (O'Connor et al., 2020). As aspiring healthcare leaders, nursing students have the responsibility to acquire the skills and knowledge required to meet the needs of navigating patient care complexity, clinical teamwork, and organizational transformation. The leadership development process among nursing students is filled with instances of adversity, introspection, and transformation. Leadership isn't always title-related, nor does it necessarily always occur on a large scale. In nursing, leadership occurs on a daily basis, be it in clinical practice, through class dialogue, or in peer mentorship. This is an idea that permeates the construct of distributed leadership, in which leadership is disseminated throughout the entire membership of a healthcare team, irrespective of rank or grade.

For nursing students, leadership results from both everyday moments and profound turning points. Clinical practice itself offers many avenues for students to exercise leadership even when they aren't formally in charge. From leading a group during a clinical simulation to mentoring a younger colleague or volunteering to solve a crisis patient care issue, these events influence the self-perception of nursing students as leaders. As per a new study by Abou et al.,(2022) surveyed the effects of managerial and leadership training combined with simulation on senior nursing students' career planning and self-efficacy. It was seen that such integrated learning had significant positive effects on students' career planning knowledge and self-efficacy, with implications for leadership training in making nursing students future-ready. Another study conducted by Labrague (2021) examined the application of simulation in leadership and management education in nursing, with the identification of dominant themes including enhanced decision-making, more effective teamwork, and improved communication skills in nursing students. This points out the utility of simulation learning in the acquisition of leadership competences. Fundamental to nursing education is the requirement that nurses have not just technical proficiency but also the leadership skill to apply theoretical knowledge to clinical practice. As healthcare delivery becomes increasingly more complex and multidisciplinary, nursing students need to be trained to lead in various environments. By their own leadership, nursing students can contribute positively to patient care and the entire profession of nursing.

Throughout their academic journey, nursing students face numerous challenges that test their leadership abilities. These challenges might include balancing demanding coursework with clinical hours, managing personal stress, or navigating the complexities of group dynamics in collaborative settings. For those students who take on formal leadership roles—such as class president, peer mentor, or clinical leader—these challenges are compounded by the added responsibility of guiding their peers.

As nursing student leaders reflect on their experiences, they often find that leadership is as much about personal development as it is about guiding others. Their growth as leaders involves continuous self-reflection and the development of emotional intelligence, resilience, and empathy. This introspective process allows them to understand not only their strengths but also the areas in which they need to grow. For example, many nursing students may struggle with balancing the demands of leadership and academic responsibilities. However, through these struggles, they gain valuable insights into time management, prioritization, and stress management. These insights, in turn, help them develop as both professionals and individuals, preparing them for the leadership roles they will assume in their careers.

The impact of nursing student leaders extends beyond their personal growth; it resonates within their peer group and the broader nursing community. By stepping into leadership roles, these students contribute to the overall cohesiveness of their cohort. They help foster an environment of collaboration, mutual support, and academic excellence. As student leaders share their experiences and insights with others, they create a ripple effect that enhances the learning experience for everyone involved. Ultimately, the journey of nursing student leaders is one of transformation. These students enter nursing school with the goal of becoming skilled clinicians, but along the way, they evolve into leaders who are capable of driving change, improving care, and mentoring future generations of nurses. The experiences they gain—through formal leadership roles, peer interactions, clinical practice, and personal challenges—serve as the foundation for their future leadership in healthcare. These experiences help them become resilient, adaptable, and compassionate leaders who can navigate the complex and evolving healthcare environment with confidence.

The reflective exploration of nursing student leaders highlights the symbiotic relationship between leadership and personal development. Through their experiences, these students not only refine their leadership abilities but also shape the future of healthcare delivery. Their stories of growth and transformation serve as a powerful reminder of the importance of leadership development in nursing education. By fostering leadership skills early in their education, we prepare nursing students not only to excel in their clinical roles but also to contribute meaningfully to the advancement of the nursing profession and the improvement of patient outcomes.

Objectives of the Study - This study aims to explore and understand the reflections of nursing student leaders on their leadership experiences. Specifically, it seeks to identify the essential experiences they encountered while fulfilling their leadership roles. It also aims to uncover the valuable lessons gained from these experiences and how such insights have contributed to their personal and professional growth. Furthermore, the study intends to determine how these lessons can be applied to future nursing practice and leadership responsibilities within the healthcare setting, thereby contributing to the development of effective and compassionate nurse leaders.

2. Methods

Research Design - This study employed a qualitative research design, specifically narrative inquiry with phenomenological elements, to explore nursing students' leadership experiences from their own perspectives (Rieger et al., 2022). Since phenomenology aims to uncover underlying meanings within complex phenomena based solely on individual accounts rather than external evidence or data points, it focuses on understanding and describing the essence of human experiences as they were lived (Ray, 2023).

Study Site and Participants - This study was conducted at Isabela State University, College of Nursing, a government higher education institution strategically located in the City of Ilagan, Isabela. Additionally, the paper employed a purposive sample of nursing student leaders who had actively participated in leadership roles within their academic or clinical settings. The sample ensured diversity in terms of leadership roles, including peer mentoring, committee leadership, and involvement in student organizations.

Population, Sample Size and Sampling Method - The target participants for this study were student leaders enrolled in the Bachelor of Science in Nursing program at Isabela State University. The researcher conducted in-depth, semi-structured interviews to explore their experiences in nursing leadership. The interview guide was designed with open-ended questions, allowing participants to share their thoughts and reflections freely. Topics explored included challenges faced, personal growth, teamwork, decision-making, and the impact of leadership experiences on their nursing education. Recent empirical guidance indicates that thematic saturation is often achieved with approximately 9–13 interviews or 4–6 focus groups, offering practical benchmarks for qualitative study design (Wutich et al., 2024). However, there were five (5) nursing student leaders interviewed for this study.

Instrument of the Study - To ensure the rigor and credibility of the study, the researcher utilized a

comprehensive interview guide with specific, open-ended questions to conduct semi-structured interviews with the participants. This approach allowed for flexibility in exploring the participants' experiences while maintaining consistency across interviews. To further enhance the validity and reliability of the findings, the researcher incorporated member checking as a key strategy. Participants were given the opportunity to review and confirm the accuracy of the interview transcripts and the interpretation of their responses. This iterative process not only verified the findings but also allowed participants to provide additional insights or clarifications, ensuring that their perspectives were accurately represented. In addition to member checking, the researcher engaged in peer debriefing with colleagues who have extensive experience in qualitative research. This collaborative consultation provided valuable feedback on the coding process, thematic development, and overall data interpretation, helping to strengthen the rigor and trustworthiness of the analysis. By involving peers in the review process, the researcher was able to identify potential biases, refine the analytical approach, and confirm the robustness of the study's findings. Together, these methodological strategies contributed to the credibility, consistency, and depth of the qualitative analysis, ensuring that the study's outcomes were both valid and reliable.

Data Gathering Procedures - Prior to conducting this study, the researcher obtained permission from the Office of the Campus Executive Officer through proper channels. Once approval was secured, participants were selected based on the following criteria: 1) currently enrolled at the university; 2) serving as a president of a classroom, batch, college, or university student organization officially recognized by the university; and 3) enrolled in the Bachelor of Science in Nursing program. The researcher conducted in-depth, semi-structured interviews using a guided question with the selected participants to explore their experiences in nursing leadership. Open-ended questions were utilized to allow participants to share their thoughts and reflections freely. The researcher focused on exploring topics such as challenges faced, personal growth, teamwork, decision-making, and the impact of leadership experiences on their nursing education.

Data Analysis - This study utilized thematic analysis to identify and analyze patterns, themes, and meanings within the data. Thematic analysis is defined as a method for systematically identifying, organizing, and offering insights into patterns of meaning (or "themes") across qualitative data. It remains central to healthcare research frameworks (Wong et al., 2021), where it's applied via structured phases for transparent, replicable qualitative analysis. This process involved coding the data for recurring concepts and organizing these codes into broader themes that captured the essence of the participants' experiences. Researcher utilized Nvivo to create themes and codes from the transcripts.

Ethical Considerations - The researcher obtained informed consent from participants, ensuring both confidentiality and anonymity. Participants' identities were kept anonymous, with measures taken to protect their confidentiality at every stage of the process. Each participant's identity remained concealed through individual codes assigned during data collection, which replaced real names during transcript analysis. Furthermore, the researcher strictly adhered to ethical guidelines for research involving human subjects and obtained approval from the relevant institutional review board (IRB).

3. Results and discussion

3.1 The Essential Experiences of Nursing Student Leaders in Their Leadership Roles

Theme 1: Motivation on Leadership Role

This theme was crucial role in shaping the leadership abilities of students in nursing programs as it directly influences their engagement and commitment in clinical settings. This intrinsic motivation not only enhances their learning experience but also empowers them to take initiative and inspire others. By fostering a culture of motivation within nursing education, educators can cultivate future leaders who are not only skilled practitioners but also influential advocates for positive change in healthcare. The attributes and motivations that define

effective leadership. This analysis delves into the codes identified in the leadership motivations expressed by individuals, particularly in a nursing context. Key descriptors such as being a natural leader, risk-taker, and having unwavering compassion highlight a profound understanding of leadership beyond mere authority.

THEME	CODE	DESCRIPTOR	VERBATIM
Motivation on Leadership Role	Natural leader	Who instinctively inspires and guides others	Respondent 1: "innate na sa akin ang pagiging leader kasi since senior high po I always have this position sa klase pagka classroom officer" ("It has always been innate in me to be a leader because since senior high, I have always held this position in class as a classroom officer.")
	Eager to embrace challenge	Enthusiastic about facing obstacles and see them as opportunities	Respondent 2: "I take that po as a challenge gusto ko pong maenhance yung aking skills po for time management and balancing my responsibilities po for future life scenarios real life scenarios po." ("I take that as a challenge. I want to enhance my skills in time management and balancing my responsibilities for future life scenarios, real-life situations.")
	Unwavering compassion	Profound ability to empathize with others	Respondent 3: "Yun ma'am yung parang nag motivate sa akin we are nursing we are advocate for our patient's." ("That's what motivated me, ma'am. We are nursing, we are advocates for our patients.")
	Proactive attitude	Taking initiative and anticipating challenges	Respondent 4: "I want to explore sabi nga ng isa sa mga kasama kong responder kanina we are nursing course kailangan nating matrain to be a leader for future nurses and advocate" ("I want to explore, just like what the other responder mentioned earlier, we are in a nursing course, and we need to be trained to be leaders for future nurses and advocates.")
	Inspired by strong Influencers	Involves drawing motivation and guidance	Respondent 5: "I, the friends and the people around me who are also leaders, parang they are influencing me or they are influencers in me" ("I, along with my friends and the people around me who are also leaders, it seems like they are influencing me or they are influencers to me.")

As a Natural Leader, individuals who identify as natural leaders often demonstrate an inherent ability to inspire and guide others. The respondent reflects on their experience as a classroom officer since senior high school, indicating that leadership roles have been a consistent part of their identity. Respondent 1 embodies the natural leader, emphasizing an innate ability to inspire and guide others, a quality they have honed since their time in senior high as a classroom officer. This early experience reflects a deep-rooted inclination towards leadership.

The code Eager to Embrace Challenges, talks about the enthusiasm for facing obstacles and viewing them as opportunities is another critical code. The desire to enhance skills related to time management and responsibility highlights a proactive approach to personal and professional development. Respondent 2 showcases a proactive approach to challenges, viewing them as opportunities for personal growth. Their eagerness to enhance skills like time management reveals a commitment to balancing responsibilities in real-life scenarios, highlighting the importance of adaptability in leadership.

Unwavering Compassion. It is a profound ability to empathize with others is a hallmark of effective leadership, particularly in nursing. The respondent's motivation as an advocate for patients underscores the ethical responsibilities inherent in healthcare professions. Empathy emerges as a key trait in Respondent 3, who emphasizes the profound compassion inherent in nursing. Their motivation stems from a desire to advocate for patients, underscoring the essential role of empathy in effective leadership.

Proactive Attitude: Taking the initiative and anticipating challenges is vital for leadership, particularly in

dynamic fields like nursing. The desire to be trained as future leaders reflects an understanding of the evolving demands of the healthcare landscape. Respondent 4 reinforces this proactive attitude, expressing a strong desire to explore and prepare for future leadership roles in nursing. Their commitment to training signifies a recognition of the responsibilities that come with leadership and advocacy.

Inspired by Strong Influencers, the influence of peers and mentors is significant in shaping leadership motivations. The respondent acknowledges the impact of friends and other leaders in their life, highlighting the importance of a supportive network. Respondent 5 illustrates the influence of strong role models, acknowledging how friends and peers who embody leadership qualities inspire them. This highlights the significance of community and mentorship in shaping one's leadership journey.

The above-mentioned collectively illustrate a holistic view of what motivates individuals to take on leadership roles, especially in nursing. These qualities not only enhance personal growth but also contribute significantly to the effectiveness of healthcare delivery.

Theme 2: Specific Leadership Position and Responsibilities

This theme signifies that student leaders play a vital role in cultivating a supportive learning environment and encouraging active participation in community health initiatives. By stepping into these leadership roles, nursing students gain essential skills in teamwork, communication, and problem-solving, preparing them for future challenges in their nursing careers.

THEME	CODE	DESCRIPTOR	VERBATIM
Specific Leadership Position and Responsibilities	Served as the voice to be heard	being an advocate or spokesperson	Respondent 1: "I am the president sabi ko po kanina I a'm the president of League of future nurses and my responsibilities is to lead the whole student of College of nursing" <i>("I am the president, as I mentioned earlier. I'm the president of the League of Future Nurses, and my responsibility is to lead the entire student body of the College of Nursing.")</i>
	Empowers students in educational journey	Enhancing Learner Empowerment	Respondent 2- "Empowers students in educational journey" ("Empowers students in their educational journey.")
	Ensures patient's care with compassion	genuine concern for patients' well-being	Respondent 3: "class president ma'am or clinical group leader ma'am and this involves responsibilities, such as ordering activities ganun sa mga case studies po para sa patient" ("Class president, ma'am, or clinical group leader, ma'am, and this involves responsibilities, such as organizing activities and handling case studies for the patients.")
	Financial stewardship	responsible financial practices while fostering a culture of motivation	Respondent 4: "president po ng section B ulit and as a treasurer naman po syempre pangunahin trabaho ng isang treasurer is mag collect ng mga funded" ("I'm the president of Section B again, and as a treasurer, of course, the main job of a treasurer is to collect the funds.")
	Motivational leadership	Prioritize tasks effectively and allocating their time wisely	Respondent 5: "Exceptional organizational skills"

The table shows the roles and responsibilities associated with specific leadership positions provide valuable insights into how leaders navigate their duties and impact those they serve. This analysis examines the themes articulated by individuals in leadership roles, particularly in nursing and educational settings. Key descriptors include being a voice for others, empowering students, ensuring patient care, practicing financial stewardship, and exhibiting exceptional organizational skills.

The role of an advocate or spokesperson is central to effective leadership. The individual highlights their position as the president of the League of Future Nurses, emphasizing the responsibility of leading fellow

students. This reflects the notion that leaders must articulate the needs and concerns of their constituents.

Empowerment in education is a critical aspect of leadership, particularly in nursing, where collaboration and support are essential. The commitment to enhancing learner empowerment illustrates the leader's role in fostering an environment where students can thrive. Recent research shows that teaching methods and in-class interactions significantly enhance nursing students' sense of empowerment, which correlates with their confidence and competence in clinical settings (Al-Niarat, 2024).

The genuine concern for patients' well-being is a cornerstone of nursing leadership. The individual describes their responsibilities as a class president and clinical group leader, which involve organizing activities related to patient care. This reflects a deep understanding of the ethical implications of leadership in nursing. Financial stewardship combined with motivational leadership signifies a dual responsibility that leaders often face. The role of treasurer requires managing funds effectively while also fostering a culture of motivation among peers. The ability to prioritize tasks and manage time effectively is critical for leaders, particularly in demanding environments like nursing. The emphasis on exceptional organizational skills indicates a recognition of the complexity of leadership roles. The codes of being a voice for others, empowering students, ensuring compassionate patient care, practicing financial stewardship, and demonstrating exceptional organizational skills provide a comprehensive view of the responsibilities associated with specific leadership positions. These qualities not only enhance the leader's effectiveness but also contribute to the well-being and development of those they serve.

Theme 3: Situation that gives greater impact as a Leader

A leader is always a source of stability and guidance. Remains calm under pressure and providing a clear vision and encouragement when challenges seem overwhelming. Ultimately, a leader's strength in tough times is their ability to turn adversity into a collective opportunity for growth and success. Effective leadership is often tested in challenging situations that require quick thinking, compassion, and strong communication. This analysis explores the related to impactful leadership experiences, particularly in a clinical context. Key descriptors include providing support, rapid response, dynamic leadership, inspiring excellence, and bridging communication. The role of a leader as a source of aid highlights the importance of providing support to those in need, particularly in healthcare settings. The respondent reflects on the emotional challenges faced while helping patients, indicating that despite their efforts, external factors can complicate care. Leaders must balance empathy with the realities of patient care, which can sometimes be beyond their control. The ability to respond quickly to challenges is crucial in healthcare environments. The respondent describes a situation where they had to adapt and create a case study despite being unprepared. This adaptability is a hallmark of effective leadership. This theme underscores the necessity of resilience and quick thinking in clinical leadership. Being a dynamic leader in clinical settings emphasizes enhancing effectiveness and productivity. Managing clinical rotations requires quick thinking and decisive action, directly impacting the team's performance. Studies have shown that effective leaders can significantly improve team dynamics and patient outcomes (Ahbadoosh et al., 2022; Ohly et al., 2021). A leader's ability to inspire confidence and foster teamwork is vital in high-pressure environments.

THEME	CODE	DESCRIPTOR	VERBATIM
Situation that gives greater impact as a Leader	Source of Aid	provides support or assistance	Respondent 1: "crucial part dun is when we give our uh lend our help dun sa patient na kailangan ng help naming but sad to say even we did our best still si God na yung kalaban namin duon during that time" ("A crucial part of it is when we give our help to the patient who needs our assistance, but sadly, even though we did our best, it was still God we were up against during that time.")
	Rapid response with positive outcomes	ability to quickly address a situation or challenge	Respondent 2: "We didn't handle the patient actually we have no time to actually assess the patient in personal and yung ginawa po namin ma'am is nag adopt po kami ginawan po namin ng case study kahit hindi kami prepared."

		("We didn't handle the patient directly; we actually didn't have time to assess the patient in person. What we did, ma'am, is we adapted and created a case study, even though we weren't prepared.")
Dynamic Leader in Clinical Efficiency	individual who plays a pivotal role in enhancing the effectiveness and productivity	Respondent 3: "managing my clinical rotations ganun ma'am where quick thinking and decisive action in positively impact our performance"
Inspiring Excellence in Clinical Teams	process of motivating and guiding healthcare professionals	("Managing my clinical rotations, ma'am, where quick thinking and decisive action can positively impact our performance.") Respondent 4: "Clinical area po na sinabi ko po like na parang pag sasalang na sa isang operation ganyan na kailangan ng isang student." ("The clinical area I mentioned, ma'am, is like when a student is about to be involved in an operation, where their presence is needed.")
Bridging Communication for Success	exchange of information and ideas that fosters understanding	Respondent 5: "the voice of the class or the voice of the campus po in general" ("The voice of the class or the voice of the campus, in general.")

Motivating and guiding healthcare professionals is essential for fostering a culture of excellence. The mention of operating room scenarios highlights the collaborative nature of healthcare, where leadership can directly influence team performance. Effective communication is fundamental to successful leadership. The respondent describes their role as the voice of the class, emphasizing the importance of clear information exchange to foster understanding.

Theme 4: Challenges Encountered and Coping Mechanism

THEME	CODE	DESCRIPTOR	VERBATIM
Challenges encountered and coping mechanism	You can't win over everyone	not all individuals will agree with or support your ideas	Respondent 1: "you can't please everyone"
	Turning mis-communication into Understanding	process of transforming misunderstandings and unclear communication into clear and effective dialogue	Respondent 2: more on communication skills ko po ma'am, kasi first time ko po as ahm yung sa boung department po na mag lead so hindi ko pa po masyadong gamay kung papaano ang mag dessiminate ganun ganun ma'am ("More on my communication skills, ma'am, because it's my first time leading in the whole department, so I'm not yet fully familiar with how to disseminate information and handle things like that, ma'am.")
	Finding Harmony From Uncertainty to Leadership	creating balance and understanding transformative journey of individuals	Respondent 3: balancing my academic workload with leadership duties Respondent 4: as a new president or baguhan lang sa ganyang posisyon and yun yung isang challenge sa akin ma'am na baguhan ("As a new president or just starting in that kind of position, that's one of the challenges for me, ma'am, being a beginner.")
	Versatile Leader	who possesses the ability to adapt	Respondent 5: handling a lot of tasks on different organizations

Challenges are inevitable and often become defining moments that shape a leader's character and effectiveness. Each challenge brings its own set of complexities that can strain patience and resilience. By confronting these challenges head-on, leaders not only develop their own capabilities but also inspire growth and resilience in those they lead, turning each setback into a valuable lesson that fuels progress and innovation. The theme and codes that leadership is often accompanied by various challenges that require effective coping mechanisms. This analysis explores the challenges faced by leaders, particularly in educational and clinical settings. Key descriptors include the impossibility of universal agreement, transforming miscommunication, finding balance, navigating uncertainty, and demonstrating versatility. The acknowledgment that not all individuals will agree with or support a leader's ideas is a critical lesson in leadership. The phrase "you can't please everyone" encapsulates the reality that diverse perspectives exist within any group.

3.2 Valuable Lessons Gained from the Leadership Experiences

Theme 1: Balancing Leadership with Academic and Personal Commitment

This balancing act can be demanding but it also fosters growth and time-management skills. Learning to set priorities and delegate effectively becomes essential for maintaining well-being and achieving long-term goals. Embracing these strategies enables leaders to thrive in each area of their lives fostering success and fulfillment in both their professional and personal development.

THEME	CODE	DESCRIPTOR	VERBATIM
	Time Organization for Key Priorities	systematic approach of managing time	Respondent 1: time management po talaga yun po yung pinaka kailangan duon with balancing these three specific things ("Time management, ma'am, that's really the most important thing, especially with balancing these three specific things.")
	Jotting with Purpose	intentional practice of quickly recording thoughts	Respondent 2: nagsi-seek po ako sa kanya ng support and also ng information and clear. Para clear po yung mai-delegate or disseminate ko po sa aking mga colleagues po. I jot down po yung mga kailangan kong gawin for prioritization po and identify kung ano yung urgent or ano yung mas importante na una kong gawin ("I seek support and information from him, ma'am, to make sure everything is clear. This way, I can properly delegate or disseminate tasks to my colleagues. I jot down the things I need to do for prioritization and identify what's urgent or more important to tackle first.")
	Empower Yourself	process of taking control of your own life	Respondent 3: practicing self-care to prevent burnout.
	Prioritize Prosper	emphasizes the importance of identifying and focusing on key tasks	Respondent 4: pinaka importante talaga dito ma'am is time management and prioritization ("What's really most important here, ma'am, is time management and prioritization.")
	Empowerment through Balance	achieving a harmonious state in various aspects of life	Respondent 5: Time management po ma'am and I have said I seek help sa mga kasama ko sa organization ("Time management, ma'am, and as I've mentioned, I seek help from my colleagues in the organization.")

Balancing leadership with academic and personal commitment. Balancing leadership responsibilities with academic and personal commitments is a significant challenge for many leaders, especially students. This is related to time management, prioritization, and self-empowerment. Key descriptors include systematic time organization, intentional recording of thoughts, self-care, prioritization of tasks, and achieving balance.

A systematic approach to managing time is essential for effective leadership. The respondent emphasizes that time management is crucial for balancing academic, personal, and leadership roles. The practice of quickly recording thoughts and tasks indicates an intentional strategy for managing responsibilities. The respondent notes the importance of seeking support and clarity when delegating tasks to colleagues. This method of jotting down essential tasks facilitates prioritization and ensures that urgent matters are addressed first. Taking control of one's own life through self-care is a crucial element in preventing burnout. The respondent highlights the importance of practicing self-care, which is essential for sustaining leadership effectiveness. Recent work also confirms that structured self-care interventions enhance resilience and reduce burnout among nurses in high-stress clinical settings (Kwon et al., 2023). Identifying and focusing on key tasks is fundamental to successful leadership. The respondent reiterates the significance of time management and prioritization, which are vital for achieving goals while juggling multiple responsibilities. Achieving a harmonious state in various aspects of life is an ongoing process for leaders.

Theme 2: Nursing experience that shape leadership

Shaping leadership through experiences is a transformative process that highlights the profound impact of real-life situations on a leader's growth and development. In addition, the diverse experiences encountered along the way play a crucial role in shaping effective leaders who can navigate the complexities of their roles with confidence and purpose.

THEME	CODE	DESCRIPTOR	VERBATIM
Nursing experience that shape leadership	The Critical Thinker	who actively seeks to understand and analyze information	Respondent 1: "dapat magaling ka mag-decide mag think critically sa academic, and applying to leadership style naman po ma'am"
			("You should be good at decision-making and think critically in academics, and applying that to leadership style as well, ma'am.")
	The Art of Communication	skillful and effective exchange of information	Respondent 2: "mag work together with my members and also to other heads para ma-support and ma-guide yung team para maganda po yung outcome sa lahat-lahat or kabuuan po ma'am"
			("To work together with my members and also with other heads to support and guide the team, so that the outcome is good for everyone or for the whole, ma'am.")
	Empathy and Resilience	fostering deeper connections with others while also enhancing one's ability to cope with adversity	Respondent 3: "empathy which is very vital for our profession with our future profession and resilience and strong communication skills and the ability to work ma'am under pressure" ("Empathy, which is very vital for our profession and future profession, along with resilience, strong communication skills, and the ability to work under pressure, ma'am.")
	Time as a tool	concept of viewing time not merely as a linear progression of moments but as a valuable resource that can be managed	Respondent 4: "I believe for me na-shape nya yung pagiging isang uhm how I managed my time ganun po ang so nakatulong po kasi talaga yun sa akin ma'am"
			("I believe that it shaped how I manage my time, ma'am. It really helped me a lot.")
	Role of Communication in Teams	It enables members to share ideas	Respondent 5: "having a communication skills in both nursing situation and leadership situation is very important po"
			("Having communication skills in both nursing situations and leadership situations is very important, po.")

The above table shows the nursing experiences that shape leadership. Which significantly influence the development of leadership qualities. This analysis explores the codes related to critical thinking, communication, empathy, resilience, time management, and teamwork. Each of these elements plays a vital role in shaping effective nursing leaders.

The ability to think critically is fundamental for leaders in nursing. The respondent emphasizes the importance of making informed decisions through critical analysis. This aligns with Benner's (1984) theory of novice to expert, where critical thinking is essential for moving from basic to advanced nursing practice. Leaders who engage in critical thinking are better equipped to navigate complex clinical situations and make decisions that positively impact patient care (Özdemir et al.,2022).

Effective communication plays a key role in promoting collaboration among colleagues in the team and delivering positive results. The respondent stresses the importance of collaborating with colleagues and leaders to assist the team. Empathy and resilience are necessary attributes for nursing leaders. The respondent agrees that empathy creates stronger ties, which is important in the nursing profession. Resilience also assists in dealing with challenges experienced in nursing.

Viewing time as a valuable resource underscores the importance of time management in nursing leadership. Respondent reflects on how managing time effectively has shaped their leadership style. Leaders who can manage time well can balance multiple responsibilities and lead their teams more effectively. Research shows that structured time management training improves nurses' prioritization, work flow regulation, and stress management—leading to better performance and resilience in challenging clinical settings (Peykar et al., 2023). Communication is integral to successful teamwork, allowing team members to share ideas and collaborate effectively. The respondent recognizes that communication skills are essential in both nursing and leadership contexts. A 2024 study with nurses in Eswatini found that communication skills significantly predicted the quality of patient-centered care and overall team functioning—highlighting the direct link between communication effectiveness and team performance (Mokoena et al., 2024). Leaders who prioritize open communication create an environment where team members feel valued and empowered to contribute.

Theme 3: Skills or Qualities that are essential in Leadership

Effective leadership is characterized by a blend of essential qualities and specific skills that enable individuals to inspire and guide others toward common goals. This fosters a positive work environment and builds trust, together these qualities and skills create a foundation for impactful leadership that drives success and fosters growth. Effective leadership in nursing and other fields requires a specific set of skills and qualities that facilitate collaboration, adaptability, and motivation. Receptiveness to new ideas is fundamental for effective leadership. The respondent emphasizes the importance of being open-minded and willing to listen to diverse perspectives. This aligns with the concept of transformational leadership, which values innovation and encourages team members to share their ideas. Leaders who are open to possibilities foster an inclusive environment that can lead to creative solutions and improvements.

Effective communication is crucial for dynamic teamwork and leadership. The respondent highlights that communication skills are essential for fostering understanding within a team. The ability to adjust to new situations while being mindful of one's own emotions and those of others is a key leadership quality. The respondent's focus on adaptability reflects the necessity for leaders to navigate changing circumstances effectively. The essential role of communication in guiding and influencing others is further highlighted by the respondent. In nursing, where scenarios can vary widely, effective communication skills are crucial for ensuring that all team members are aligned and informed. An optimistic outlook not only influences a leader's behavior but also inspires and motivates those around them. The respondent suggests that maintaining a positive perspective is important in overcoming challenges.

THEME	CODE	DESCRIPTOR	VERBATIM
Skills or Qualities that are essential in Leadership	Open to Possibilities	receptiveness to new ideas	Respondent 1: as a leader you should be open minded, like open dapat ang avenues ng ideas sayo and you know how to listen that and know when to talk ganun po ma'am ("As a leader, you should be open-minded, meaning the avenues for ideas should be open to you. You should know how to listen and also know when to speak, ma'am.")
	Communicate to Lead	emphasizing the critical role of effective communication	Respondent 2: we need communication skills for me it is crucial for a team to be dynamic is dapat meron silang pagkakaintindihan ("We need communication skills because, for me, it is crucial for a team to be dynamic. There should be mutual understanding among them.")
	Cultivating Adaptability and Emotional Awareness	developing the ability to adjust to new situations while being mindful of one's own emotions and those of others	Respondent 3: adaptability

Leadership Through Communication	essential role that effective communication plays in guiding and influencing	Respondent 4: communication skills umm communications para syempre as a future nurses madami tayong different scenarios mga ganayan na nagyayari ("Communication skills, umm, communication is essential because, as future nurses, we will face many different scenarios and situations that will happen.")
The impact of being an Optimistic Leader	positive outlook that not only affects their own behavior but also inspires and motivates those around them	Respondent 5: Aside po sa pagkakaroon ng communication skills, I think is to look at the brighter side of every situation ("Aside from having communication skills, I think it's important to look at the brighter side of every situation.")

Theme 4: Inspiring Peers on Leadership Roles

Effective leaders recognize that their influence extends beyond authority; it involves cultivating a shared vision and encouraging others to engage in the pursuit of common goals. Inspiring peers in leadership enhances collective performance and fosters a sense of belonging, driving everyone toward shared achievements. Inspiring Peers on Leadership Roles. The commitment to empowering fellow students is crucial for fostering a collaborative environment. The respondent highlights their approach to engaging others by inviting them to participate in activities. This reflects the principles of participative leadership, where leaders actively involve team members in decision-making and activities, thereby enhancing engagement and commitment.

Fostering a strong emotional and intellectual connection with peers is essential for effective leadership. The respondent mentions being actively involved in organizational events to demonstrate commitment. Serving as an inspirational role model involves influencing and motivating peers through actions. The respondent notes the importance of leading by example to promote collaboration and encourage participation. Demonstrating dedication through actions emphasizes the importance of being a visible and active leader. The respondent suggests that dedication can inspire peers to follow suit. Leveraging personal and professional experiences can enhance a leader's ability to guide and mentor peers. The respondent emphasizes sharing their stories to illustrate the fulfillment of leadership.

THEME	CODE	DESCRIPTOR	VERBATIM
Inspiring Peers on Leadership Roles	Student Involvement Leader	commitment to empowering students	Respondent 1: Ma'am I engage others to join in such activities by inviting them and letting them experience the things that they need to experience po ("Ma'am, I engage others to join in such activities by inviting them and letting them experience the things they need to experience.")
	Engaging Deeper Commitment at work	strategies and practices that foster a strong emotional and intellectual connection between employees and their organization.	Respondent 2: I'm more active in more active na po sa pagsali ng events or pagiging involve in any activities of the organizations that I'm with. Para naman po maipakita naman sa mga other colleagues na committed ako sa position na ibigay sa akin ("I'm more active now in participating in events or being involved in any activities of the organizations I'm with. This way, I can show my other colleagues that I am committed to the position given to me.")
	Inspirational Role Model	individual who significantly influences and motivates others through their actions	Respondent 3: by leading by example to foster a culture of collaboration and mag-encourage po ng active participation in their making process, parang open ka ma'am for any ideas, suggestions ganun ma'am ("By leading by example to foster a culture of collaboration and encouraging active participation in the decision-making process. It's about being open, ma'am, to any ideas or suggestions.")
	Leading through Action	emphasizes demonstrating behaviors	Respondent 4: parang you have to be dedicated sa lahat ng mga gagawin mo para mayron silang basis para mas ma-inspire sila ganyan para maging leader

Experience-Based Leader	leverages their personal and professional experiences to guide and mentor	("You have to be dedicated to everything you do so that they have a basis to be inspired, and in turn, motivate them to become leaders as well.") Respondent 5: I think po by telling them stories or my experiences my personal experiences how fulfilling to be a leader or to join and participate in activities and events

Theme 5: Embraces Change and Growth

For new leader demonstrates effective communication, empathy, and decision-making skills, peers often begin to respond positively fostering a sense of trust and collaboration. This shift can lead to increased engagement as team members feel more valued and motivated to contribute to the shared vision. Embraces Change and Growth. Actively promoting and supporting significant changes within an organization is a key leadership role. Respondent illustrates how individuals who were once quiet and reserved are now expressing their thoughts and becoming more involved. Promotion of beneficial transformations is essential for fostering a vibrant community. Respondent notes that individuals who previously did not participate are now engaging in various events, reflecting a positive shift in organizational culture.

Driving and advocating for improvements in societal structures is a critical aspect of leadership. The respondent describes how previously silent individuals are now suggesting ideas, indicating a shift towards greater openness and engagement. A dedicated approach that prioritizes active participation is vital for fostering a sense of community. The respondent emphasizes their willingness to participate in various events and activities, showcasing a commitment to engagement. This resonates with the principles of transformational leadership, which focus on motivating and inspiring followers to actively engage in shared goals. Actively embracing change and growth is essential for both leaders and their teams. The respondent highlights that individuals are becoming more vocal and confident, influenced by leaders who model these behaviors.

THEME	CODE	DESCRIPTOR	VERBATIM
Embraces Change and Growth	Transformation Advocate	who actively promotes and supports significant changes within an organization	Respondent 1: yung dating tahimik ngayon ay nagsasabi na ng saloobin, mas nagiging open na rin po sya hindi na sya loner lang sa isang tabi ("Before, they were quiet, but now they're starting to express their thoughts. They're becoming more open and no longer just a loner sitting in the corner.")
	Positive Change Advocate	actively promotes and supports beneficial transformations within an organization	Respondent 2: yung mga dating hindi po sumasali is now nag i-incline na sila sa mga different sport events or activities na prinepare po ng ating school po.
	Social Change Leader	drives and advocates for improvements in societal structures	("Those who used to not participate are now starting to get involved in different sports events or activities that our school has prepared.") Respondent 3: tahimik hindi po nagsa-suggest ng mga ideas. Ngayon po ma'am open na po sila for ganun po since nabibigyan ng emphasis yung mga suggestions nila ganun po
	Commitment to Engagement	dedicated approach that prioritizes active participation	("Before, they were quiet and didn't suggest any ideas. But now, ma'am, they are more open to sharing, since their suggestions are being given emphasis.") Respondent 4: willingly participate on the different event ganayn or kaya mga activities ganun po
	Evolutionary Individual	actively embraces change and growth	("Willingly participate in different events or activities, ma'am.") Respondent 5: yung nasa mind kapag nasasabi na po nila yung navo-voice nila yun by yung nga po na iimpluwensyahan po sila ng isang leader na hindi rin po nahihya

("When it's in their mind and they're able to voice it out, it shows that they're being influenced by a leader who isn't shy or afraid to speak up.")

3.3 Lessons can be Applied to Future Nursing Practice and Leadership Roles within the Healthcare Setting

Theme 1: Legacy of Caring Leadership

This process not only enhances individual leadership capabilities but also strengthens organizational culture and fosters a legacy of effective leadership that can be sustained over time. Learned leadership creates a ripple effect contributing to a more collaborative and innovative environment where future leaders are equipped to drive positive change. The table shows the theme and codes as to legacy of caring leadership. The importance of providing clear, concise, and compassionate communication is paramount in healthcare settings. The respondent emphasizes that effective communication is essential for teamwork and patient care. The concept of caring leadership is central to the healthcare profession, where leaders are tasked not only with providing excellent care but also with fostering environments that promote compassion, empathy, and support. The responses shared by the participants reflect the qualities and values that contribute to a legacy of caring leadership, emphasizing the importance of clear communication, continuous improvement, active listening, humility, and the desire to positively impact the lives of others. One of the key elements in caring leadership is the ability to advocate for clarity in patient care. Respondent 1 emphasized the importance of clear, concise, and compassionate communication, particularly when interacting with patients and their families. Effective communication ensures that patients understand their care plan, know what to expect, and feel supported throughout their journey. This practice fosters trust and strengthens the relationship between the healthcare provider and the patient, which is essential for delivering high-quality care. Additionally, the respondent highlighted adaptability as another key lesson, underscoring that healthcare leaders must be flexible and responsive to the changing needs of patients and their teams.

THEME	CODE	DESCRIPTOR	VERBATIM
Legacy of Caring Leadership	Clarity in Care Advocate	importance of providing patients and their families with comprehensive information regarding their care	Respondent 1: I want to pass is yung clear concise and compassionate communication po ma'am. Which is essential for teamwork and patient care po for and another lesson po is yung value of adaptability ("What I want to pass on is clear, concise, and compassionate communication, ma'am, which is essential for teamwork and patient care. Another lesson is the value of adaptability.")
	Progress Thinker	seeks improvement and innovation in various aspects of life	Respondent 2: more on being open minded po no, kasi we should be always open to feedback and improvement ("More on being open-minded, po, because we should always be open to feedback and improvement.")
	Amplifying Potential Through Active Listening Life Impacting Other	practice of enhancing individuals' capabilities and fostering their growth by genuinely engaging in listening to influence and inspire change in the lives of others	Respondent 3: the importance of listening and empowering others ("The importance of listening and empowering others.")
			Respondent 4: "Leadership is not about titles, positions it is about one life influencing another" ("Leadership is not about titles or positions; it is about one life influencing another.")
	Lead to Serve and not to be Served	leadership philosophy that prioritizes the needs and well-being of others over personal gain or recognition	Respondent 5: ang pagiging a humble leader or maging kapwa tao ("Being a humble leader or being humane to others.")

The concept of being a progress thinker—one who is always seeking improvement and innovation—was brought up by Respondent 2. They emphasized the need to remain open-minded and receptive to feedback, highlighting that improvement is an ongoing process. In a healthcare setting, leaders who embrace continuous learning and are open to new ideas contribute to a culture of innovation and progress. This not only benefits patients but also enhances the efficiency and effectiveness of the team, driving better outcomes for everyone involved. A progress thinker in leadership positions can inspire others to adopt similar mindsets, ensuring that the team and organization as a whole are always striving for better care and better practices.

Respondent 3 brought attention to the importance of active listening in leadership. By listening attentively to others, leaders can better understand their team members' needs and challenges, as well as the concerns of patients and their families. This practice of empowering others through genuine listening helps build a supportive environment where everyone feels heard, respected, and valued. Listening actively not only improves communication but also enhances team collaboration and problem-solving, creating a more effective and harmonious work environment. Leaders who foster an atmosphere where every voice matters can inspire their team to work together more cohesively, ultimately benefiting patient care.

Life-impacting leadership was another key theme explored by Respondent 4, who reflected on the idea that leadership is not defined by titles or positions but by the ability to influence and inspire change in the lives of others. This perspective aligns with the philosophy that leadership is about making a difference in people's lives, whether that's by supporting colleagues, advocating for patients, or motivating others to grow and succeed. In healthcare, the impact a leader has on their team and patients can be profound, shaping the care experience and leaving a lasting legacy of compassionate leadership. Finally, Respondent 5 highlighted the philosophy of leading to serve, not to be served, emphasizing the value of humility in leadership. This approach prioritizes the needs and well-being of others over personal gain or recognition. In healthcare, this principle is critical, as leaders must be dedicated to serving both their patients and their teams. By adopting a servant-leadership approach, healthcare leaders create environments that promote trust, respect, and mutual support. Leaders who serve with humility set an example for others to follow, encouraging a culture of compassion, service, and collective responsibility.

Theme 2: Visionary Nursing Leadership

Setting clear and actionable goals provides direction and purpose motivating individuals to strive for continuous improvement and growth. Future goals empower individuals to transform their aspirations into achievable milestones laying the foundation for a fulfilling and impactful life.

THEME	CODE	DESCRIPTOR	VERBATIM
Visionary Nursing Leadership	Growth Oriented Leader	fosters an environment conducive to continuous learning and development	Respondent 1: my leadership style to continue yan kasi I a'm also planning to enroll to my master degree to continue my life long learning mentorship. Siguro mag apply din akong as clinical instructor. ("My leadership style is to continue this because I am also planning to enroll in my master's degree to continue my lifelong learning and mentorship. I might also apply as a clinical instructor.")
	Future Educator in Clinical Practice	preparing to take on a pivotal role in educating and training healthcare professionals within clinical settings	Respondent 2: maging C.I. kasi po base sa mga kwento ng mga clinical instructors or mga nurses sa field is maganda naman daw po. So it inspired me na maging as one po. ("Becoming a Clinical Instructor (C.I.) because, based on the stories from clinical instructors or nurses in the field, it seems like a great experience. It inspired me to pursue that path as well.")
	Patient-Centered Health Advocate and Educator	dedicated to promoting patient welfare and rights,	Respondent 3: I think the leadership in ourselves' will continue by taking on roles that influence some healthcare policies ma'am and as a teacher for our patients' to achieve optimum level of functioning ma'am

Prospective Clinical Leader	aspires to take on leadership roles within healthcare settings	Respondent 4: ine-envision ko is maging isang clicinal instructor ("What I envision is becoming a clinical instructor.")
Leadership Advancement Seeker	pursuing opportunities to grow and develop their leadership skills	Respondent 5: i-go-goal pa rin natin mag tuamas tayo hanggang sa chief nurse ganyan ("I'll still aim for that goal—to progress all the way to becoming a chief nurse.")

Fostering an environment conducive to continuous learning and development is a hallmark of effective leadership. The respondent emphasizes their intention to pursue a master's degree and potentially become a clinical instructor. This commitment to lifelong learning aligns with the principles of transformational leadership, which encourages leaders to model learning and development behaviors for their teams.

A key element of visionary nursing leadership is being a growth-oriented leader. Respondent 1, for example, expressed their commitment to lifelong learning by planning to pursue a master's degree and exploring mentorship opportunities. This mindset reflects a desire to not only advance one's own career but also to foster an environment that encourages continuous personal and professional growth. By constantly evolving and seeking knowledge, leaders set an example for their teams, showing that learning should never stop. This approach creates a culture where professional development is a priority, benefiting both the leader and the organization as a whole.

Respondent 2 emphasized the role of future educators in clinical practice, inspired by stories from clinical instructors and nurses in the field. Becoming a clinical instructor (C.I.) is seen as a pivotal role, where experienced nurses contribute to training the next generation of healthcare professionals. Educating others is a powerful way to shape the future of healthcare by imparting essential knowledge and skills. This aligns with the idea that visionary leaders are not only concerned with their own growth but also with developing others, ensuring that the workforce is equipped to meet the demands of the future.

A patient-centered health advocate plays a crucial role in visionary leadership, as Respondent 3 noted. They expressed their commitment to promoting patient welfare and rights, emphasizing the importance of leadership in influencing healthcare policies. This perspective shows that leadership extends beyond individual practice—it involves advocating for changes in healthcare systems that improve patient outcomes. By integrating education with advocacy, this type of leadership aims to empower patients and healthcare workers alike, striving to create an environment where patients achieve the highest possible level of functioning and well-being.

The theme of becoming a prospective clinical leader was echoed by Respondent 4, who specifically envisioned becoming a clinical instructor. This goal highlights a key aspect of visionary leadership in nursing—preparing the next generation of healthcare providers while continuing to grow professionally. Clinical instructors are essential for passing on critical knowledge and guiding students through real-world experiences. By pursuing roles like this, future leaders not only improve healthcare education but also ensure that nursing practice remains dynamic, well-informed, and adaptable to the ever-changing needs of patients.

Lastly, leadership advancement is an ongoing pursuit for many nurses, as highlighted by Respondent 5, who expressed the desire to continue advancing in leadership roles, ultimately aspiring to positions like chief nurse. The ambition to grow into more senior leadership positions reflects a drive for continuous development, leadership expansion, and greater influence in shaping healthcare policies and practices. This progression underscores the importance of setting high goals and striving to reach them, thereby advancing nursing leadership at all levels of healthcare.

Theme 3: Establishing Trust and Relationship

Sharing experiences helps to build empathy and understanding as individuals relate to one another's struggles and triumphs. It cultivates a supportive environment where people feel empowered to learn from each

other enhancing collaboration and community.

THEME	CODE	DESCRIPTOR	VERBATIM
Establishing Trust and relationship	Developing Trustworthy Relationships	creating connections based on mutual respect and reliability	Respondent 1: It is about building a good relationship with others having their trust, wherein you can make follow you in a good way and influence each other because in that way we can set a goal wherein both of are ano nakikinabang ("It's about building a good relationship with others, gaining their trust, so they can follow you in a positive way and influence each other. Because in that way, we can set a goal where both of us benefit.")
	Lead by example		
	Influence		
	Finding Joy in Your Pursuits	ability to derive happiness and fulfillment	Respondent 2: being a leader is hard pero if you will enjoy it or if you are doing it on your own will or kapag gusto mo namang gawing yung ginagawa mo it will be easy for us kapag yung ginagawa natin is gusto natin ganun po ma'am ("Being a leader is hard, but if you enjoy it or if you're doing it out of your own will, or when you genuinely want to do what you're doing, it will be easier for us. When we do something we love, it becomes much easier, ma'am.")

Establishing trust and relationship. Creating connections based on mutual respect and reliability is essential for effective leadership. The respondent highlights the importance of building trust, which allows leaders to influence and guide others positively. Trustworthy relationships foster a sense of safety, encouraging team members to engage and contribute their ideas.

4. Discussion

4.1 Essential Experiences of Nursing Student Leaders in their Leadership Roles

Theme 1: Motivation on Leadership Role

The motivation to take on leadership roles, especially in fields like nursing, is deeply rooted in a combination of personal traits, experiences, and influences. For many, leadership comes naturally. As one respondent shared, leadership has been a part of their identity since senior high school, where they frequently assumed the role of a classroom officer. This sense of innate leadership highlights how some individuals instinctively take charge and inspire others, even from an early age. Research by Haave et al. (2022) supports this notion, demonstrating that student peer mentors in nursing education often show early leadership tendencies and intrinsic motivation to guide and support their peers. Alongside this natural inclination, there is a clear eagerness to embrace challenges as opportunities for growth. One respondent reflected on how they view challenges as stepping stones to enhancing their time management and balancing responsibilities—skills crucial not only in academics but also in real-life scenarios. This proactive attitude is a common theme among those motivated to lead—leaders don't wait for opportunities to come to them; they actively seek out ways to improve and take on new responsibilities. Fagan (2023) affirms this in her qualitative study, where nursing students used self-talk and personal reflection to persevere through academic challenges, developing leadership and resilience in the process.

At the heart of leadership is also a deep sense of compassion, especially in fields like nursing. One respondent shared how their passion for leadership stems from their desire to advocate for patients, underscoring that effective leaders in healthcare must be driven by empathy and a commitment to the well-being of others. Additionally, the influence of others plays a significant role in shaping one's motivation to lead. Respondents often cited peers, mentors, or role models as inspirations—being surrounded by strong leaders provides both examples to emulate and guidance to grow. In nursing education, near-peer mentoring programs have shown that observing senior student leaders builds motivation, confidence, and leadership interest (Flott et al., 2022). Together, these motivations—natural leadership qualities, a drive for growth, compassion, and the influence of others—form a solid foundation for effective, empathetic leadership in nursing.

Theme 2: Specific Leadership Position and Responsibilities

Leadership positions within nursing programs offer valuable opportunities for personal and professional development, while also contributing to the greater good of the academic community, fellow students, and patients. These roles encompass responsibilities that go beyond administrative functions, fostering essential qualities such as advocacy, communication, and representation.

One respondent, who serves as the president of the League of Future Nurses, described their position as being “the voice to be heard” for the entire student body. This advocacy role reflects the broader importance of leadership in shaping a supportive and responsive academic environment. Ha et al.,(2023) emphasized that nursing students often enter leadership roles feeling underprepared but gradually acquire key competencies—particularly in communication and peer representation—through lived leadership experiences. Similarly, Cuesta-Martínez et al. (2024) found that participation in peer mentoring during clinical placements significantly enhanced nursing students’ leadership and teaching capabilities. These findings affirm that experiential leadership within nursing education not only empowers individual students but also strengthens collective outcomes in academic and clinical settings. Another significant aspect of leadership is the ability to empower students on their educational journey. One respondent emphasized the importance of helping fellow students navigate their learning experience. Empowering others in their academic growth involves not just guiding them through challenges, but also motivating them to take ownership of their education and develop their own leadership potential.

Leadership in nursing not only empowers student leaders but is also deeply intertwined with patient care. Respondent 3, who served as both class president and clinical group leader, described responsibilities like organizing patient-centered activities and managing case studies. Leadership in clinical settings ensures care is delivered with compassion and attention to detail—core professional nursing values. Financial stewardship is another key leadership responsibility. One respondent, treasurer of a student section, emphasized the delicate balance between responsible budgeting and engaging the group. This reflects broader findings: a 2022 qualitative intervention in Brazil showed that workshops on management case discussions effectively improved students’ financial awareness, leadership, decision-making, and communication skills in hospital practice (Leal et al., 2022). Finally, exceptional organizational skills are fundamental for managing nursing responsibilities. Respondent 5 highlighted the importance of task prioritization, time management, and precision—competencies identified in the 2024 scoping review as critical for effective clinical leadership among student nurses.

Theme 3. Situation that gives greater impact as a Leader

Leadership in nursing is often most visible during challenging moments—where quick decision-making, compassion, and adaptability are essential. The respondents’ experiences underscore the diverse ways leadership can be exercised in both clinical and academic contexts.

One powerful example comes from Respondent 1, who recounted providing urgent assistance to a critically ill patient. Despite their best efforts, the outcome was influenced by factors beyond their control. This situation reflects the essence of compassionate leadership—being fully present, offering aid, and acknowledging the emotional complexity of care giving. Such leadership is supported by a study which emphasized that student nurses often view compassion as a fundamental leadership trait that shapes their relationships with both patients and peers (Snowdon et al., 2022). Respondent 2 illustrated another impactful leadership moment—navigating limited clinical time and resources by adapting a planned patient assessment into a meaningful case study. This demonstrated not only creativity but also rapid decision-making under pressure. A qualitative study by Källestedt et al. (2022) highlighted that rapid response team nurses must maintain situational awareness and adapt to rapidly changing environments—skills increasingly recognized as essential in nursing leadership. Respondent 3 shared their experience managing clinical rotations where prompt coordination and decisive actions were crucial to team performance. Effective leadership in these high-pressure environments involves organizing work flows, supporting peers, and making timely decisions to ensure optimal patient care outcomes. Together, these accounts

illustrate how impactful nursing leadership is shaped not just by position or title, but by the ability to act compassionately, think critically, and adapt swiftly in dynamic situations.

Another critical aspect of leadership is inspiring excellence within clinical teams. Respondent 4 reflected on the role of leadership in motivating peers, particularly in the clinical areas like operating rooms, where coordination and precision are essential. These competencies are foundational in nursing leadership and are emphasized in contemporary leadership texts, which highlight motivation, delegation, and high-functioning team dynamics as core to effective clinical leadership (Marquis et al., 2023). Finally, bridging communication for success emerged as a key leadership skill. Respondent 5 highlighted the role of being the "voice of the class" or the "voice of the campus" in general. Communication is widely recognized as a cornerstone of leadership in nursing education and practice, contributing to team cohesion, decision-making, and improved patient outcomes (Weiss et al., 2023).

Theme 4. Challenges Encountered and Coping Mechanism

The ability to transform misunderstandings into clear and effective dialogue is vital for leadership. The respondent emphasizes their need to develop communication skills, particularly in a new leadership role within their department. This highlights how miscommunication can hinder progress, while effective leaders can foster clarity and collaboration. According to Kämäräinen et al. (2024), interpersonal communication competence—such as empathy, clarity, and adaptability—is a foundational skill for nurse leaders to navigate complex team dynamics and build trust. Creating balance between academic responsibilities and leadership duties is a common challenge for student leaders. The respondent highlights the struggle to manage these competing demands, which is critical for maintaining overall well-being. A study by Çalışkan et al. (2021) found that nursing students who underwent time management training showed significantly improved planning and prioritization skills, which reduced stress and increased academic and leadership effectiveness.

The transformative journey from uncertainty to leadership captures the essence of personal growth that many leaders experience. The respondent's acknowledgment of being new to their position reflects the challenges of stepping into leadership roles. Kuluski et al. (2021) demonstrate how applying adaptive leadership principles—differentiating between technical and adaptive problems—enables nurse leaders to respond effectively to patient needs and team dynamics. They emphasize that successful adaptive leaders help both staff and patients adjust behaviors and expectations, ultimately fostering engagement, resilience, and growth during challenging transitions. Versatility in leadership refers to the ability to adapt to various tasks and roles across different organizations. The respondent's experience in handling multiple responsibilities illustrates the need for flexibility in leadership. 2023 systematic review analyzing 19 leadership development interventions for nursing students concluded that programs featuring multi-contextual, experiential learning, including role diversity and adaptability training, were especially effective at enhancing leadership skills (Cummings et al., 2023).

4.2 Valuable Lessons Gained from the Leadership Experiences

Theme 1: Balancing Leadership with Academic and Personal Commitments

Balancing leadership roles alongside academic and personal responsibilities is a complex but essential challenge for nursing students and future healthcare professionals. The respondents' experiences highlight various strategies they use to manage this delicate balance, which requires effective time management, prioritization, seeking support, and maintaining personal well-being. A central theme among the respondents is the importance of time management. Respondent 1 shared that managing time effectively is crucial when juggling leadership duties, academic requirements, and personal life. A systematic approach to time management enables individuals to allocate time efficiently, ensuring that each responsibility is addressed without compromising well-being. This skill not only helps in meeting deadlines but also reduces stress and prevents burnout. Çingöl et al. (2023) demonstrated that fourth-year nursing students significantly improved time planning and career-readiness attitudes after completing a structured Management in Nursing course.

Behdarvand et al.,(2023) found that time management was a significant predictor of clinical competence among nursing students, underscoring its role in academic and professional success.

Respondent 2 further emphasized the value of jotting down tasks with purpose. This intentional practice of recording thoughts and to-do lists is essential in organizing daily responsibilities. By jotting down tasks, they ensure that priorities are clearly defined, which in turn aids in delegating tasks to others more effectively. This method of prioritization ensures that urgent and important tasks are addressed first, leaving room for less time-sensitive responsibilities later on. It also helps avoid forgetting important tasks in the busy routine of leadership and study. Prioritization, as emphasized by Respondent 2, is a cornerstone of effective leadership. In addition to organizational skills, self-empowerment plays a critical role in maintaining balance. Respondent 3 highlighted the importance of self-care in preventing burnout. Leadership, especially in nursing, can be demanding, and the emotional and physical toll can be high. An explanatory mixed-methods study involving nursing students across multiple institutions found that engagement in organizational roles, self-awareness, and structured planning significantly enhanced self-leadership, especially when students paused to reflect and assess their responsibilities (Seo et al.,2024)

Another key factor in achieving balance is prioritization. Respondent 4 pointed out that effective time management and identifying key tasks are crucial in managing multiple commitments. By prioritizing the most important responsibilities, a leader can stay focused on what matters most, ensuring that critical tasks—whether related to patient care, academic work, or leadership duties—are completed in a timely manner. This skill helps reduce the risk of procrastination and ensures that resources are used efficiently, this approach not only fosters productivity but also helps prevent burnout. For nursing students, prioritization is closely linked to innovation and self-regulation: a study found that strong time management disposition among undergraduates significantly predicted innovative behavior, mediated by increased academic self-efficacy and flow experience—highlighting that effectively managing priorities fosters creativity and performance Cai et al.,(2022).

Finally, empowerment through balance was discussed by Respondent 5, who underscored the importance of both time management and seeking support from others. By recognizing the need for help and working collaboratively with peers or colleagues, they are able to maintain a balanced approach to their leadership and academic responsibilities. Empowering oneself through balance involves acknowledging one's limits, seeking assistance when needed, and ensuring that all aspects of life—academic, professional, and personal—are in harmony. This reflects a collaborative leadership approach, where team support and mentorship are crucial for sustaining balance and preventing burnout.

Theme 2: Nursing Experience that Shapes Leadership

The experiences gained in nursing not only enhance clinical skills but also shape essential leadership qualities critical in healthcare settings. These experiences enable individuals to develop the ability to think critically, communicate effectively, build empathy and resilience, manage time efficiently, and work collaboratively within teams.

One key trait developed through nursing experience is critical thinking. Respondent 1 highlighted the importance of being able to make quick, informed decisions in both academic settings and leadership roles. Emphasizes that critical thinking is essential for clinical judgment, prioritization, and navigating complex healthcare environments (Papathanasiou et al., 2020).

Communication is another skill that is consistently emphasized as fundamental to leadership. Respondent 2 shared how the ability to communicate effectively with team members and other leaders is crucial for guiding a group toward success. Whether it's coordinating care or managing a team of healthcare professionals, clear and open communication ensures everyone is aligned and working toward the same goal. Respondent 5 further reinforced this point by stressing that communication is indispensable in both nursing and leadership contexts, recent studies highlight that strong communication among nurses and leaders is directly linked to improved

patient outcomes, increased team cohesion, and better organizational performance (Berman et al., 2021).

Equally important in shaping a strong leader is the development of empathy and resilience. Respondent 3 pointed out that empathy is central to nursing as it fosters deeper connections with patients, while resilience ensures one can navigate the challenges and pressures inherent in healthcare work. Studies highlight that leadership development among nursing students should intentionally include emotional intelligence training to strengthen their empathy and resilience, which are key attributes of effective nurse leaders (Abelha et al., 2020).

Time management is another skill that comes into sharp focus in the nursing profession. Respondent 4 reflected on how nursing experience helped them view time not just as a series of moments but as a valuable resource that needs to be managed carefully. Efficient use of time is essential in healthcare, where decisions and actions often need to happen quickly. Good time management ensures that leaders can balance multiple responsibilities and meet the needs of both their team and their patients. Time management training enhances leadership potential among nursing students, helping them prioritize tasks, reduce stress, and improve academic and clinical performance (Alzayyat et al., 2020).

Finally, the role of communication within teams is pivotal. Effective communication within teams enables the sharing of ideas, concerns, and solutions, which fosters a collaborative, supportive work environment. In nursing leadership, the ability to ensure clear and open lines of communication among team members can make the difference between success and failure in patient care or leadership endeavors. Studies affirm that developing communication skills in nursing students is essential for preparing them to lead effectively, resolve conflicts, and promote team cohesion in both academic and clinical settings (Regan et al., 2020).

Theme 3: Skills or Qualities that are Essential in Leadership

Effective leadership in nursing requires a diverse set of skills and qualities that not only help a leader manage their responsibilities but also inspire and guide others. The respondents highlighted several key attributes, such as open-mindedness, communication skills, adaptability, emotional awareness, and optimism, that are essential for successful leadership.

A core skill emphasized by multiple respondents is the ability to communicate effectively. Respondent 2 stressed that communication is crucial for building a dynamic team, where every member understands their role and can collaborate efficiently. As a leader, being able to convey ideas clearly, listen attentively, and encourage open dialogue is essential. Respondent 4 similarly pointed out that communication is vital in nursing, especially since nurses often face complex and changing scenarios. In such settings, a leader must ensure that information flows smoothly and that the team is well-informed and aligned. Communication is recognized as one of the key leadership skills in healthcare, studies support this view, highlighting that communication training significantly enhances leadership development among nursing students by improving teamwork, reducing clinical errors, and promoting confidence in decision-making (Göransson et al., 2021).

Another vital quality for leadership is openness to possibilities. Respondent 1 emphasized the importance of being open-minded, suggesting that a good leader must be receptive to new ideas and know when to listen and when to speak. A leader who is open to the contributions of others fosters an inclusive environment where all team members feel valued, which ultimately enhances collaboration and creativity. This openness also helps leaders adapt to new challenges and learn from experiences, making them more effective in their roles. Cultivating openness and flexibility in nursing students enhances their leadership development, critical reflection, and readiness for complex clinical environments (Reyes et al., 2022).

Adaptability is also essential in leadership, particularly in nursing, where situations can change rapidly. Respondent 3 highlighted the importance of being able to adjust to new environments and challenges. Adaptability is not just about changing one's approach but also about being attuned to the emotions of others in such dynamic situations. Leaders in nursing need to remain flexible in the face of changing patient conditions, staffing issues, or

unexpected challenges while maintaining composure and guiding their teams through uncertainty. Studies promoting adaptability and self-awareness in nursing students significantly enhances their leadership capabilities and prepares them to handle unpredictable clinical scenarios with confidence and emotional intelligence (Alquwez, 2020). Emotional awareness complements adaptability and communication skills. Understanding and managing one's emotions, as well as being empathetic to the emotions of others, helps leaders maintain positive working relationships and manage stress more effectively. By being emotionally intelligent, a leader can better understand team dynamics, resolve conflicts, and offer support when necessary, ensuring that the work environment remains productive and respectful. Studies further shows that nursing students with higher levels of emotional intelligence demonstrate stronger leadership potential, better stress management, and improved interpersonal relationships in clinical and academic settings (Codier et al.,2022).

Finally, a positive, optimistic outlook can greatly impact leadership effectiveness. Respondent 5 suggested that an optimistic leader can motivate others by seeing the bright side of any situation. This optimistic mindset not only helps the leader stay resilient during tough times but also inspires the team to stay focused and motivated. Optimism can help mitigate stress, foster a sense of hope, and encourage a solution-oriented approach to challenges. Recent studies affirm that fostering optimism in nursing students contributes to the development of effective leadership traits, supports psychological resilience, and improves their readiness to lead in challenging clinical environments (Kaya et al., 2022). Optimistic leadership has been linked to increased productivity, better team dynamics, and higher levels of employee engagement.

Theme 4: Inspiring Peers on Leadership Roles

Inspiring peers to take on leadership roles involves not just motivating others, but also actively engaging with them, demonstrating commitment, and fostering a culture of collaboration. The respondents shared various ways in which they inspire and encourage their peers to get involved in leadership roles and activities, each emphasizing different aspects of leadership such as empowerment, commitment, leading by example, and experience-sharing.

One key strategy in inspiring peers is student involvement and engagement. Respondent 1 emphasized the importance of actively inviting peers to join activities and letting them experience leadership roles firsthand. By engaging others in meaningful activities, leaders can give their peers the opportunity to explore their own potential and recognize the value of leadership. This approach not only empowers others but also helps build a more inclusive and collaborative environment, where everyone feels they have a stake in the success of the group. Recent research supports this, indicating that structured engagement opportunities in nursing programs—such as student organizations, peer mentoring, and leadership workshops—significantly enhance nursing students' leadership identity and willingness to take on leadership roles (Ortiz, 2021).

Respondent 2 described how they stay actively involved in events and organizational activities as a way to demonstrate commitment. By showing dedication to their responsibilities and engaging in various activities, they set an example for others. This level of involvement encourages others to also commit, creating a culture of mutual support and shared purpose within the group. When peers see someone actively participating and demonstrating passion, they are more likely to be inspired to follow suit and take on leadership roles themselves. More recent evidence confirms that nursing students who consistently engage in academic and extracurricular leadership activities model behaviors that enhance peer motivation, cultivate leadership identity, and build team accountability (Kronk et al., 2020).

Another critical aspect of leadership is being an inspirational role model. Respondent 3 highlighted the importance of leading by example to inspire others to engage and collaborate. By fostering a culture of active participation and openness to ideas and suggestions, leaders can encourage others to contribute their thoughts and take ownership of projects. This creates a more dynamic, inclusive environment where everyone feels their voice matters. A leader who practices transparency and inclusivity helps peers see leadership as a collective effort, not just an individual responsibility. Research affirms that nursing students who adopt transformational leadership behaviors—such as modeling excellence, encouraging input, and promoting shared vision—positively influence

their peers' engagement and leadership development (Kim et al., 2021).

Respondent 4 further elaborated on the idea of leading through action, emphasizing that true leadership is not just about giving orders, but about demonstrating the behaviors that you want others to emulate. Dedication, hard work, and a positive attitude can set a strong foundation for others to feel motivated and inspired to follow the leader's example. When peers witness their leader's commitment and consistency, they are more likely to be inspired to step up and take on leadership roles themselves. Research highlights that when nursing students take initiative and consistently model professional behaviors, they influence their peers' engagement and willingness to assume leadership roles, reinforcing the value of experiential and action-based leadership development (Benner et al., 2020).

Finally, experience-based leadership was highlighted by Respondent 5, who shared that telling personal stories and experiences can serve as a powerful tool for inspiring peers. By sharing how fulfilling and rewarding it is to lead or to participate in group activities, leaders can provide insights into the real-world impact of leadership. These stories can help others relate to the leader's journey, making leadership feel more attainable and motivating others to take on similar roles. Research showing that when nursing students engage in reflective storytelling and share leadership experiences, it strengthens authenticity, builds confidence, and promotes peer motivation to engage in leadership opportunities (Manning et al., 2021).

Theme 5: Embraces Change and Growth

Embracing change and growth is a vital characteristic of effective leadership, particularly in dynamic environments like nursing and education. The ability to lead through change, inspire others to grow, and actively foster an atmosphere of transformation is essential for creating positive shifts within organizations. The responses from the participants illustrate different facets of leadership that encourage change—whether it's through personal growth, social engagement, or organizational transformation.

One key theme is advocacy for transformation. Respondent 1 shared an example of how leadership can foster personal transformation within individuals. A once quiet and reserved person now feels comfortable expressing their thoughts and is no longer isolated. This is a powerful reminder of how leadership can encourage self-expression and openness, helping individuals break out of their shells and grow into more confident versions of themselves. Such changes are often indicative of a broader shift in organizational culture, where inclusivity and communication are valued and promoted. Recent studies support this, showing that when nursing students are encouraged to take on leadership roles, they experience significant personal and professional growth, developing greater confidence, communication skills, and a sense of advocacy for both themselves and others (Cummings et al., 2020).

Respondent 2 highlighted the role of a positive change advocate, describing how previously disengaged individuals are now more inclined to participate in school activities, such as sports events. This shift represents the leader's ability to inspire engagement and promote positive transformations in a community. By creating opportunities for participation and encouraging involvement, leaders can help individuals realize their potential and become more active contributors to the organization. This reflects how leadership can turn passive members into active, engaged participants, ultimately benefiting the entire community. Research emphasizes that nursing students who demonstrate inclusive leadership behaviors and provide engagement opportunities foster greater participation and peer empowerment within academic and clinical environments (Ten et al., 2020).

A social change leader also plays a crucial role in fostering improvements not just within the organization but also in broader societal contexts. Respondent 3 emphasized how individuals, who once remained silent and did not offer suggestions, are now more open and willing to contribute ideas. This change occurred as they felt their voices were being valued and heard. Such transformation is driven by a leader who actively creates space for others to share their ideas, empowering people to feel that their perspectives matter and that they can help shape the direction of the organization. Research shows that when nursing students are trained in transformational and

participative leadership approaches, they are more likely to promote inclusive dialogue, empower peers, and drive positive social change in both academic and clinical settings (Im et al., 2021).

Commitment to engagement is another theme highlighted by Respondent 4, who spoke about the importance of actively participating in various events and activities. Leaders who are committed to engagement not only show up themselves but also encourage others to get involved. This participatory approach helps create a culture of shared responsibility and collaboration, where everyone feels motivated to contribute their time, skills, and energy to the group's success. This kind of leadership fosters a sense of belonging and shared purpose, which is crucial for driving collective growth. Research supports that when nursing students demonstrate active engagement and foster peer participation, it strengthens leadership identity and enhances collaborative culture in academic and clinical environments (Dyess et al., 2019).

Finally, the concept of being an evolutionary individual who actively embraces change and growth was shared by Respondent 5. They pointed out that change often comes when individuals are encouraged to voice their thoughts and are influenced by leaders who are not afraid to speak up themselves. By leading through influence and example, leaders can instill a growth mindset in others, helping them embrace change rather than fear it. This is particularly important for fostering a culture of continuous improvement and personal development, where individuals feel empowered to evolve and take ownership of their growth. Studies shows that promoting leadership development rooted in self-awareness, adaptability, and empowerment among nursing students contributes to a stronger readiness to lead and respond to the dynamic demands of modern healthcare (Rosser et al., 2020).

4.3 Lessons can be Applied to Future Nursing Practice and Leadership Roles within the Healthcare Setting

Theme 1: Legacy of Caring Leadership

This aligns with recent research by Berman et al. (2021), which highlights that clear communication improves patient outcomes and enhances collaborative efforts among healthcare providers. Additionally, adaptability is vital in navigating the complexities of patient care. Being open to feedback and improvement reflects a commitment to continuous growth and innovation. Studies confirm that cultivating a growth-oriented, reflective mindset among nursing students enhances their leadership readiness and promotes innovation in clinical decision-making (Kim et al., 2021). This mindset fosters an environment where improvement is valued and pursued.

Active listening is a critical skill for leaders aiming to empower others. The respondent highlights the significance of genuinely engaging in listening to enhance individuals' capabilities. According to recent studies, active listening promotes trust, strengthens interpersonal connections, and supports the personal and professional development of team members. For nursing students, this practice is particularly valuable in fostering empathy and creating psychologically safe environments where peers feel heard and supported (Widarsson et al., 2020).

The idea that leadership is about influencing and inspiring change in the lives of others encapsulates the essence of caring leadership. The respondent's quote reflects a profound understanding of leadership as a relational process. Recent literature supports that incorporating servant leadership training into nursing education encourages students to adopt a people-centered leadership style that enhances team morale, trust, and peer collaboration (Neville et al., 2021).

The philosophy of prioritizing the needs and well-being of others over personal gain is central to a legacy of caring leadership. The respondent's focus on humility and being a "kapwa tao" (fellow human) illustrates the importance of empathy in leadership. Research emphasizes that empathetic leadership not only supports team cohesion and emotional safety but also enhances students' ability to lead ethically and inclusively within diverse nursing environments (Ali et al., 2022).

Theme 2: Visionary Nursing Leadership

Visionary leadership in nursing is crucial for the advancement of both healthcare systems and the professionals within them. The ability to guide a team towards continuous learning, inspire the next generation of healthcare workers, and prioritize patient-centered care are central themes that emerged from the responses of the participants. Each respondent highlighted their aspirations and the qualities they aim to embody as they work toward shaping the future of nursing leadership. Recent research affirms that visionary leadership in nursing students fosters a forward-thinking mindset, builds resilience, and equips them to become change agents in complex healthcare environments (Rosser et al., 2020).

Preparing to take on a pivotal role in educating and training healthcare professionals is a vital aspect of nursing leadership. The respondent expresses a desire to become a clinical instructor, inspired by the experiences shared by current educators. This aligns with the concept of expert nursing practice, where experienced nurses transition into educational roles to share their knowledge and expertise with the next generation. Recent studies confirm that student nurses who engage in mentorship and teaching opportunities early in their education develop stronger leadership identities and teaching aspirations (Reid et al., 2021).

Dedication to promoting patient welfare and rights is essential in nursing leadership. The respondent highlights the importance of influencing healthcare policies and educating patients to achieve optimal functioning. This reflects the core values of patient-centered care, which prioritize the needs and rights of patients while advocating for their well-being. Current evidence reinforces that leadership training among nursing students should emphasize advocacy, policy engagement, and ethical decision-making to uphold patient-centered values (Kagan et al., 2022).

Aspirations to take on leadership roles within healthcare settings illustrate the respondent's vision for their career. By envisioning themselves as a clinical instructor, they demonstrate a commitment to guiding future nurses. This aligns with the concept of succession planning in nursing, where experienced professionals mentor and prepare emerging leaders for future roles. Recent studies support the importance of integrating succession planning into nursing education, emphasizing early leadership identity formation and mentorship as key to sustainable leadership pipelines (Anders et al., 2020).

The pursuit of opportunities for growth and development in leadership skills is essential for advancing within the nursing profession. The respondent expresses their ambition to rise to higher positions, such as chief nurse. This aligns with the idea of career progression, where continuous education and professional development are critical for achieving leadership roles. Current research highlights that nursing students who engage in structured leadership development programs and ongoing education are more confident in pursuing executive-level roles and contributing to organizational improvement (Kostovich et al., 2021).

Theme 3: Establishing Trust and Relationship

Effective leadership is deeply rooted in the ability to establish trust and build meaningful relationships. Respondents in this discussion highlighted the critical importance of mutual respect, influence, and personal fulfillment as foundational elements for fostering strong connections and creating an environment where leadership thrives.

Respondent 1 emphasized that leadership is about building trustworthy relationships, where trust is the cornerstone for effective collaboration. By cultivating trust, leaders can inspire others to follow their guidance and work towards shared goals. The key idea expressed was that trust is not simply about reliability, but about creating connections where both the leader and their team can influence each other. This dynamic relationship fosters a shared sense of purpose, wherein everyone benefits from the collective effort. Leadership is not just about directing; it's about engaging others in a way that inspires mutual respect and sets the foundation for a cooperative and goal-oriented team. By leading by example, a leader demonstrates integrity, which in turn

encourages others to follow suit, thus reinforcing the trust at the core of the group's success. Studies confirm that **trust-based leadership** among nursing students supports team cohesion, enhances peer collaboration, and improves overall leadership effectiveness (Ali et al., 2020).

Respondent 2 introduced an essential component of leadership: the ability to find joy in your pursuits. She described how leadership can be challenging, but when a leader enjoys what they are doing and aligns their actions with their own values and passions, the work becomes more fulfilling. When a leader derives happiness and satisfaction from their role, it not only makes their responsibilities easier but also radiates positivity to the team. This sense of enjoyment helps to build trust and goodwill within a group, as team members can sense the authenticity and passion of their leader. A leader who enjoys what they do is more likely to inspire others and create a work environment that is both productive and emotionally rewarding. This joy in leadership strengthens relationships because it reflects a genuine commitment to the collective success and well-being of the group. Research supports that positive emotional engagement among nursing students in leadership roles boosts relational energy, motivation, and team morale (Foster et al., 2021).

Both respondents highlight that leadership is not just about taking charge but about creating an environment of mutual respect, trust, and fulfillment. Trustworthy relationships are essential for encouraging open communication and cooperation, and when a leader genuinely enjoys their work, it enhances their ability to inspire and lead with authenticity. Leading by example is a powerful way to establish credibility and trust. The respondent's emphasis on modeling behaviors that encourage others to follow showcases the role of ethical leadership in influencing team dynamics. Research indicates that leaders who demonstrate integrity and transparency inspire similar behaviors in their followers, creating a culture of accountability and mutual respect (Alilyyani et al., 2022).

The ability to influence others is a key aspect of effective leadership. The respondent notes that through trustworthy relationships, leaders can set goals that benefit everyone involved. This aligns with the concept of transformational leadership, where leaders inspire and motivate followers to achieve shared objectives. Current studies confirm that transformational leadership among nursing students strengthens teamwork, boosts motivation, and enhances group outcomes through trust-building and goal alignment (Kim et al., 2020). Deriving happiness and fulfillment from leadership activities is vital for sustaining motivation and engagement. The respondent emphasizes that enjoying the leadership journey makes challenges easier to navigate. This aligns with research on positive psychology, which suggests that leaders who find joy in their roles are more resilient and effective. Recent evidence in nursing education shows that cultivating positive emotional experiences and meaning in leadership roles enhances perseverance, creativity, and team cohesion (Su et al., 2021).

5. Conclusions and recommendations

This study's findings offer a clearer understanding of the following conclusions: Regarding the first research question this study shows nursing experience lays a strong foundation for developing effective leadership. Core competencies such as critical thinking, empathy, communication, resilience, and time management enable nurses to evolve from skilled caregivers into capable leaders. These attributes, when nurtured, equip nurses to inspire their teams and improve patient outcomes. Leadership roles within nursing programs, whether through peer representation, resource management, or clinical organization, all share common themes of responsibility, empowerment, and collaboration. These early leadership experiences help nursing students transition smoothly into professional environments, ready to manage complex tasks while fostering a culture of teamwork and compassion. In response to the second research question strong nursing leadership encompasses emotional intelligence, adaptability, and the ability to make decisions under pressure. It is more than directing—it's about uplifting, supporting, and communicating with authenticity. Leadership that balances academic, clinical, and personal responsibilities does so through time management, prioritization, self-care, and seeking support when needed. Such balance not only maintains productivity but also encourages personal growth and professional excellence. Effective leaders lead by example, inspire others through shared experiences, and cultivate an

atmosphere of cooperation and trust, empowering peers to take on leadership roles themselves. In relation to the last research question the future of healthcare relies on visionary and caring nursing leaders who embrace lifelong learning, promote change, and prioritize relationship-building. These leaders motivate through humility, active listening, and a commitment to growth—for themselves and their teams. By fostering trust and modeling dedication, they influence both individuals and systems, ultimately shaping a healthcare culture rooted in empathy, excellence, and collaboration. Whether through mentorship, education, or advocacy, future nursing leaders are poised to bring lasting improvements to patient care and inspire generations of compassionate, effective caregivers.

Based on the conclusions derived from the study's findings, several recommendations are proposed by the researcher: Encourage Open Communication and Transparency. Leaders need to encourage open and honest communication with their teams in order to establish trust. Establishing a culture where all members feel heard and understood can greatly improve collaboration and transparency. Leaders need to be accessible so that team members feel free to share ideas, feedback, and concerns. Lead by Example. Leaders must always exhibit the behaviors and values that they want from their teams. Leading by example establishes the level of professionalism, integrity, and commitment. It contributes to the creation of trust and credibility among team members. Foster Mutual Respect and Influence. Leaders must foster a culture where influence goes both ways—leaders influencing their teams, and team members influencing the leader. Fostering mutual respect and recognizing the input of all team members builds relationships and creates a collaborative culture. Embed Personal Fulfillment and Passion in Leadership Positions. Leaders ought to enjoy their work and find fulfillment in their positions because such authenticity can positively influence their teams. If leaders are passionate about what they do, they will motivate others to also derive meaning from their tasks, hence improve performance and a positive organizational culture. Offer Leadership Development Support. Leaders must invest in leadership development and mentoring programs to assist upcoming leaders with skills in building relationships, communication, and trust. Strong leadership pipeline is critical for fostering a healthy and productive organizational culture. Foster Emotional Intelligence and Empathy. Emotional intelligence (EQ) is vital to building trusting relationships. Leaders must be taught to identify and regulate their own emotions and also be sensitive to the emotions of others. Empathy creates solid bonds in teams and increases trust. Foster a Supportive and Pleasurable Work Culture. An enjoyable, positive, and fulfilling workplace is vital to maintain motivation and interest. Leaders need to seriously foster a work culture that enhances collaboration, creativity, and support. Future researchers can add other potentially variables to extend this research.

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Ecumenical spiritual practices among nurses: Towards strengthening the integration of spiritual care in hospital setting

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Abstract

This study explored ecumenical spiritual practices among nurses as a foundation for strengthening the integration of spiritual care in the hospital setting. This study utilized a descriptive-correlational research design and conducted in the three selected hospitals in Isabela. An adopted survey questionnaire was administered to 55 nurses. Frequency, percentage, mean and chi-square test were used to statistically analyze the gathered data. The findings of this study indicate that nurses consistently practice and value the importance of spiritual care across multiple dimensions. This infers a strong commitment among nurses to integrate spiritual care into their practice, highlighting its significance in holistic healthcare. In addition, the findings suggest that ecumenical spiritual practices among nurses are not significantly influenced by demographic variables such as sex, age, educational attainment, religion, and workload. This implies that the practice of ecumenical spirituality transcends individual demographic differences and may instead be shaped by external factors such as institutional culture, workplace policies, availability of spiritual care resources, professional training, and other factors. The findings underscore the need for standardized tools, focused training programs, and institutional policies to enhance nurses' ability to recognize and address patients' spiritual needs comprehensively and consistently. Additionally, healthcare facilities should prioritize creating accessible spaces for spiritual care, institutionalizing supportive practices, and providing resources to cater to diverse spiritual requirements.

Keywords: ecumenical, spiritual practices, holistic nursing care

Ecumenical spiritual practices among nurses: Towards strengthening the integration of spiritual care in hospital setting

1. Introduction

A person's self-perception shapes his life greatly in terms of not just physical and psychological but also spiritual well-being. Holistic health acknowledges that, especially in cases of medical conditions, coping mechanisms and general health depend on spiritual demands which are natural. Patients who have physical issues can struggle with concerns of meaning, faith, and purpose, so spiritual and religious considerations are very important to their healing process. Lack of spiritual well-being can cause a reduced hope and negatively impact quality of life. In recent years, there has been a growing emphasis on holistic patient care, with organizations like the World Health Organization (WHO) promoting a model that integrates physical, mental, social, and spiritual dimensions of health. Recent studies have reinforced the significance of spiritual care in improving patient outcomes, particularly in palliative and critical care settings (Balboni et al., 2022). However, despite this recognition, integrating spiritual care into nursing practice remains a challenge. Research highlights that while healthcare professionals acknowledge the importance of spiritual well-being, they often face barriers such as lack of training, time constraints, and ambiguity in addressing patients' spiritual needs (Ramezani et al., 2021).

This research paper aims to explore the ecumenical spiritual practices among nurses. It focuses on how nurses can incorporate spiritual practices—such as prayer, meditation, and spiritual counseling—into care plans to enhance patient-centered care and improve health outcomes. By elucidating how a balanced nursing plan that includes spiritual interventions can contribute to patient well-being, this paper aims to provide a framework for integrating spiritual care into holistic nursing practices. The findings are intended to offer a foundation for future research, helping to better equip nursing professionals to address the diverse spiritual needs of their patients and enhance the overall effectiveness of patient care.

Objectives of the Study - This study aimed to determine the ecumenical spiritual practices of nurses in providing care among patients in selected hospitals in Isabela. Specifically, it sought to: (1) identify the profile of the respondents in terms of sex, age, educational attainment, school graduated, religion, and workload every shift; (2) determine the ecumenical spiritual practices of nurses in providing care in terms of general and specific manifestations in rendering spiritual care, recipients of spiritual care, venue and appropriate time for rendering spiritual care, relevance or meaning of spiritual care, and institutional support; and (3) assess whether there is a significant relationship between the nurses' ecumenical spiritual practices and their profile variables.

2. Methods

Research Design - The researcher employed a descriptive-correlational design to evaluate the ecumenical spiritual practices among nurses working in three selected hospitals in Isabela and establish its relationship to their profile variables. This research does not determine causation but offers insights into the strength and direction of relationships among variables. A descriptive-correlational design was suitable for the study as it sought to investigate and delineate the ecumenical spiritual practices among nurses, focusing on their characteristics and variances across several hospital environments. Furthermore, the researcher recorded these acts methodically within their context. This strategy enabled the researcher to examine the correlation between nurses' spiritual activities and their demographic factors. This strategy proved appropriate for discovering and quantifying the strength and direction of correlations without variable manipulation.

Study Site and Participants - This study was conducted in the province of Isabela, focusing on nurses employed in three selected hospitals, including both private and government institutions. The participants

consisted of nurses currently working at these hospitals. The objective was to assess the ecumenical spiritual practices of nurses in delivering holistic nursing care. This examination helped determine how well these spiritual practices were incorporated into the overall approach to patient care in the selected healthcare settings.

Population, Sample Size, and Sampling Method - The population of the study consisted of 55 nurses in three selected hospitals in Isabela (Hospital A=25, Hospital B=15, and Hospital C=15). A total enumeration sampling method was used to include all nurses currently employed at these hospitals. Total enumeration guarantees data collection from every individual or unit within the population, yielding a comprehensive dataset. This methodology is especially vital when the population is limited, or everyone's viewpoint is essential to the study's aim.

Research Instrument - The researcher used a survey questionnaire for data collection. The questionnaire was adopted from the study titled "Integration of Ecumenical Care Practices in Providing Holistic Care for Patient." This was consisted of 58 structured subscale items, all framed in a declarative format and grouped into seven domains related to the ecumenical spiritual practices in nursing care: 1. General Manifestation in Rendering Spiritual Care (4 items); 2. Specific Manifestation in Rendering Spiritual Care (14 items); 3. Recipients of Spiritual Care (10 items); 4. Venue for Rendering Spiritual Care (4 items); 5. Appropriate Timing for Rendering Spiritual Care (6 items); 6. Relevance and Meaning of Spiritual Care (10 items); and 7. Institutional Support (10 items). The questionnaire employed a four-point Likert scale for responses: 4: Strongly Agree – indicated that the nurse consistently practiced spiritual care as outlined in the tool; 3: Agree – reflected that the nurse frequently practiced spiritual care in alignment with the tool's guidelines; 2: Disagree – showed that the nurse rarely practiced spiritual care as described; and 1: Strongly Disagree – suggested that the nurse did not practice spiritual care or did so infrequently.

Data Gathering Procedure - The researcher followed a systematic approach to conduct the study. Permission to conduct the research was first secured from the selected hospitals in Isabela, specifically through the office of each hospital administrator. Once approval was obtained, the researcher prepared the primary data-gathering tool—a questionnaire. This adopted instrument was reproduced according to the total number of respondents, with informed consent forms attached to each copy. The questionnaires were then distributed to the identified respondents, who were nurses working in the three selected hospitals. Distribution was done face-to-face to allow for questions and clarifications, and to encourage full participation. The purpose of the study was clearly explained, and respondents were asked to sign the informed consent forms. Given the number of items in the questionnaire, nurses were allowed up to one week to complete it. The researcher conducted regular follow-ups and reminders to ensure timely completion. Clear instructions were provided on the deadline for submission, and additional reminders were issued to promote prompt return of the questionnaires. The completed questionnaires were kept secure to maintain confidentiality and ensure that only authorized personnel had access to the data. Finally, the collected responses were carefully tabulated and analyzed. Appropriate statistical tools were used with the assistance of a qualified statistician to interpret the data and derive meaningful conclusions.

Data Analysis - The following statistical measures were employed in the study to analyze the gathered data. Frequencies and percentages were used to determine the profile of the respondents, specifically in terms of sex, age, educational attainment, school graduated, religion, and workload per shift. To assess the nurses' ecumenical spiritual practices, the mean was utilized, covering aspects such as general and specific manifestations in rendering spiritual care, recipients of spiritual care, venue and appropriate timing for rendering spiritual care, the relevance or meaning of spiritual care, and the institutional support available. A 4-point Likert scale served as the basis for analyzing and interpreting these responses. Additionally, the Chi-Square Test was applied to identify any significant relationship between the nurses' spiritual care practices and their profile variables.

Ethical Considerations - The researcher ensured that respondents' identities were kept confidential and not disclosed to anyone outside the research team. This commitment to confidentiality encouraged participants to

share their thoughts and opinions more freely, knowing that their responses would be protected. Also, the researcher carefully weighed the potential benefits and risks associated with any necessary manipulation or deception. If deception was used, participants were fully debriefed at the end of the study, and any misleading elements were clarified. This ensured that respondents were informed about the study's true nature and purpose, and any questions or concerns they had were addressed. In addition, the researcher took full responsibility for safeguarding participants from any form of harm, including emotional distress, mental stress, embarrassment, or discomfort. The study was conducted in a way that ensured no negative impact on the participants' professional development, personal well-being, or mental health. There was an implementation of strict measures to protect data from unauthorized access, misuse, or inappropriate disclosure. Data were securely stored and handled to prevent tampering, improper deletion, or destruction. The results were presented and shared in a manner that respected the integrity and confidentiality of the information collected.

3. Results and discussion

Table 1

Distribution of the Respondents According to Their Demographic Profile

Sex	Frequency	Percentage
Male	13	23.6
Female	42	76.4
Age	Frequency	Percentage
20-25 years old	11	20.0
26-30 years old	7	12.7
31-35 years old	12	21.8
36-40 years old	12	21.8
41-45 years old	4	7.3
46-50 years old	3	5.5
51-55 years old	6	10.9
Educational Attainment	Frequency	Percentage
Bachelor's Degree	47	85.5
Masteral Units	4	7.3
Masteral Degree	4	7.3
School Graduated	Frequency	Percentage
Private Sectarian (Catholic/Christian)	34	61.8
Private Non-sectarian	14	25.5
Government (College/University)	7	12.7
Religion	Frequency	Percentage
Catholic	39	70.9
Born Again	6	10.9
Methodist	6	10.9
Baptist	2	3.6
Muslim	2	3.6
Workload Every Shift - Patients Each Shift	Frequency	Percentage
Approximately 5 to 10	20	36.4
Approximately 11 to 20	24	43.6
More than 20	11	20.0
Workload Every Shift - Time of Shift	Frequency	Percentage
8-10 hours	25	45.5
10-12 hours	22	40.0
More than 12 hours	8	14.5

As reflected in Table 1, regarding sex, the majority of respondents, 42 or 76.4%, identify as females, while males make up 13 or 23.6% of the total respondents. Regarding the age categories, respondents range from 20 to 55. Most of the respondents, 12 or 21.8%, are ages 31-35 and 36-40, respectively. The second most common age group is 20-25, representing 11 or 20% of respondents. On the other hand, the age group of 46-50 years old has the lowest frequency of 3 or 5.5%.

Additionally, 47 or 85.5% of respondents are bachelor's degree holders. This is followed by master's graduate and master's units, which constitute 4 or 7.3% of the total. Regarding the school graduated category, 34 or 61.8% graduated in private sectarian. This is followed by 14 or 25.5% of graduates from private non-sectarian

schools. Lastly, only 7 or 12.7% of graduates are government college/university graduates. In terms of their religion, the majority of the respondents are Catholic, which constitutes 39 or 70.9% of the respondents. Meanwhile, there is only 2 or 3.6% that constitutes Baptist and Muslim. Lastly, the table shows that 24 or 43.6% of the respondents have approximately 11 to 20 hours of workload every shift (number of patients per shift). 25 or 45.5% of respondents have 8-10 hours of shift.

Table 2*Ecumenical Spiritual Practices of Nurses in terms of General Manifestation in Rendering Spiritual Care*

Items	Mean	Interpretation
1. During admission, I ask my patients' religion.	3.75	
2. I observe the presence of religious items in my patients, such as rosary beads and Buddha beads. Bible, etc.	3.31	Practice/ concur with the opinion on spiritual care at all times.
3. I utilize the Checklist/Assessment tool related to spiritual needs (if applicable).	3.22	
4. I render spiritual care as an expression of the hospital's mission and vision (if applicable).	3.51	
Category Mean	3.45	

As revealed in Table 2, they always practice the following about general manifestation in rendering spiritual care: asking about their patients' religion during admission ($M=3.75$), rendering spiritual care as an expression of hospital mission and vision ($M=3.51$), and observing the presence of patients' religious items ($M=3.31$). On the other hand, they often practice utilizing checklist/assessment tools related to spiritual needs. With a category mean of 3.45, this implies that the nurses always practice spiritual aspects in rendering care to the patients. This means that nurses regularly integrate spiritual elements into patient care, including noting the existence of religious objects, recognizing patients' religious affiliations, and coordinating their practices with the hospital's mission and vision. This illustrates their dedication to holistic care and attending to spiritual and physical requirements. By providing spiritual care in line with the hospital's mission and vision, nurses demonstrate that they align with the organization's objectives and reaffirm the significance of spirituality as a fundamental aspect of patient care.

As shown in Table 3, nurses always practice all the indicated items. Specifically, item 4, "I maintain an open mind and heart for individual's religious practices," got the highest mean of 3.73. This is followed by item 4, "I provide privacy by giving patients and relatives space for prayer," with a mean of 3.73. On the other hand, the following got the lowest scores: I am sincere about my patient's concern, e.g., requesting confession before the operation ($M=3.38$), and I document my spiritual care in the nurse's notes ($M=3.36$). Although rated low, they still practice these at all times. With a category mean of 3.55, this indicates that the nurses always practice specific manifestations in rendering spiritual care to the patients. This implies that nurses should first consider patients' different spiritual views and practices. This suggests that nurses should consider patients' diverse spiritual beliefs and behaviors. This suggests a patient-centered strategy intended to increase comfort and self-assurance in the therapeutic environment. The relatively lower ratings for sincerity in addressing spiritual issues (e.g., requests for confession) and recording spiritual care point to areas where nurses may improve their work even more. Although these are still regularly followed, more training or better policies may provide chances for development. The general good evaluations show that nurses regularly use spiritual care, promoting comprehensive patient treatment.

Table 3*Ecumenical Spiritual Practices of Nurses in terms of Specific Manifestation in Rendering Spiritual Care*

Items	Mean	Interpretation
1. I respond promptly to requests on spiritual matters, e.g. Priests/pastors/counselors services (anointing, receiving communion, blessings).	3.47	
2. I offer silent prayers when at home, especially to those terminally ill.	3.49	
3. I utilize -therapeutic-communication" questions, e.g., "W/hat would you like to talk about?"; "What's bothering you?"	3.51	Practice/ concur with the opinion on spiritual care at all times.
4. I provide privacy by giving patients and relatives space for prayer.	3.73	
5. I respect dietary preferences based on one's faith, e.g. as a Muslim, Jehovah, or Adventist. (if Applicable)	3.71	
6. Part of spiritual care is empathizing with the patient.	3.65	
7. I maintain an open mind and heart for individual's religious practices.	3.76	

8. I listen attentively to my patient's stories.	3.56
9. I anticipate the need for spiritual intervention, e.g., anointing, communion, blessing, pray-over.	3.40
10. Spiritual care is part of the nurses' daily care.	3.53
11. I am sensitive to non-verbal cues, e.g., silence, facial grimaces.	3.62
12. I pray before any diagnostic and therapeutic procedure.	3.56
13. I am sincere about my patient's concern, e.g., requesting confession before the operation.	3.38
14. I document my spiritual care in the nurse's notes.	3.36
Category Mean	3.55

Dealing with the found areas for growth will help increase the quality and efficacy of spiritual care, guaranteeing that all facets of patients' spiritual needs are fully satisfied. As reflected in Table 4, nurses consistently agree with the view on spiritual care in all the listed statements. With a mean of 3.80, item 4, "A patient in the OR (Operating Room)/undergoing surgery needs spiritual attention," clearly got highest. Item 2, "The critically ill and dying most frequently need spiritual care," with a mean of 3.76 comes next. Patients in pain need spiritual attention (M=3.53), while patients who are psychologically unwell, e.g., depressed, suicidal, confused, need spiritual attention (M=3.36), earned the lowest scores. Though rated low, they constantly engage in these activities. With a category mean of 3.67, this indicates that nurses strongly associate spiritual care with critical or life-threatening situations. The result reflects their awareness of the heightened need for emotional and spiritual support during these vulnerable moments. Also, it suggests a potential gap in recognizing the importance of spiritual attention in non-critical situations. Although nurses often participate in these activities, the lower mean scores point to a chance to emphasize the need of spiritual care for mental and emotional health equally. The results also highlight the need of including spiritual care into every patient's regular treatment, not only those of acute or critical state. This can help ensure that patients with psychological or emotional challenges receive adequate spiritual support.

Table 4*Ecumenical Spiritual Practices of Nurses in terms of Recipients of Spiritual Care*

Items	Mean	Interpretation
Patients who are psychologically ill, e.g., depressed, suicidal, confused, need spiritual attention.	3.36	Practice/ concur with the opinion on spiritual care at all times.
The critically ill and dying most frequently need spiritual care.	3.76	
Palliative care and hospice patients need spiritual care.	3.71	
A patient in the OR (Operating Room)/ undergoing surgery needs spiritual attention.	3.80	
Patients who received bad laboratory results, e.g., cancer, need spiritual care.	3.71	
Patients in pain need spiritual attention.	3.53	
All patients, including well patients, need spiritual care.	3.71	
Patients who are losing hope, e.g., HIV victims and cancer patients, need spiritual care.	3.75	
Happy and grateful patients, e.g., patients for discharge, need spiritual care.	3.73	
Abused patients, e.g., battered wife/child, need spiritual attention.	3.67	
Category Mean	3.67	

Table 5*Ecumenical Spiritual Practices of Nurses in terms of Venue for Rendering Spiritual Care*

Items	Mean	Interpretation
Spiritual care can be given anywhere if there is privacy.	3.64	Practice/ concur with the opinion on spiritual care at all times.
A silent and peaceful environment for meditation and prayer is a place for spiritual care.	3.73	
Spiritual care can be rendered in a patient's room	3.65	
Spiritual care is preferably done in the chapel/prayer room of the institution.	3.47	
Category Mean	3.62	

Table 5 illustrates that nurses consistently agree with the view on spiritual care in all the listed statements. As reflected, item 2, "A silent and peaceful environment for meditation and prayer is a place for spiritual care," clearly got highest. Item 3, "Spiritual care can be rendered in a patient's room," with a mean of 3.65 comes next. Moreover, item 1 "Spiritual care can be given anywhere if there is privacy," got a mean score of 3.62. On the other hand, item 4 "Spiritual care is preferably done in the chapel/prayer room of the institution" with a mean of

3.47 got the lowest.

With a category mean of 3.62, this emphasizes the need to set aside specific areas for spiritual healing in medical establishments. Such surroundings can improve the nature of spiritual contacts and give patients and relatives comfort and connection. The high ratings for spiritual care in a patient's room or any other private setting demonstrate how adaptable nurses are in meeting patients' spiritual needs regardless of their environment. This flexibility is necessary to ensure that all patients receive spiritual care, even those unable to travel to designated venues like chapels or prayer rooms. The comparatively low rating for spiritual care in prayer rooms or chapels suggests that these locations may not be as necessary for offering spiritual care as other locations. This may indicate a preference for faster, patient-focused environments, practical challenges, or ignorance. The findings further emphasize how vital solitude and peaceful environments are for providing effective spiritual care. Fostering deep spiritual connections depends on these parameters being met in patient rooms or other venues.

Table 6

Ecumenical Spiritual Practices of Nurses in terms of Appropriate Time in Rendering Spiritual

Items	Mean	Interpretation
1. Spiritual care is rendered when the patients request for it, e.g., to receive anointing.	3.47	Practice/ concur with the opinion on spiritual care at all times.
2. Spiritual care is appropriately done when the patient is calm and willing to listen.	3.73	
3. Spiritual care is given to patients in their lowest moments.	3.75	
4. Spiritual care is given every time nurses interact with the patients.	3.55	
5. Spiritual care is given when an emergency procedure is to be done with unknown outcomes.	3.69	
6. Spiritual care is given in the morning as a daily routine.	3.60	
Category Mean	3.63	

Table 6 shows that nurses consistently agree with the view on spiritual care on the following: Spiritual care is given to patients in their lowest moments (M=3.75); Spiritual care is appropriately done when the patient is calm and willing to listen (M=3.73); Spiritual care is given when an emergency procedure is to be done with unknown outcomes (M=3.69); Spiritual care is given in the morning as a daily routine (M=3.60); Spiritual care is given every time nurses interact with the patients (M=3.55); and Spiritual care is rendered when the patients request for it, e.g., to receive anointing (M=3.47).

The overall mean of 3.63 indicates that nurses are highly conscious of the significance of attending to patients' spiritual needs when they are most vulnerable. This emphasizes that spiritual care is essential or that psychological and emotional support is offered in trying or upsetting times. The significance of timing and patient receptiveness is highlighted by the high mean score for spiritual care when the patient is at ease and open to listening. This implies that nurses understand the importance of providing spiritual care. The emphasis on spiritual care during emergency treatments with unknown outcomes shows its function in giving consolation and confidence in stressful, life-altering situations. When it is most significant and effective for the patient, this aligns with the holistic approach to nursing care, which addresses physical and emotional well-being. A dedication to incorporating spirituality into the typical nursing work-flow is shown by offering spiritual care as part of a daily routine and throughout every patient encounter. This regular integration guarantees that spiritual care is always accessible and not situation-specific.

As reflected in Table 7, item 7, "Spiritual care is respecting patients as human beings with heartedness," clearly got the highest mean of 3.80. It is followed by item 3, "Spiritual care allows patients to practice their faith/beliefs," with a mean of 3.76. Moreover, item 5, "Spiritual care prepares patients to accept their illness/condition," got a mean score of 3.75. On the other hand, items 2 and 9, "Spiritual care is done through counseling and using therapeutic communication," and "Integrating spirituality, like saying prayers, is a daily routine of healing in nursing," with a mean of 3.69, the lowest.

Table 7*Ecumenical Spiritual Practices of Nurses as to Relevance/Meaning of Spiritual Care*

Items	Mean	Interpretation
1. Spiritual care is based on the patient's religion. Beliefs and faith.	3.71	Practice/ concur with the opinion on spiritual care at all times.
2. Spiritual care is done through counseling and using therapeutic communication.	3.69	
3. Spiritual care allows patients to practice their faith/beliefs.	3.76	
4. Spiritual care is a priority aspect of holistic nursing care.	3.71	
5. Spiritual care prepares patients to accept their illness/condition.	3.75	
6. Spiritual care is compassion.	3.73	
7. Spiritual care is respecting patients as human beings with heartedness.	3.80	
8. Spiritual care is assured when patients have a positive attitude towards their illness.	3.71	
9. Integrating spirituality, like saying prayers, is a daily routine of healing in nursing	3.69	
10. Taking care of patients with empathy is spiritual care.	3.73	
Category Mean	3.73	

With a category mean of 3.73, this indicates that compassion and empathy play a crucial part in spiritual care. This emphasizes how vital it is to treat patients respectfully and acknowledge their inherent worth, as this promotes comfort and trust in the nurse-patient interaction. The significant degree of agreement with the claim that spiritual care helps patients exercise their faith and beliefs shows the nurses' dedication to providing a friendly environment for various spiritual manifestations. This is consistent with holistic treatment, which addresses the spiritual component of health and physical and psychological needs. The high mean score for the role of spiritual care in patients' acceptance of their illness or condition underlines its relevance for promoting psychological health and emotional resilience. This suggests that spiritual care is necessary for helping patients to overcome the challenges of their medical route. Given the comparatively low scores for therapeutic communication and spiritual care through therapy, there may be room for improvement. Nurses can be better equipped to have meaningful conversations with patients about their spiritual needs and concerns if they receive training and education.

It can be gleaned from table 8 that item 1, "The availability of the chapel/prayer room as a place of worship is necessary for spiritual care," got the highest mean of 3.67. It is followed by item 2, "Provision of institutional assessment tools is integrated in spiritual care," with a mean of 3.53. Moreover, item 3, "Daily blessing of patients from religious sisters/priests is a spiritual care component," got a mean score of 3.49. On the other hand, items 4 and 8, "A built-in speaker placed in each room for accessibility to hearing daily mass is essential for spiritual care," and "The provision of religious leaflets to patients augments spiritual care," with mean scores of 3.31 and 3.36, respectively.

Table 8*Ecumenical Spiritual Practices of Nurses as to Institutional Support*

Items	Mean	Interpretation
1. The availability of the chapel/prayer room as a place of worship is necessary for spiritual care.	3.67	Practice/ concur with the opinion on spiritual care at all times.
2. Provision of institutional assessment tools is integrated in spiritual care.	3.53	
3. Daily blessing of patients from religious sisters/priests is a spiritual care component.	3.49	
4. A built-in speaker placed in each room for accessibility to hearing daily mass is essential for spiritual care.	3.31	
5. Stipulation of Spiritual Care in FDAR (Focus Data Action Response) documentation is part of spiritual care.	3.44	
6. Spirituality imparted to all nursing staff through integration in culture and sensitivity seminar given by the HR is crucial in spiritual care.	3.47	
7. A checklist is utilized in assessing spiritual needs upon admission (if applicable)	3.42	
8. The provision of religious leaflets to patients augments spiritual care.	3.36	
9. Providing spiritual care through visitations and offering Christian songs helps patients. (if applicable)	3.42	
10. A chaplain is available to give needs such as anointing the sick, blessing, giving communion, etc.	3.45	
Category Mean	3.46	

A category mean of 3.73 signifies that compassion and empathy are essential components of spiritual care. This underscores the need of treating patients with respect and recognizing their intrinsic value, since this fosters comfort and trust in the nurse-patient relationship. The nurses' commitment to creating a welcoming space for different forms of spiritual expression is demonstrated by the high level of agreement with the claim that spiritual care assists patients in practicing their faith and beliefs. This aligns with the principles of holistic treatment, which take into account not only the physical and mental aspects of well-being but also the spiritual dimension. The significance of spiritual care in helping patients accept their disease or condition is shown by its high mean score, which indicates its value for developing emotional resilience and psychological wellness. This offers more proof that spiritual care is crucial for helping patients negotiate challenges they could encounter on their path of treatment. Therapeutic communication and spiritual care through treatment have somewhat low ratings, hence there could be opportunity for development. Nurses can be better equipped to have meaningful conversations with patients about their spiritual needs and concerns if they receive training and education.

Table 10

Chi-Square Test of Independence between the Nurse's Ecumenical Spiritual Care Practices and their Profile Variables

Level of Nurses Integration on Ecumenical Spiritual Care	χ^2	df	p-value
Sex	0.933	2	0.627
Age	3.573	12	0.329
Educational attainment	1.593	4	0.810
School Graduated	3.039	4	0.551
Religion	7.914	8	0.442
Workload Every Shift - Patients Each Shift	0.676	4	0.954
Workload Every Shift - Time of Shift	1.638	4	0.802

The Chi-Square test results indicate that there is no statistically significant relationship between the ecumenical spiritual care practices of nurses and their profile variables. The test results showed no significant relationship between the two variables, as all p-values are greater than the 0.05 significance level. Therefore, we must accept the null hypothesis at this significance level. Specifically, the analysis revealed that factors such as sex, age, educational attainment, and the schools from which the nurses graduated do not influence their ecumenical spiritual care practices. For example, the p-values for sex (0.627), age (0.329), and educational attainment (0.810) all suggest a lack of significant correlation. Similarly, although the chi-square value for religion (7.914) was higher, the p-value of 0.442 indicates that religious affiliation does not significantly impact how nurses incorporate spiritual care into their practice. With p-values of 0.954 and 0.802, respectively, workload variables—including patient count per shift and shift timing—also showed no meaningful correlations. These results imply that personal beliefs and practices rather than demographic or professional factors probably influence the integration of spiritual care among nurses. This underscores the idea that spiritual care can be embraced across diverse backgrounds and experiences within the nursing profession.

4. Discussion

Spiritual care is essential to holistic nursing because it considers patients' emotional, mental, and spiritual well-being. This study's results tell us a lot about how nurses currently provide spiritual care, how they think about it, and the problems they face. This combines the study's findings with other research, showing where they agree and disagree and what this means for nursing practice, education, and policymaking.

I. Profile of the Respondents

The demographic profile of nurses in this study highlights essential aspects that influence their ecumenical spiritual care practices. Gender, age, educational background, workload, and religious beliefs shape the delivery of spiritual care. By acknowledging and addressing these factors, healthcare institutions can better support nurses in providing holistic care that recognizes the vital role of spirituality in the healing process. This alignment benefits patient outcomes and contributes to nurses' professional growth and satisfaction, fostering a more compassionate and effective healthcare environment.

The findings reflected a well-documented trend in the nursing profession. This gender disparity, as noted by Buchan et al. (2019), is a global phenomenon where women dominate the field. The implications of this are multifaceted; female nurses often bring unique perspectives and approaches to patient care, which can enhance holistic and spiritual care delivery. The age distribution shows that most nurses fall within the 20-35 age bracket. This demographic is typically characterized by a willingness to adopt innovative practices, including holistic approaches to care. Bournes (2020) highlights that younger nurses are often more open to integrating modern methodologies into their practice. This receptiveness is crucial for the successful implementation of ecumenical spiritual care, as younger nurses may prioritize patient-centered approaches that recognize the importance of spirituality in healing.

In addition, the majority of the respondents hold a Bachelor's degree, and the educational background of the nursing staff is promising. Higher educational attainment in nursing is associated with improved patient outcomes and the capability to integrate complex care practices (Benner et al., 2010). This level of education indicates that the nurses are equipped with the knowledge and skills necessary to incorporate spiritual care into their holistic practice, potentially enhancing the overall quality of care. The data indicates that many nurses reported handling 11 to 20 patients per shift, with nearly half working 8-10 hour shifts. These workload demands can pose significant challenges to the effective delivery of holistic care. Dall et al. (2015) emphasize that high patient loads often lead to burnout and diminished care quality, underscoring the need for adequate staffing and supportive environments. Addressing these workload issues is essential for enabling nurses to engage fully in spiritual care practices without compromising their well-being or that of their patients. The predominance of Catholic nurses suggests that personal beliefs may significantly influence their approach to spiritual care. Research by Puchalski et al. (2014) indicates that a nurse's faith can shape their interactions with patients and inform their practice.

II. Ecumenical Spiritual Practices

2.1 General Manifestation in Rendering Spiritual Care

The results revealed that nurses prioritize understanding their patients' religious beliefs, which is fundamental in providing holistic care. This practice demonstrates an awareness that spirituality can significantly impact health outcomes and patient experiences. According to Koenig et al. (2012), recognizing religious artifacts in a patient's environment can facilitate spiritual assessments and discussions, reinforcing the importance of a supportive care environment. This recognition helps nurses to validate and respect patients' beliefs, promoting emotional well-being. Spiritual assessment tools are often practiced, indicating a commitment to systematically addressing spiritual needs. However, the slightly lower score suggests that consistent application could be improved.

Holt et al. (2015) highlight that using standardized spiritual assessment tools is crucial for effectively identifying patients' spiritual needs. These tools can help healthcare providers deliver comprehensive care incorporating spirituality, ultimately improving patient satisfaction and health outcomes. Furthermore, nurses actively incorporate the hospital's mission and vision related to spiritual care into their practice. This connection reinforces the organizational commitment to holistic care. Benner et al. (2010) argue that a precise alignment between personal practice and organizational values is essential for promoting a culture of holistic care. When nurses feel that their spiritual care practices align with their institution's mission, they are more likely to engage deeply with their patients' spiritual needs.

The findings reflect nurses' strong commitment to practicing ecumenical spiritual care. The high mean scores indicate that nurses recognize the importance of spirituality in patient care and actively incorporate it into their practice. However, the data also highlight areas for further improvement, particularly in consistently applying spiritual assessment tools. By creating an environment that supports these practices and ensuring ongoing education, healthcare organizations can enhance the delivery of holistic, patient-centered care.

2.2 General Manifestation in Rendering Spiritual Care

The findings revealed a strong integration of specific ecumenical spiritual practices among nurses, highlighted by high mean scores across all items. This suggests that nurses understand the importance of spiritual care and actively engage in practices that support patients' spiritual needs. Furthermore, nurses demonstrate a commitment to responding promptly to requests for spiritual services, such as anointing and blessings. This proactive approach is crucial for holistic care, as timely spiritual interventions can provide comfort to patients and their families during critical moments, thereby improving overall patient satisfaction (McCaffrey et al., 2012).

Additionally, nurses often engage in silent prayers for terminally ill patients, underscoring the significance of spirituality in end-of-life care and offering emotional support to both patients and their families. Coyle et al. (2010) highlight that effective communication is essential in spiritual care, enabling healthcare providers to understand and address the spiritual dimensions of patients' experiences. The findings also indicate that nurses prioritize creating private spaces for prayer, which is essential for respecting patients' spiritual practices. Research by Ferrell et al. (2016) suggests that providing such spaces enhances patients' spiritual well-being, allowing them to engage in meaningful rituals. Nurses also demonstrate awareness and respect for dietary restrictions based on patients' faiths. This practice shows cultural competency and respect for their beliefs. Hodge (2017) states that honoring dietary preferences is crucial for providing holistic care, positively impacting patients' spiritual and emotional well-being.

Overall, the findings reflect a strong commitment among nurses to integrate specific spiritual care practices into their daily routines. The high mean scores across all items demonstrate a holistic approach that addresses patients' spiritual needs. However, there is a need to focus on improving the documentation of spiritual care, ensuring that these vital practices are recognized and supported within healthcare settings. By continuing to foster an environment that values and integrates spiritual care, healthcare organizations can enhance the quality of patient care and contribute to a more compassionate and holistic healing process.

2.3 Recipients of Spiritual Care

Empathizing with patients and being sensitive to non-verbal cues indicates that nurses recognize the importance of emotional intelligence in spiritual care. Benner et al. (2010) assert that empathy and attentiveness to non-verbal communication are essential for nurses to deliver effective spiritual care. However, documenting spiritual care shows a need for improvement in recording these practices. While nurses are engaged in spiritual care, consistent documentation is crucial for maintaining continuity and quality of care. Holt et al. (2015) argue that documenting spiritual care ensures that these needs are recognized and addressed throughout the patient's healthcare journey.

Generally, the findings reflect a strong commitment among nurses to integrate specific spiritual care practices into their daily routines. The high mean scores across all items demonstrate a holistic approach that addresses patients' spiritual needs. However, there is a need to focus on improving the documentation of spiritual care, ensuring that these vital practices are recognized and supported within healthcare settings. By continuing to foster an environment that values and integrates spiritual care, healthcare organizations can enhance the quality of patient care and contribute to a more compassionate and holistic healing process.

2.4 Venue for Rendering Spiritual Care

The data indicates that nurses have a strong consensus regarding the venues for delivering spiritual care. This suggests that nurses believe spiritual care is integral to patient well-being and can be effectively administered in various settings, including patient rooms and peaceful environments. The importance of a silent and quiet environment highlights the need for tranquility during spiritual practices. This aligns with the literature emphasizing that environments conducive to meditation and reflection significantly enhance the quality of

spiritual care (Koenig, 2012).

The strong agreement that spiritual care can be rendered in a patient's room suggests that nurses recognize the importance of accessibility in delivering holistic care. Research indicates that familiar environments can alleviate anxiety and promote healing (Seymour et al., 2017). Nurses' ability to integrate spiritual care into daily interactions in patient rooms can strengthen the nurse-patient relationship, enhancing trust and emotional support (Dossey et al., 2016). Although the mean score for the preference for spiritual care in a chapel or prayer room is lower than other items, it still indicates recognition of specialized spaces for spiritual practices. This finding aligns with the perspective that designated spaces for spiritual reflection can provide patients with a more profound sense of peace and connection (Baldacchino, 2006).

The overall findings demonstrate a robust integration of spiritual practices among nurses. The data shows a strong consensus among nurses regarding the venues for spiritual care. The mean scores indicate that nurses believe spiritual care can be provided effectively in various settings, emphasizing the importance of privacy, a peaceful environment, and the possibility of providing care directly in patient rooms. The preference for a chapel or prayer room is acknowledged but slightly less in agreement than other venues. Overall, the category mean reflects a solid agreement with integrating spiritual care practices in their nursing roles.

2.5 Appropriate Time in Rendering Spiritual Care

The results showed that nurses know the suitable moments for offering spiritual care. This demonstrates a persistent conviction that spiritual care is vital and should be included in several phases of patient contact. The highest mean score for offering spiritual care during patients' lowest points shows that one understands the need to attend to spiritual needs during crises.

Conversely, tending to patients when calm and ready to listen emphasizes the need for patient receptivity in spiritual care. The result that every nurse-patient interaction incorporates spiritual care points to a comprehensive approach to nursing care. This reflects the developing knowledge that spiritual care should not be a separate activity but a component of nurses' regular contact with patients (Dossey et al., 2016). A high score for offering spiritual care during an emergency emphasizes nurses' vital role in attending to the spiritual needs of patients confronted with uncertainty. Studies show that spiritual care can help patients manage anxiety and worry and offer comfort and support in trying circumstances (Koenig, 2012). Giving spiritual care in the morning as part of a daily ritual shows the need to realize that spiritual care is necessary for nursing. Regular spiritual care might help patients feel stable and consistent (Baldacchino, 2006).

Overall, the results show that nurses are sensitive to the need for timing in delivering spiritual care by recognizing moments of need, readiness, and routine interaction. This enables the effective integration of spiritual practices into their treatment, improving the overall support given to patients.

2.6 Relevance/meaning of Spiritual Care

The results indicate a strong consensus among nurses regarding the importance and significance of spiritual care in nursing practice. Each aspect illustrates a solid understanding of how spiritual care relates to patients' beliefs, emotional support, and holistic nursing. The highest mean score for respecting patients as human beings shows that nurses prioritize the dignity and individuality of each patient. This finding aligns with research that emphasizes the importance of recognizing a patient's inherent worth as fundamental to effective spiritual care (Dossey et al., 2016). In contrast, the lowest mean score related to using counseling and therapeutic communication suggests that while nurses recognize the importance of dialogue in delivering spiritual care, there is room for improvement. Overall, the findings demonstrate that nurses possess a profound understanding of the significance of spiritual care in their practice. By emphasizing respect for patient beliefs, the value of therapeutic communication, and the integration of compassion and empathy, nurses show their commitment to providing holistic care that addresses the spiritual needs of their patients.

2.7 Institutional Support

The results highlight the role of institutional support in integrating ecumenical spiritual practices in nursing care. Nurses agreed on the importance of various institutional resources and practices facilitating spiritual care. The highest mean score indicates that nurses see the chapel or prayer room as essential for spiritual care. This aligns with literature suggesting that dedicated spaces for spiritual reflection can significantly enhance patients' spiritual experiences (Baldacchino, 2006). While the score for having a built-in speaker for daily mass is the lowest, it still acknowledges the importance of making spiritual resources accessible to patients. The findings demonstrate that nurses recognize the importance of institutional support in delivering effective spiritual care. Nurses can enhance their patients' spiritual well-being by valuing resources such as dedicated spaces, assessment tools, and religious support, reinforcing spirituality's integral role in holistic nursing practice.

III. Test of Significant Relationship Between the Ecumenical Spiritual Practices of Nurses and their Profile

The findings suggest that ecumenical spiritual practices among nurses are not significantly influenced by demographic profile variables such as sex, age, educational attainment, religion, and workload. This indicates that ecumenical spiritual practices may be more related to or attributed to other external factors associated with the nurses' profiles. The strong recognition of spiritual care's relevance and meaning reflects an evolving understanding of holistic nursing. The findings support the notion that spiritual care is not merely an adjunct to physical care but a fundamental aspect of holistic nursing practice. While the results showed no significant correlations between institutional support and spiritual practices, the nurses' acknowledgment of the necessity of supportive resources—like prayer rooms, assessment tools, and chaplain services—highlights an area for potential development. Institutions promoting spiritual care resources may enhance nurses' ability to deliver such care effectively. This aligns with the literature suggesting that institutional culture and resources significantly impact nurses' capacity to provide holistic care (Dossey et al., 2016).

5. Conclusions and recommendations

In light of the findings, the following conclusions are drawn: Most respondents are female, which aligns with the global trend of nursing being a predominantly female profession. The age group of 31-35 years suggests a population with sufficient professional experience to understand the importance of spiritual care. The educational attainment of bachelor's degree holders reflects a strong foundation in nursing education, equipping respondents with the knowledge and skills to incorporate spiritual care into their practice. Their graduation from private sectarian (Catholic-Christian) institutions and their Catholic faith may further enhance their understanding and application of spiritual care, as these institutions often emphasize values-based education and holistic care. In addition, managing 11-20 patients per shift and working 8-10 hours indicates a demanding environment. This demographic profile suggests that their personal, educational, and professional backgrounds collectively influence their capacity and willingness to engage in ecumenical spiritual practices within the hospital setting. The findings indicate that nurses consistently practice and value the importance of spiritual care across multiple dimensions. This infers a strong commitment among nurses to integrate spiritual care into their practice, highlighting its significance in holistic healthcare. By addressing the implications of these findings, healthcare institutions can foster a supportive environment that improves both patient outcomes and nurses' job satisfaction. The findings suggest that ecumenical spiritual practices among nurses are not significantly influenced by demographic variables such as sex, age, educational attainment, religion, and workload. This implies that the practice of ecumenical spirituality transcends individual demographic differences and may instead be shaped by external factors such as institutional culture, workplace policies, availability of spiritual care resources, professional training, and other factors.

Based on the conclusions mentioned above, the following recommendations are derived and suggested for possible implementation: The less frequent use of checklists or evaluation instruments for spiritual needs

suggests room for development. By means of standardized tools, nurses may methodically recognize and meet patients' spiritual requirements, guaranteeing consistency and comprehensiveness in the provision of spiritual care. The results highlight the need for focused professional development programs, including seminars or training courses, to support documentation integration into daily nursing care and the relevance of sincerity in spiritual contacts. The results emphasize the need for focused training programs to improve nurses' competencies in spotting and attending to spiritual requirements across a wider spectrum of patient situations, particularly for individuals suffering psychological discomfort. While encouraging the freedom to deliver treatment in patient rooms or other private areas, healthcare facilities should also consider improving or establishing specific venues for spiritual care, such as meditation rooms or silent areas. Policies and rules can help guarantee that these areas are open and encourage many spiritual needs. Particularly in high-stakes or emergency situations, hospital and nursing managers might use these insights to create training programs that improve nurses' capacity to recognize and meet spiritual needs. Furthermore, institutionalizing this practice involves developing procedures for regular spiritual care delivery. The findings will help the hospital create initiatives that highlight the need for respect and compassion in spiritual care and offer counseling methods and therapeutic communication training. Policies supporting the regular incorporation of spiritual activities also help guarantee consistency in the provision of treatment. The hospital should prioritize maintaining easily accessible chapels or prayer rooms and ensure they are ready to satisfy patients' spiritual needs and those of their families. The hospital should develop and apply spiritual care evaluation instruments to enable nurses to meet spiritual needs. Religious blessings or similar practices can be institutionalized as optional components of care, respecting the diverse faiths of patients. Providing resources like religious leaflets and exploring alternative ways to make spiritual content (e.g., online or recorded services) accessible could enhance spiritual care offerings.

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Knowledge management infrastructure capabilities, management information system efficiency and organizational performance: Basis for higher education institution's sustainable competitive advantage framework

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Abstract

The purpose of this paper is to create a framework for Higher Education Institution's sustainable competitive advantage. The determining factors used were knowledge management infrastructure capabilities, management information system and organizational performance. A total of 265 respondents accomplished the research instrument with a Cronbach Alpha Value of 0.83 making it reliable for the study. In interpreting the data, the statistical tools employed were frequency percentage, ranking, weighted mean, Shapiro-Wilk Test, Spearman rho. Based on the findings, selected institution has high knowledge management infrastructure capability. The selected institution and has a high organizational performance with efficient Management Information System. Findings revealed that statistically significant relationship exists between knowledge management infrastructure capabilities and organization performance. There was also statistically significant relationship that exists between MIS efficiency and organization performance since all the obtained p-values were less than 0.01 which implies that efficient MIS led to better organizational performance. Thus, the development of an Institution's Sustainable Competitive Advantage Framework was recommended by the proponent for utilization of Higher Education Institutions.

Keywords: knowledge management, knowledge management infrastructure, capabilities, management information system, organizational, performance

Knowledge management infrastructure capabilities, management information system efficiency and organizational performance: Basis for higher education institution's sustainable competitive advantage framework

1. Introduction

In today's competitive world, knowledge has become the best indicator of survival for many institutions, recognizing employees as the knowledge owners and the most valuable asset of any organization. It is imperative in this situation to effectively handle knowledge by enhancing its capabilities. The capabilities of the Knowledge Management Infrastructure (KMI) are examined in relation to common knowledge, organization, technology, and culture. In the emerging knowledge economy, knowledge is a crucial strategic and competitive resource. It is impossible to overstate the value of knowledge, and educational institutions are no different from other corporate organizations regarding the importance understanding knowledge management for enhancing performance. Organizations can foster knowledge management if they possess these resources and conditions. KMI also includes elements that assist knowledge management (KM) efforts within organizations and give them a competitive edge.

Another factor that could affect the organizational environment is the efficiency of its Management Information System (MIS). Institutions require MIS to compete in the market and to earn more profit, invest in product innovation and grow their businesses. These elements became the cornerstone of the new business environment and changed information systems from being data processing systems to decision support systems (Khan, et al., 2020). There is a great deal of opportunity for enhancing organizational performance given the remarkable expansion of MIS. However, since MIS is a large investment for companies, management is under more pressure to demonstrate a return on investment by measuring the impact of MIS applications on performance. The problem of information security and technological expertise also poses a significant obstacle to the efficient use of MIS. In light of the previously given background, it is crucial to remember that neglecting the challenges of the implementation process may result in issues for the organization's whole MIS development and deployment process. Furthermore, it appears that a significant barrier to the MIS installation process is the absence of successful implementation. To ensure a successful implementation, the success elements must be identified and managed (Malobi, et al., 2019). An organization is also impacted by the adoption of MIS, and the effects are connected to the outcomes of business operations. As a result, while introducing a new MIS, a company must take this into careful consideration.

One more factor that could affect the business environment is organizational performance. The ability of an organization to manage and access a variety of organizational resources in order to accomplish its goals and objectives is known as organizational performance. Organizations are looking to new solutions, market expansion, and flexible growth prospects to promote organizational performance in the rapidly changing global markets characterized by intense rivalry and a dynamically changing environment (Bujang, et al., 2021). According to Masa'deh et al. (2019), the performance measurement system is essential for organizations because it assesses the attainment of organizational goals, helps build strategic plans, and gives information on the quality of operations inside the organization. The four perspectives - financial, customer, internal business, and innovation and learning - form the foundation of the elements.

Despite the increasing adoption of digital technologies and knowledge management strategies in HEIs, many institutions continue to face challenges in leveraging MIS for effective knowledge storage, sharing, and utilization (Hislop et al., 2021). The extent to which KMI capabilities and MIS efficiency influence organizational performance remains an area requiring further empirical investigation, particularly in HEIs where knowledge is a strategic asset (Chatterjee et al., 2020). Understanding this relationship is essential in designing a

sustainable competitive advantage framework that enables HEIs to remain adaptive, innovative, and resilient in a rapidly evolving educational landscape (Serenko & Bontis, 2022).

This study aims to examine the interplay between KMI capabilities, MIS efficiency, and organizational performance, identifying critical gaps and strategic opportunities for HEIs. The findings will serve as the foundation for developing a sustainable competitive advantage framework that can guide HEIs in optimizing their knowledge resources, digital infrastructure, and institutional strategies for long-term success.

The intention of the researcher as one of the faculty members of one university is to find out if the university, together with other universities in CALABARZON, are capable of stimulating the creation and sharing of knowledge within their organization since knowledge is the most valuable and strategic resource of an organization. At the same time, the researcher wants to find out if the university's management information system is efficient enough to have a quality information system and service that satisfy and make happy employees who will contribute to its organizational performance. Results of this study could be an added to the body of knowledge contributory to the formulation of competitive advantage framework focused on the three key variables.

This study aimed to determine the knowledge management infrastructure capabilities, management information system efficiency and organizational performance in selected universities in Batangas Province which formed basis for the development of Higher Education Institution's sustainable competitive advantage framework. Specifically, this study aimed to determine the knowledge infrastructure capability of selected private higher educational institutions in terms of technology, structure, culture, and common knowledge; assess the MIS efficiency in terms of information quality, system quality, service quality, usefulness and employee satisfaction; described the organizational performance in view of customer related, internal business, employee learning and growth and perceptual financial; tested the significant relationship of knowledge management capability and MIS efficiency to organizational performance and finally, developed a Higher Education Institutions' Sustainable Competitive Advantage Framework.

2. Methods

Research Design - This study determined and conceptualized how knowledge management and management information system efficiency impacts the organizational performance. In order to do this, researcher employed a descriptive and quantitative research designs to address the objectives and to be able to formulate a model involving the variables of knowledge management, management information system and organizational performance. The study utilized a quantitative approach through statistical analysis to develop a model among the said variables. Quantitative procedures was used to test the relationship among knowledge management capabilities, management information system and organizational performance. Descriptive research design was employed in this study for an adequate and precise interpretation of the findings.

Participants of the Study - Participants of the study were college faculty members from Lyceum of the Philippines University-Batangas, Lyceum of the Philippines University-Manila and Lyceum of the Philippines University-Cavite. Participants must be working for more than six months in the institution. The total population of selected private university is 848, with a margin error of 5% and 95% level of confidence. Raosoft recommended size was 265 respondents.

Instruments - The researcher used an adapted questionnaire for data gathering instrument as it has a higher validity. It has three parts which includes the following:

Part 1. Questions measuring knowledge management infrastructure capability was adopted from the study of Fampo (2020) entitled "Knowledge Management Capabilities, Organizational Innovation and Performance of Selected Private Educational Institutions in Batangas." Four components were assessed under the organization's knowledge management infrastructure capability namely technology, structure, culture, and common knowledge.

Five questions were provided to measure technology component of the organization. There were also five questions to measure organizational structure including rules, policies, procedures, hierarchy and boundaries designed to support effective knowledge management flow and activities. Organizational culture was measured using five questions which particularly indicate knowledge sharing culture and five questions for common knowledge.

Part 2 Management information system efficiency was determined using the questionnaire adapted from the CSM survey used by LPU-B. It has four components such as information quality, system quality, service quality, usefulness and employee satisfaction all of each dimension including five questions each.

Part 3 Organizational Performance were measured using the questions from the study of Fampo (2020). A four-item scale to measure organizational performance were utilized with four constructs. These constructs involved questions assessing organizational performance in terms of financial, customer related aspect of organizational performance looks into how the organization invest its resources to build a strong relationship with its customers. There were seven questions to be used in measuring the internal business perspective of the organizational performance. Learning and growth perspective involves activities that deal with how a firm learns, improves, and innovates to meet its objectives. A total of seven questions were provided to measure this aspect of organizational performance while there were four questions for perceptual financial perspective.

The researcher ran a pilot test in order to determine the validity and reliability of the adopted questionnaires which have a Cronbach Alpha result of: Under knowledge management infrastructure capabilities; Information Technology (0.846), Organizational Structure (0.925), Organizational Culture (0.836) and Common knowledge (0.759): While under MIS Efficiency; Information Quality (0.903), System Quality (0.928), Service Quality (0.968), Usefulness (0.976) and User Satisfaction (0.941): Moreover, under Organizational Performance; Customer perspective (0.961), Internal Business Process Perspective (0.935), Learning and Growth (0.862) and Financial Perspective (0.831).

Table 1
Summary of Test Reliability

Indicators	Cronbach Alpha	Remarks
Common knowledge	0.759	Acceptable
Customer perspective	0.961	Excellent
Information Quality	0.903	Excellent
Information Technology	0.846	Good
Organizational Culture	0.836	Good
Organizational Structure	0.925	Excellent
Service Quality	0.968	Excellent
System Quality	0.928	Good
Usefulness	0.976	Excellent
User Satisfaction	0.941	Excellent
Internal Business Process Perspective	0.935	Excellent
Learning and Growth	0.862	Good
Financial Perspective	0.831	Good

Data Gathering Procedure - The researcher sought assistance from her adviser for the validation of the questionnaire. Validation was done to check whether the questionnaire accurately reflects the constructs or variables being measured. It ensured that all relevant topics were covered and that irrelevant items were removed. Respondents were requested to engage fully and provided accurate answers if the questions are clear and meaningful. After the validation, the researcher proceeded gathering data from thirty respondents and run the pilot test on October 2022. After the validity and reliability were determined, a letter of approval was sent to the research directors of the selected higher educational institution to seek their permissions regarding the study. After approval, the researcher proceeded with the data gathering by administering the survey to the and faculty members face to face through questionnaire print outs and by sending them the link for the google form in their emails and messenger account. A cover letter was included in the instrument which explained the purpose of the

study and informed them to accomplish the instrument in their most convenient time and to be retrieved within a week. A 4-point Likert scale was used to determine the responses of the employees on the constructs of knowledge management infrastructure capability, management information system efficiency and organizational performance. After 2 months, 265 responses were completed. Data were tallied, interpreted and analyzed.

Ethical Considerations - An informed consent form was provided to the respondents to fully explain to them the purpose of the study. Participation in the study was made voluntary; thus, respondents were allowed to decide whether or not they will answer the survey questionnaire. The researcher assured respondents of the confidentiality of the information shared by the respondents. Responses were also presented in aggregate and no individual answers were shown. All information gathered was strictly used only for the purpose mentioned.

Data Analysis - Weighted mean and rank were used to determine the knowledge management infrastructure capability in terms of information technology, organizational structure, organizational culture and common knowledge, determine the MIS efficiency in terms of information quality, system quality, service quality, usefulness and employee satisfaction; describe the organizational performance in view of; customer's perspective, internal business perspective, learning and growth and financial perspective. The result of Shapiro-Wilk Test showed that p-values of all variables were less than 0.05 which means that the data set was not normally distributed. Therefore, Spearman rho was used to test the significant relationship as part of the non-parametric tests. All analyzes were performed using SPSS version 28. Responses on the variables were presented in terms of weighted mean results.

3. Results and Discussions

Table 2

Summary Table on Knowledge Management Infrastructure Capabilities

Key Result Areas	Composite Mean	VI	Rank
Information Technology	3.43	Agree	2
Organizational Structure	3.24	Agree	4
Organizational Culture	3.48	Agree	1
Common knowledge	3.29	Agree	3
Grand Composite Mean	3.36	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 2 indicates the summary table on knowledge management infrastructure capabilities with grand composite mean of 3.36 and verbally interpreted as agree. It implies that the systems are present and working, but they are not perceived as very strong or fully optimized. Organizational culture (3.43) verbally interpreted as agree ranks first. This indicates that respondents agree that the university's culture supports knowledge management practices. It is perceived by respondents as the strongest enabler of knowledge sharing and collaboration within the university. This high rating suggests that the university has cultivated an environment where trust, openness, collaboration, and shared values are present factors that are essential to successful knowledge management. A strong organizational culture fosters collaboration, trust, and shared values, which are critical in creating an environment where knowledge sharing thrives (Ugwu & Ejikeme, 2023). This is consistent with Al-Kurdi et al., (2020) who emphasized that organizational culture is a foundational enabler of knowledge management, especially in academic institutions where openness and teamwork are vital. Organizational structure received the lowest mean (3.24), indicating that structural elements such as hierarchy, departmental boundaries, and formal processes may be limiting knowledge flow across the institution. This reflects the challenges of siloed systems in academic institutions, where knowledge may be restricted to specific departments rather than shared across units (Almeida & Carvalho, 2021). A rigid structure can hinder collaboration and reduce opportunities for interdepartmental learning (Foss, et al., 2022).

Table 3 indicates summary table on MIS efficiency with grand composite mean of 3.39 and verbally interpreted as efficient. It suggests a balanced but modest level of effectiveness. It reflects that while the MIS is reliable and usable, further refinements such as enhanced functionality, faster performance, and deeper user

engagement could improve efficiency across all areas. Information Quality ranked the highest with a composite mean of 3.43, indicating that users find the information provided by the MIS to be clear, readable, relevant, and timely. Information quality is often seen as a key antecedent of user satisfaction. Measures of information quality include personalization, completeness, ease to understand, security, timeliness, availability, relevance, and format of contents delivered through the information systems. Thus, the quality of content or information may be an important reason for online users to perceive the usefulness of information systems and to have higher levels of satisfaction with using those information systems (Ge et al., 2023). System quality ranks lowest with a composite mean of 3.32, highlighting that users may have concerns about the system's technical aspects, such as response time, consistency, and interface design. This area often reflects the system's infrastructure and technical stability. A lower rating here suggests potential gaps in performance reliability or user interface usability that could negatively affect the overall experience. System quality is a significant determinant of user satisfaction with information systems in various studies (Kolasa et al., 2020). Thus, the more that system users believe the information systems will be reliable, available, and easy to use, the more they will use it.

Table 3*Summary Table on MIS Efficiency*

Key Result Areas	Composite Mean	VI	Rank
Information Quality	3.43	Efficient	1
System Quality	3.32	Efficient	5
Service Quality	3.42	Efficient	2
Usefulness	3.39	Efficient	3
User Satisfaction	3.36	Efficient	4
Grand Composite Mean	3.39	Efficient	

Legend: 3.50-4.00=Highly Efficient; 2.50-3.49=Efficient; 1.50-2.49=Less Efficient; 1.00-1.49=Not Efficient

Table 4*Summary Table on Organizational Performance*

Key Result Areas	Composite Mean	VI	Rank
Customer perspective	3.37	Agree	1
Internal Business Process Perspective	3.32	Agree	2
Learning and Growth	3.14	Agree	3
Financial Perspective	3.13	Agree	4
Grand Composite Mean	3.24	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 4 indicates summary table on organizational performance with grand composite mean of 3.24 and verbally interpreted as agree. This result implies that overall organizational performance is viewed positively by stakeholders but not strongly. This suggests that while the university's strategic initiatives across customer service, internal processes, learning and growth, and financial management are generally effective, they may not yet be perceived as fully meeting stakeholders' highest expectations. Customer Perspective (3.37) verbally interpreted as agree got the highest ranking. It suggests that stakeholders perceive the university as more successful in delivering quality service to students, alumni, and external partners. This aligns with recent studies emphasizing that higher education institutions increasingly prioritize external stakeholder satisfaction to remain competitive and maintain reputation (Hazelkorn, 2021). Investment in student services, alumni engagement, and external partnerships is often highly visible, which helps explain why respondents rated this area most favorably. Financial Perspective (3.13) verbally interpreted as agree, received the lowest composite means, suggesting this is relatively weaker area from respondents' viewpoints. Similarly, concerns about fair compensation and benefits reflect financial pressures often faced by institutions, especially when balancing budgets for research, community outreach, and employee welfare (Tight, 2020).

Table 5*Relationship Between knowledge management infrastructure capabilities and organizational performance*

Variables	rho-value	p-value	Interpretation
Information Technology			
Customer perspective	0.557	0.000	Highly Significant
Internal Business Process Perspective	0.569	0.000	Highly Significant
Learning and Growth	0.451	0.000	Highly Significant
Financial Perspective	0.424	0.000	Highly Significant
Organizational Structure			
Customer perspective	0.425	0.000	Highly Significant
Internal Business Process Perspective	0.405	0.000	Highly Significant
Learning and Growth	0.391	0.000	Highly Significant
Financial Perspective	0.372	0.000	Highly Significant
Organizational Culture			
Customer perspective	0.607	0.000	Highly Significant
Internal Business Process Perspective	0.507	0.000	Highly Significant
Learning and Growth	0.461	0.000	Highly Significant
Financial Perspective	0.392	0.000	Highly Significant
Common Knowledge			
Customer perspective	0.519	0.000	Highly Significant
Internal Business Process Perspective	0.564	0.000	Highly Significant
Learning and Growth	0.583	0.000	Highly Significant
Financial Perspective	0.495	0.000	Highly Significant

**, Correlation is significant at the 0.01 level

Table 5 depicts the relationship between knowledge management infrastructure capabilities and organizational performance. As seen in the table, the computed rho-value ranging from 0.372 to 0.607 indicating moderate to strong positive correlation. It shows that there was a statistically significant relationship exists between knowledge management infrastructure capabilities and organization performance since all the obtained p-values were less than 0.01. This implies that good knowledge management infrastructure capabilities lead to better organizational performance. The fact that all p-values were less than 0.01 confirms that these correlations are statistically significant, suggesting that the observed relationships are unlikely due to chance (Field, 2020). This strengthens the argument that investing in robust KM infrastructure is not just theoretically valuable but empirically linked to improved performance.

In his study, Singh, (2018) concluded that sustainable competition and long-term success could be achieved if emphasis to proper management of knowledge management is implemented together with the organizations core culture. Organizations need to nourish a culture that will motivate employees to share knowledge as a result of realizing their personal and organizational objectives. Similarly, a recent study found that organizational structure has a significant positive impact on organizational performance and shapes employee behavior by influencing work specialization and coordination mechanisms (Al-Hussaini et al., 2021). On the other hand, Abu et al., (2018) concluded that knowledge management is the main path to business growth. Thus, it is good to invest in knowledge management resources to attain organizational performance improvement, since knowledge management resources and practices are related directly and indirectly to it when they are implemented effectively. Furthermore, sustaining Knowledge management is essential to improve organization performance (Shahzad et al., 2020).

The findings presented in Table 6 reveal a strong and statistically significant positive relationship between Management Information System (MIS) efficiency and organizational performance across all dimensions of the Balanced Scorecard: customer perspective, internal business processes, learning and growth, and financial performance. The computed correlation coefficients, ranging from 0.340 to 0.750, indicate that as MIS efficiency increases—particularly in terms of information quality, system quality, service quality, usefulness, and user satisfaction—so does the performance of the organization. Efficient MIS enhances customer service, supports internal operational efficiency, fosters a learning-oriented culture, and contributes to better financial outcomes. These results are strongly supported by literature, affirming that well-designed and effectively implemented MIS is not only a technological asset but a strategic tool that drives competitiveness, innovation, and sustainability.

Table 6*Relationship Between MIS Efficiency and Organizational Performance*

Variables	rho-value	p-value	Interpretation
Information Quality			
Customer perspective	0.599**	0.000	Highly Significant
Internal Business Process Perspective	0.557**	0.000	Highly Significant
Learning and Growth	0.537**	0.000	Highly Significant
Financial Perspective	0.340**	0.000	Highly Significant
System Quality			
Customer perspective	0.656**	0.000	Highly Significant
Internal Business Process Perspective	0.611**	0.000	Highly Significant
Learning and Growth	0.575**	0.000	Highly Significant
Financial Perspective	0.521**	0.000	Highly Significant
Service Quality			
Customer perspective	0.497**	0.000	Highly Significant
Internal Business Process Perspective	0.548**	0.000	Highly Significant
Learning and Growth	0.513**	0.000	Highly Significant
Financial Perspective	0.446**	0.000	Highly Significant
Usefulness			
Customer perspective	0.683**	0.000	Highly Significant
Internal Business Process Perspective	0.750**	0.000	Highly Significant
Learning and Growth	0.634**	0.000	Highly Significant
Financial Perspective	0.563**	0.000	Highly Significant
User Satisfaction			
Customer perspective	0.552**	0.000	Highly Significant
Internal Business Process Perspective	0.669**	0.000	Highly Significant
Learning and Growth	0.604**	0.000	Highly Significant
Financial Perspective	0.507**	0.000	Highly Significant

** . Correlation is significant at the 0.01 level

Specifically, each MIS component plays a distinct yet interconnected role in improving organizational performance. Information and system quality were shown to be strongly correlated with enhanced customer satisfaction and streamlined operations. Similarly, service quality and system usefulness promoted employee development and financial optimization, while user satisfaction was linked to improved productivity and retention, ultimately boosting profitability. The study underscores the importance of continuous investment in MIS infrastructure, emphasizing that a well-functioning MIS ecosystem significantly contributes to holistic organizational growth and long-term success.

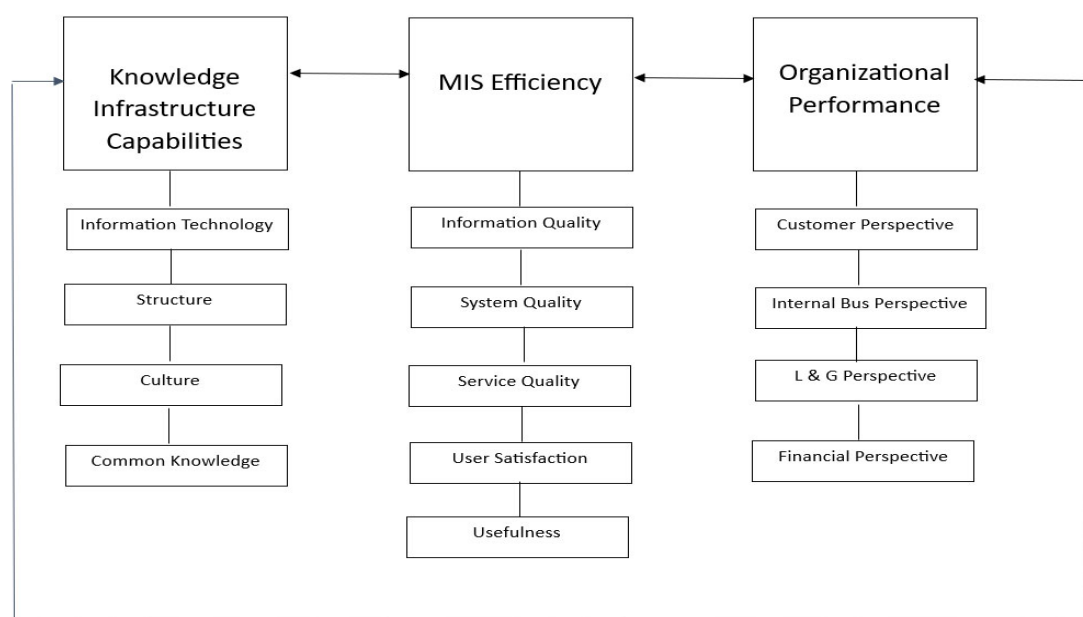


Figure 1. Higher Education Institution's Sustainable Competitive Advantage Framework

Based on the results of this study, knowledge management infrastructure capabilities, MIS Efficiency and organizational performance have a high significant relationship to each other. Most organizations have vast amounts of organizational knowledge, but this knowledge is only valuable for the business if used to make better and faster decisions. With the teaching personnel being the most important element in Higher Education Institutions, they are expected to be knowledgeable of their tasks, processes of the institution and a good communicator to the students and other stakeholders of the institution. If all that teaching required was the transmission of knowledge and competencies, teaching personnel could be replaced by a video specially in this technology age. But students need more, students as the customer and the main source of income of institutions need a guide, an adviser, and a role model. Teaching personnel having these duties should be supported by the institution with a rich culture, supportive managers, reliable information and good technology to be used in doing their task. Having efficient MIS, teaching personnel will be able to do their tasks efficiently and effectively through the integration of process and information technology which could motivate them to perform better. Satisfied teaching personnel is a potential loyal employee. Teaching personnel will be satisfied by fair salary and benefit, learning & growth opportunities and a good management. All these could result to a better employee performance that could lead to a better organizational performance.

4. Conclusions and recommendations

Majority of respondents demonstrates general agreement on knowledge management infrastructure capability across all dimensions of technology, structure, culture, and common knowledge. The respondents agreed that the implemented management information system is generally efficient. The selected private higher education institutions have been demonstrating good organizational performance across customer-related, internal business, employee learning and growth, and perceptual financial aspects. There was statistically significant relationship between knowledge management infrastructure capabilities, management information system and organization performance. A higher education institution sustainable competitive advantage framework was developed provide a practical and theoretically sound tool that empowers the institution to strategically navigate the competitive environment.

The institution may revisit the organizational structure in terms of the discovery and creation of new knowledge and design process. The institution may encourage the employees to report to MIS department about any delay and problem encountered with the system. MIS may also facilitate training to employees about simple troubleshooting as a refresher. The institution may conduct a survey to employees in regard with the possible benefits they need and the possibility of providing them to the employees. The institution may also review if the salary of the employees is enough compared to the tasks assigned to them since salary and benefits got the lowest rating. Based on these results HEIs may utilize the framework developed by the researcher to enhance their competitive advantage. For future studies, researchers may involve other stakeholders (administrative personnel, students and managers) to determine their perception on the knowledge management infrastructure capabilities, MIS efficiency and organizational performance of their institution.

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Metacognitive strategies, intercultural communicative competence, and language proficiency among Chinese vocational college students

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Abstract

This quantitative descriptive study assessed the metacognitive strategies, communicative competence and language proficiency of 425 college students in a vocational college in China. This research also determined the relationship between these constructs to propose an enhanced language program for students at Chinese vocational colleges. This research administered a researcher-made survey questionnaire during the first semester of school year 2024-2025. The data gathered were analyzed using descriptive statistics, t-test, ANOVA and Pearson correlation test. Findings revealed that the respondents exhibited very good level of metacognitive strategies. The overall communicative competence was rated highly across all areas and the respondents generally agreed on their competence, with reading scoring the highest and listening scoring the lowest. Additionally, strong positive correlations were found between metacognitive strategies and both communicative competence and language proficiency. Based on the findings, a comprehensive training program for Chinese vocational students is proposed to emphasize metacognitive strategy development, focusing on self-awareness, goal-setting, and planning. This program may enhance communicative competence by incorporating targeted activities to improve language proficiency across reading, writing, listening, and speaking.

Keywords: vocational college students, metacognition, metacognitive strategies, language proficiency, communicative competence

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1. Introduction

In the context of globalized education and increasingly diverse communication demands, the development of effective learning strategies and communicative competence has become critical for students in higher vocational institutions, particularly in non-native English-speaking contexts such as China. This study explores the interplay between metacognitive strategies, intercultural communicative competence (ICC), and language proficiency among Chinese vocational college students, aiming to understand how these variables contribute to successful language learning and communication in multicultural environments. Metacognitive strategies refer to higher-order thinking processes that enable learners to plan, monitor, and evaluate their learning activities. These strategies help students take control of their own learning by setting goals, selecting appropriate methods, and reflecting on outcomes (Zhang et al., 2021). In second language acquisition (SLA), metacognitive strategies are recognized as key predictors of language success, allowing learners to adapt and optimize their learning approaches (Rahimi et al., 2021). Research has consistently highlighted the role of metacognition in promoting learner autonomy and enhancing overall academic performance, particularly in self-regulated language learning environments (Teng, 2020).

Intercultural communicative competence (ICC) encompasses the ability to communicate effectively and appropriately across different cultural contexts. It integrates linguistic skills with sociocultural awareness, intercultural attitudes, and interpretative abilities (Liu et al., 2023). In recent years, ICC has gained prominence in vocational education as students are expected to engage with diverse professional and social environments. Studies have shown that ICC development positively correlates with learners' adaptability, cross-cultural understanding, and communication effectiveness in globalized workplaces (Wang et al., 2022). Moreover, the integration of ICC into English language instruction has been encouraged in Chinese colleges to prepare students for international collaboration and mobility (Li, 2021). Language proficiency, often measured in terms of speaking, listening, reading, and writing skills, remains a core outcome of English language education. It reflects a learner's ability to effectively use the target language for academic, professional, and social purposes. Language proficiency is not solely a result of formal instruction but is also influenced by learners' strategic behaviors and intercultural engagement. (Wu et al., 2022). In vocational settings, where practical language use is emphasized, proficiency plays a vital role in employability and career readiness (Zhou et al., 2023). Research suggests that students with higher metacognitive awareness and stronger intercultural skills tend to exhibit greater language competence (Gao et al., 2024).

Taken together, these three constructs—metacognitive strategies, intercultural communicative competence, and language proficiency—form a dynamic triad that shapes the language learning experience of vocational students in China. This study sought to examine the relationships among these variables and provide insights into how strategic learning and intercultural preparedness can enhance English language outcomes in vocational education.

This study is significant as it addresses the crucial intersection of metacognitive strategies, intercultural communicative competence (ICC), and language proficiency within the context of Chinese vocational college education. As the demands for effective English communication continue to grow in global and multicultural workplaces, vocational students must be equipped not only with linguistic skills but also with the strategic and cultural competencies necessary for success. For language educators and curriculum developers, the findings will offer practical insights into how metacognitive awareness and intercultural preparedness can enhance language learning outcomes. This can inform the design of more learner-centered and globally relevant language programs. For administrators and policymakers in vocational institutions, the study will provide data-driven evidence to

support the integration of cognitive and cultural dimensions into English language instruction, thereby improving the employability and communication readiness of graduates. Furthermore, students themselves will benefit from a better understanding of how their learning strategies and intercultural skills contribute to language proficiency, encouraging greater autonomy and strategic engagement in their language studies. Finally, for scholars and researchers in the field of second language acquisition and intercultural communication, this study expands the current knowledge base by offering a more holistic view of how cognitive and cultural variables interact to influence language development, particularly in a vocational education setting that has received limited academic attention.

Despite the relevance of metacognitive strategies and intercultural competence in language learning, several gaps remain in the existing literature. First, there is a noticeable lack of research focusing specifically on vocational college students in China, as most previous studies have been conducted in the context of general universities or secondary schools. This leaves the unique needs, challenges, and learning contexts of vocational learners underexplored. Second, although metacognitive strategies and ICC have been studied individually, few empirical investigations have examined how these two variables interact and collectively influence language proficiency. Third, there is a scarcity of comprehensive studies that combine all three constructs—metacognitive strategies, intercultural communicative competence, and language proficiency—within a single research framework. This limits a deeper understanding of how these elements function together in shaping language learning outcomes. Additionally, much of the existing research on intercultural competence is grounded in Western contexts, which may not fully capture the cultural nuances and educational realities of Chinese vocational settings, where exposure to authentic intercultural communication is often limited. Lastly, with ongoing educational reforms and the rapid globalization of vocational education in the post-pandemic era, there is a need for up-to-date empirical evidence to reflect current trends, challenges, and best practices in language education for vocational learners in China.

The findings of this research may directly benefit respondents by identifying specific areas for improvement, guiding them to use metacognitive strategies more effectively, and enhancing their communicative competence and language proficiency.

Objectives of the Study - The main objective of this study was to determine the level of meta-cognitive strategies, communicative competence, and language proficiency among English majors in Chinese vocational colleges, with the goal of cultivating communicative competence. Specifically, the study aimed to assess meta-cognitive strategies across several components, including self-awareness, goal setting and planning, cognitive strategies, self-reflection, use of resources, adaptability and flexibility, motivation and engagement, personal and social aspects, and evaluation. The study sought to identify the respondents' communicative competence in terms of knowledge, attitudes, and skills, and to evaluate their language proficiency in reading, listening, writing, and speaking. It examined the relationship between meta-cognitive strategies, communicative competence, and language proficiency, and ultimately proposed an enhanced language program tailored to improve proficiency of English majors in Chinese vocational colleges.

2. Methods

Research Design - This study is a descriptive research that utilized a quantitative research method. Employing a descriptive design, the researcher in this study investigated the connections among the variables: metacognitive strategies, communicative competence, and language proficiency. Descriptive quantitative research was suitable for this study because it allowed for the systematic collection and analysis of numerical data, which can provide clear insights into the relationships between these variables. According to Kim et al.,(2020), descriptive qualitative research is ideal for health and education studies that seek to capture the essence of experiences without imposing pre-existing theories, and it provides flexibility in data collection and analysis while maintaining rigor and credibility.

This approach facilitated the examination of students' profiles, such as age, sex, and place of origin, while quantitatively measuring their metacognitive strategies, communicative competence and language proficiency. By using a researcher-developed survey, the researcher ensured consistency and reliability in assessing the respondents' metacognitive strategies, communicative competence and language proficiency levels. Furthermore, descriptive quantitative research revealed patterns and trends within the data, helping to identify significant differences among various groups of students based on their profiles. Ultimately, this methodology enabled researchers to make data-driven recommendations for enhancing educational practices and training programs in vocational colleges.

Participants of the Study - The research involved 425 participants from a state-owned vocational college in South China. Among the samples were 108 freshmen, 112 sophomores, and 205 junior students. The number of sample per grade level was calculated using an online sample calculator named Raosoft with the confidence level of 95% and 5 % margin of error. A simple random sampling method was utilized. Each participant's name in the population was electronically encoded and given a number. The sample number calculated for each year level was then used to identify the participants using an online electronic randomizer tool.

Data Gathering Instruments - The study aimed to assess perceptual constructs such as the metacognitive strategies, communicative competence, and language proficiency among Chinese vocational college students. The questionnaire is a 4-point Likert scale that is comprised of four parts: Personal Data Information, the Metacognitive Strategies Scale, the Communicative Competence Scale, and the Language Proficiency Scale. The scale consisted of 62 items, rated on a 4-point Likert scale, ranging from "strongly disagree" to "strongly agree."

The first part of the questionnaire gathered respondents' profile information which included age, sex, place of origin. The second part of the questionnaire was designed to gauge the Metacognitive strategies of the respondents, and it comprised 8 sub-scales: self-awareness, goal-setting and planning, self-regulation, cognitive strategies, self-reflection and evaluation, use of resources, adaptability and flexibility, motivation and engagement, and personal and social aspects. There was a total of 32 statements in this part of the survey questionnaire. The scale was developed based on two sources, study by Feng (2023) and research study by Zhaowen et al. (2020). The third part was the Communicative Competence Scale, developed under the influence of two research studies, a study by Gonçalves et al. (2020) entitled, Intercultural Communication Competence Scale: Invariance and Construct Validation in Portugal and a study by Li-Jung (2021) entitled, Developing intercultural communicative competence in foreign language classrooms. This section included three sub-scales: knowledge, attitudes and skills, with a total 73 statements. The fourth part was the Language Proficiency Scale which consisted of four sub-scales: reading, speaking, listening and writing comprising 40 statements.

Table 1

Summary of Reliability Test

Indicators	Cronbach Alpha	Remarks
Goal Orientation	0.881	Good
Constructivist Teaching	0.854	Good
Learner Autonomy	0.861	Good
Teacher-Student Interaction	0.931	Excellent
Peer Effect	0.892	Good
Student-Student Cooperation	0.905	Excellent
Curriculum Assessment	0.892	Good
Visual Learning Style	0.788	Acceptable
Auditory Learning Style	0.789	Acceptable
Tactile Learning Style	0.820	Good
Kinesthetic Learning Style	0.874	Good
Group Learning Style	0.880	Good
Individual Learning Style	0.870	Good
Self-assessment scale for English reading comprehension	0.891	Good
Self-assessment scale for English written expression	0.901	Excellent
Self-assessment scale for English listening comprehension	0.876	Good
Self-assessment scale for English oral expression	0.915	Excellent

Self-assessment scale for English pragmatic ability	0.880	Good
Self-assessment scale for English organizational competence	0.886	Good
George and Mallery (2003) provide the following rules of thumb: “>.9–Excellent, >.8–Good, >.7–Acceptable, >.6–Questionable, >.5–Poor, and <.5–Unacceptable.”		

To ensure the reliability of the questionnaire, the researcher conducted a preliminary study involving 30 students from both first-year and second-year classes. Data from these participants were gathered using the "Golden Data" questionnaire tool, coded, and entered into SPSS 27.0 for analysis. Data collection primarily relied on a questionnaire, which underwent validation by experts, and a pilot test involving 30 college students to ensure its suitability for the current study. The adjusted questionnaire demonstrated a satisfactory Cronbach's alpha coefficient of .872. Cronbach Alpha coefficients for both the sub-scales and the entire questionnaire were computed to assess reliability. The results in The Reliability Test for Three Variables indicated that the Cronbach Alpha coefficients for all sub-scales ranged from 0.788 to 0.931, which demonstrated that the internal consistency reliability coefficients for both the subscales and the overall questionnaire were deemed acceptable, surpassing the threshold of 0.70. Following pilot study, the questionnaires were administered to 425 participants during the data collection.

Data Gathering Procedures - Data in this study were gathered in two phases: the Pilot Test and the Main Research. The data collection process involved utilizing the questionnaire tool converted to an online survey. The survey questionnaire also included a section where respondents consented to participate. The subsequent step involved contacting English teachers from the Applied English Department. The questionnaire, presented as a QR code, was sent to them with a detailed explanation of its specific purpose. The English teachers were then responsible for distributing the questionnaire to eligible students in their classes during regular sessions. The researcher introduced the survey's aim and procedure, clarified the use and content of the questionnaire, and emphasized the importance of authentic responses. Given the extensive number of questions, the student's cooperation and patience were assumed to be essential for a thorough investigation.

Upon receiving the QR code, interested students could directly scan it in WeChat to access the questionnaire link and respond using their mobile phones. After submitting the questionnaire, respondents received a token as a reward to ensure both quantity and quality of feedback. Participants were assured that the results will be totally irrelevant to their course grades and that all information would be kept confidential. Students based their responses on their learning experiences, and the collected questionnaires were exported using the "Golden Data" application. The researcher entered the questionnaire data into an Excel form, meticulously checking input data for accuracy. The questionnaire was designed with a maximum limit of 500, prompting data collection when this threshold was reached. Subsequently, data were collected and statistically treated using weighted mean through SPSS 27.0 to interpret, analyze, and compare participant responses.

Following data collection, the researcher tabulated, interpreted, and analyzed the information to investigate significant relationships among perceptual constructs like the constructivist learning environment, learning style preferences, and language ability. Based on the analysis, the researcher proposed an enhanced communicative competence training program.

Data Analysis - After collecting data, each survey was carefully reviewed individually, and any incomplete questionnaires were eliminated from the analysis. Of the collected questionnaires, 425 were considered suitable and assigned codes for statistical analysis to address the research inquiries. The Statistical Package for the Social Sciences (SPSS) was utilized to analyze the gathered data statistically. Pearson correlation analysis was also conducted to explore relationships between metacognitive strategies, communicative competence, and language proficiency. Pearson's correlation, or Pearson's r , is a statistical measure that evaluates the strength and direction of the linear relationship between two continuous variables. It generates a coefficient ranging from -1 to +1, where +1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation. Pearson's correlation is widely used in research to determine how closely two variables are associated.

Ethical Considerations - This current inquiry systematically integrated ethical considerations into the entire survey procedure. Initially, a formal consent letter was drafted to obtain approval from the deans of the English department at the private university. A consent form was incorporated at the beginning of the questionnaire to uphold the confidentiality and anonymity of the participants. The individuals under investigation were provided with comprehensive information about the study's objectives and the tasks they were expected to perform. Participants were given the autonomy to decide whether to partake in or withdraw from the study at any stage. Furthermore, students were reassured that the data and discoveries would be exclusively used for research. Throughout the study, researchers ensured that participants thoroughly read and understood all instructions, study procedures, and the purpose of the survey before commencement. A voluntary participation approach was adopted to uphold the rights of the respondents. Throughout this period, the confidentiality of information and gathered data was treated with the utmost discretion. Moreover, the Ethics Review Committee Center affiliated with the University of the Lyceum in the Philippines secured approval for ethical considerations.

3. Results and discussion

Table 2

Metacognitive Strategy in terms of Teaching Clarity

Indicators	Weighted Mean	Verbal Interpretation	Rank
Self-Awareness	3.13	Agree	1
Goal Setting and Planning	3.11	Agree	2
Composite Mean	3.12	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 showcases the application of metacognitive strategies in the context of teaching clarity, focusing specifically on the indicators of Self-Awareness and Goal Setting and Planning. The weighted mean scores for these indicators were 3.13 and 3.11 respectively, both of which fall within the 'Agree' range according to the provided legend. This suggested that respondents generally concurred that these strategies were effectively employed in enhancing teaching clarity. The composite mean for the table, which aggregated the scores of the two indicators, stood at 3.12, solidly placing the overall evaluation within the 'Agree' category. The ranking placed Self-Awareness slightly higher than Goal Setting and Planning, indicating that respondents found self-awareness slightly more critical or effectively implemented in the context of teaching clarity.

This data could suggest that educators acknowledge the importance of understanding their own cognitive processes and setting clear objectives as essential components for clear and effective teaching. The close scores between the two indicators also suggested a balanced view that both self-awareness and effective planning were nearly equally important in contributing to teaching effectiveness. Teachers who are more self-aware are better equipped to reflect on their instructional methods and adjust their teaching to meet student needs, thus fostering an environment conducive to learning (Zhang et al., 2022).

Table 3

Summary Table on Communicative Competence

Indicators	Weighted Mean	Verbal Interpretation	Rank
Knowledge	3.14	Agree	3
Attitudes	3.19	Agree	2
Skills	3.30	Agree	1
Composite Mean	3.21	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 presents a summary of communicative competence broken down into three primary categories: Knowledge, Attitudes, and Skills. Each category has been evaluated and assigned a weighted mean, which collectively forms the composite mean for overall communicative competence. The Skills category scored the highest with a weighted mean of 3.30, ranked first among the three, suggesting that respondents felt most confident in their communicative skills. This might include practical abilities such as adjusting tone, managing misunderstandings, and effectively restarting conversations, which were crucial for effective intercultural communication.

Attitudes were ranked second with a mean of 3.19, indicating a strong, positive disposition towards the value and utility of communicative competence. This reflected a proactive attitude towards learning and using language in diverse settings, underlining the importance of mindset in language acquisition and usage. Knowledge, although slightly lower, still scored well at 3.14 and was ranked third. This suggested that while there was a good foundation of understanding the elements of English-speaking cultures and the technical aspects of language, there may be slightly less confidence in this area compared to skills and attitudes. Composite mean score of 3.21 suggested that respondents generally agreed on their level of communicative competence, particularly regarding knowledge, skills, and attitudes. This balanced competence suggested that while learners were confident in their abilities, more focused educational efforts were needed to enrich their understanding of cultural contexts and non-verbal communication to complement their existing practical skills (Peng et al., 2020). The findings aligned with broader trends in Chinese education, where integrating both cultural learning and language proficiency was seen as vital for students' success in global communication.

Table 4*Summary Table on Language Proficiency*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Reading	3.11	Agree	1
Speaking	3.07	Agree	3
Listening	3.06	Agree	4
Writing	3.08	Agree	2
Composite Mean	3.08	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 4 provides a concise overview of student assessments across four key language proficiency areas: Reading, Speaking, Listening, and Writing. Each area had been evaluated with a weighted mean score, and all indicators were uniformly within the "Agree" range, which reflected general approval or competence in these skills. Reading had the highest weighted mean at 3.11 and ranked first among the assessed skills. This suggests that students felt most confident in their reading abilities, which may imply strong skills in comprehending and interpreting written English materials. Writing follows closely with a mean of 3.08 and was ranked second, indicating a slightly lower but still robust competence in expressing thoughts in written form. Speaking and Listening were rated slightly lower, with means of 3.07 and 3.06, respectively, ranking third and fourth. This indicates that while students were generally capable in these areas, they might experience slightly more challenges in oral communication and auditory comprehension compared to reading and writing.

The composite mean of 3.08 for language proficiency areas highlighted that students generally felt competent across critical language skills. However, the slight gradation in self-assessed proficiency levels indicated that specific areas could benefit from focused educational interventions. Research on Chinese students' language learning showed that while students often demonstrated balanced skills in areas like grammar and vocabulary, there was a need to enhance more specific competencies, such as listening comprehension and creative writing, which were crucial for advanced language use (Zhang et al., 2022). These findings suggested that a tailored approach, which addressed individual skill gaps, could further improve overall language proficiency and self-assurance in communication tasks. Furthermore, reflective practices, such as journaling, have been shown to enhance self-regulation and language skill development, suggesting that integrating these techniques could be beneficial for fostering greater proficiency (Zhang et al., 2022).

Table 5 provides a statistical analysis examining the relationship between metacognitive strategies—specifically self-awareness and goal-setting and planning—and various aspects of communicative competence, including knowledge, attitudes, and skills. The analysis employs correlation coefficients (r -values) to measure the strength of the relationship, and p -values to test the significance of these correlations. The results indicate highly significant correlations ($p < 0.01$) across all domains, with r -values ranging from 0.645 to 0.777. This suggested a strong positive relationship between effective use of metacognitive strategies and enhanced communicative competence. For self-awareness, the correlation with communicative knowledge was particularly strong ($r=0.757$), suggesting that a deeper self-awareness significantly correlated with better knowledge in

communicative contexts. This was closely followed by attitudes ($r=0.762$) and skills ($r=0.645$), indicating that individuals who were more self-aware tended to have more positive attitudes towards communication and were more skilled at it.

Table 5*Relationship Between Metacognitive Strategy and Communicative Competence*

Self-Awareness	r-value	p-value	Interpretation
Knowledge	.757**	0.000	Highly Significant
Attitudes	.762**	0.000	Highly Significant
Skills	.645**	0.000	Highly Significant
Goal-Setting and Planning			
Knowledge	.777**	0.000	Highly Significant
Attitudes	.760**	0.000	Highly Significant
Skills	.650**	0.000	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

Similarly, goal-setting and planning showed very strong correlations with all three aspects of communicative competence. The strongest correlation was with knowledge ($r = 0.777$), followed by attitudes ($r = 0.760$) and skills ($r = 0.650$). This implied that those who regularly set clear goals and plan effectively were likely to know more about, have better attitudes towards, and be more skilled at communication.

Findings underscored the importance of metacognitive strategies in enhancing communicative competence. The significant correlations suggested that interventions aimed at improving self-awareness and goal-setting capabilities could effectively enhance an individual's communicative skills, attitudes, and knowledge. The findings highlighted the critical role of metacognitive strategies, such as self-awareness and goal-setting, in enhancing communicative competence. Research among Chinese learners shows that developing these strategies leads to improved communication skills, attitudes, and knowledge, especially in language learning contexts (Liu, 2020; Zhang et al., 2021). These correlations suggested that integrating metacognitive training into educational practices could significantly bolster communicative competence, making learners more adept at navigating complex communication scenarios. Moreover, training programs that focus on metacognitive regulation, including planning, monitoring, and evaluating communication tasks, are shown to improve overall communication outcomes (Teng et al., 2022). This has practical implications for educators and curriculum designers aiming to enhance communication proficiency through targeted, metacognitive interventions.

Table 6*Relationship Between Metacognitive Strategy and Language Proficiency*

Self-Awareness	r-value	p-value	Interpretation
Reading	.817**	0.000	Highly Significant
Speaking	.664**	0.000	Highly Significant
Listening	.752**	0.000	Highly Significant
Writing	.723**	0.000	Highly Significant
Goal-Setting and Planning			
Reading	.844**	0.000	Highly Significant
Speaking	.721**	0.000	Highly Significant
Listening	.755**	0.000	Highly Significant
Writing	.763**	0.000	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

Table 6 presents the results of a statistical analysis exploring the relationship between metacognitive strategies, specifically self-awareness and goal-setting and planning, and various aspects of language proficiency, including reading, speaking, listening, and writing. The data revealed highly significant correlations ($p < 0.01$) across all areas, suggesting a strong, positive relationship between effective metacognitive strategies and language proficiency levels. For self-awareness, the strongest correlation was observed in reading ($r=0.817$), indicating that individuals with high levels of self-awareness tend to have superior reading skills. This was followed by listening ($r=0.752$), speaking ($r = 0.664$), and writing ($r = 0.723$). The correlation values suggested that self-awareness significantly enhanced an individual's ability to engage with and comprehend language in both oral and written forms.

Similarly, goal-setting and planning showed the highest correlation with reading proficiency ($r=0.844$), underscoring the importance of structured approaches to improving reading skills. The correlations with speaking ($r=0.721$), listening ($r=0.755$), and writing ($r=0.763$) were also robust, demonstrating that clear, well-planned learning objectives were crucial for developing all facets of language proficiency. The high correlation coefficients in the study underscored the integral role that metacognitive strategies, such as self-awareness and goal-setting, play in enhancing the learning process and mastering language skills. Recent studies confirmed that metacognitive strategies not only improve language learning efficiency but also led to measurable gains in language proficiency, particularly in areas like reading comprehension and listening (Liu, 2020; Zhang, 2021). Implementing teaching strategies that focus on developing these metacognitive skills can significantly improve students' overall language competence, making them more effective communicators across various contexts (Chen et al., 2021). This information is invaluable for educators and curriculum developers aiming to design more effective language learning programs that foster both cognitive and linguistic growth (Teng et al., 2022).

Table 7*Relationship Between Communicative Competence and Language Proficiency*

Knowledge	r-value	p-value	Interpretation
Reading	.913**	0.000	Highly Significant
Speaking	.765**	0.000	Highly Significant
Listening	.845**	0.000	Highly Significant
Writing	.854**	0.000	Highly Significant
Attitudes			
Reading	.891**	0.000	Highly Significant
Speaking	.762**	0.000	Highly Significant
Listening	.831**	0.000	Highly Significant
Writing	.823**	0.000	Highly Significant
Skills			
Reading	.777**	0.000	Highly Significant
Speaking	.651**	0.000	Highly Significant
Listening	.718**	0.000	Highly Significant
Writing	.723**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 7 presents a statistical analysis exploring the relationship between communicative competence (divided into knowledge, attitudes, and skills) and language proficiency across different aspects such as reading, speaking, listening, and writing. The data highlighted highly significant correlations in all categories, as evidenced by the correlation coefficients (r-values) and their corresponding p-values, all of which were significantly below the threshold of 0.01. Highest correlation was observed in the knowledge category for reading ($r=0.913$), indicating a very strong relationship between the depth of knowledge in communicative competence and reading proficiency. This suggested that a deeper understanding of communicative principles strongly enhanced reading skills. Similar high correlations were seen across other knowledge aspects, with writing also showing a notably high correlation ($r=0.854$). In the attitudes category, correlations remained strong, with writing ($r=0.823$) and listening ($r=0.831$) displaying robust links. This implied that positive attitudes towards communication significantly contributed to enhanced writing and listening proficiencies. Skills correlations indicated significant relationships, particularly in reading ($r=0.777$) and writing ($r=0.723$). Strong correlation in these areas underscored the impact of practical communicative skills on improving language proficiency, especially in processing and producing text.

The results illustrated that both theoretical understanding and practical skills in communicative competence were closely linked to overall language proficiency. Recent studies from Chinese scholars highlighted that communicative competence encompassed not only linguistic knowledge but also the ability to apply this knowledge effectively in real-world contexts, which significantly enhanced language proficiency across multiple dimensions (Chen et al., 2022). The strong correlations across various language aspects—such as speaking, reading, and listening—suggested that improving communicative competence can have a broad impact on overall language skills, making it an essential focus for language education interventions (Liu et al., 2019). These

insights are particularly valuable for curriculum designers and educators, as they underscore the importance of integrating communication training into language education programs to support comprehensive language development (Zhang et al., 2021). The integration of communicative competence strategies could ultimately foster both academic and professional success for language learners.

Table 8
Enhanced Language Proficiency Program for Chinese Vocational College Students

KRA Results	Objectives	Program Activities	Success Indicators	Persons Involved
Improved Communicative Competence	Understand components of communicative competence (knowledge, attitudes, skills)	- Self-assessment of language proficiency - Language learning journals - Group discussions	Students can identify strengths/weaknesses in communication skills	Instructors, Students
	Develop self-awareness in language learning	- Reflective journaling - Peer group sharing	Increased reflective entries; student engagement in discussion	Instructors, Students
Effective Goal-Setting and Learning Planning	Set SMART goals for language development	- Goal-setting workshop - Personalized study planning - Weekly peer review	Submission of individual plans; visible goal progress	Instructors, Students, Peer Mentors
Enhanced Speaking and Listening Proficiency	Improve fluency, clarity, and comprehension	- Role-playing and debates - Listening exercises - Peer feedback sessions	Improved clarity in speaking tasks; accurate listening comprehension	Language Trainers, Peers
Increased Intercultural Awareness	Understand cultural norms and non-verbal cues	- Cultural workshops - Intercultural case analysis - Role-playing with diverse cultural contexts	Ability to demonstrate appropriate cultural communication in role plays	Instructors, Cultural Resource Persons
Academic and Functional Reading & Writing	Strengthen reading comprehension and writing accuracy	- Reading workshops with academic texts - Writing tasks (emails, reports, essays) - Peer editing sessions	Improved scores in reading/writing tasks; grammatical accuracy in writing	Writing Coaches, Instructors
Real-world Communication Practice	Apply all acquired skills in practical tasks	- Group presentation project - Final reflective essay - One-on-one final assessment	Completion of integrated communication tasks; positive instructor feedback	All Instructors, Students
Sustainable Language Learning Habits	Foster ongoing reflective and goal-setting practices	- Final reflection and future learning goal planning	Clear articulation of growth areas; goal setting for continued learning	Students, Instructors
Comprehensive Evaluation and Feedback	Evaluate student progress and proficiency	- Ongoing formative assessment (journals, peer reviews) - Summative assessment (final project, individual evaluation)	Evidence of growth from pre- to post-assessments; instructor rubric results	Assessment Team, Instructors

The table presents a structured summary of a 14-week hybrid language development program designed to enhance communicative competence, intercultural awareness, and sustainable learning habits among students. Each Key Result Area (KRA) is aligned with specific objectives, targeted activities, success indicators, and involved stakeholders.

The program begins by promoting self-awareness through self-assessments, reflective journaling, and group discussions to help learners identify their communication strengths and weaknesses. This foundation is followed by goal-setting workshops where students create SMART goals and personalized study plans, encouraging learner autonomy and accountability. In the mid-phase, the focus shifts to developing fluency in speaking and listening through practical exercises like role-plays and debates. Listening comprehension is enhanced using authentic audio materials. Cultural competence is developed through workshops, case studies, and intercultural role-playing to foster awareness of norms and non-verbal cues in English-speaking contexts. Further, the program strengthens reading and writing skills through workshops on academic texts, structured writing tasks, and peer editing. These activities ensure grammatical precision and critical comprehension. Finally, students

apply their cumulative learning in real-world tasks such as group presentations and reflective essays. Continuous formative and summative assessments, including peer and instructor feedback, support ongoing evaluation.

Overall, the program not only aims for improved language proficiency but also cultivates lifelong learning habits through reflective and goal-oriented practices. The involvement of instructors, peers, and cultural experts ensures comprehensive support throughout the learning journey.

4. Conclusions and recommendations

With the results obtained from the data gathered, the following conclusions were drawn: The respondents exhibited a strong agreement on their use of metacognitive strategies, with self-awareness and goal-setting ranking highly. There was a good level of engagement in these strategies. The overall communicative competence was rated highly across all areas, with skills receiving the highest score, followed by attitudes and knowledge. Across all aspects of language proficiency, the respondents generally agreed on their competence, with reading scoring the highest and listening scoring the lowest. Strong positive correlations were found between metacognitive strategies and both communicative competence and language proficiency. Based on the findings, a comprehensive Language Proficiency program for Chinese vocational students was proposed to emphasize metacognitive strategy development, focusing on self-awareness, goal-setting, and planning.

Instructors may Integrate structured metacognitive activities—such as goal-setting workshops, self-assessment tools, and reflective journaling. Students may engage in self-monitoring strategies, such as maintaining language learning journals and setting SMART goals, to enhance personal accountability and continuously improve across all areas of language proficiency. Peer Mentors may share learning strategies, provide mutual feedback and encourage reflective practices that promote language improvement and intercultural competence. Language trainers may design training modules that emphasize real-life communication tasks and integrate metacognitive strategy instruction—particularly in listening skills, which students identified as an area of weakness. Writing Coaches may guide students through reflective writing activities and provide personalized feedback aimed at improving grammar, coherence, and goal-setting in writing tasks to foster both linguistic accuracy and self-awareness. Future researches may investigate the long-term impact of metacognitive strategy training on language proficiency across different contexts and student populations to validate and expand the findings of this study.

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Organizational empowerment and work engagement among full-time faculty and academic service personnel in selected higher educational institution

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Abstract

Full-time faculty and Academic Service Personnel (ASPs) play a pivotal role in supporting the core functions of universities, including teaching, research, and administrative activities. Their contributions are critical to ensuring the smooth operation of institutions and the achievement of their academic goals. The study employed a quantitative methodology and utilized a descriptive research design. The study revealed that organizational empowerment significantly influenced various aspects of work engagement. Studies conducted during the period emphasized different facets of empowerment, including autonomy, skill development, meaningful work, and social support, as crucial factors in fostering employee engagement. A positive relationship existed between organizational empowerment and work engagement across various industries and cultural contexts. Researchers concluded that empowering leadership, supportive organizational climates, and participative decision-making processes served as key drivers of employee engagement.

Keywords: employee performance, human resource management, organizational empowerment, work engagement, workplace motivation

Organizational empowerment and work engagement among full-time faculty and academic service personnel in selected higher educational institution

1. Introduction

In the dynamic and competitive landscape of higher education, the success of institutions hinges on the effectiveness and engagement of their full-time faculty and Academic Service Personnel (ASPs). These individuals play a pivotal role in supporting the core functions of universities, including teaching, research, and administrative activities. Their contributions are critical to ensuring the smooth operation of institutions and the achievement of their academic goals. Organizational climate is the working environment of the organization that may affect the employees. A positive climate makes the employees happy, satisfied, and energized, and therefore employees are eager to work more for the company. It is an intangible aspect of the environment because it involves the emotional aspect of the employees. It is only the employees who feel it. Thus, organizational climate refers to employees' perceptions of organizational practices reported by people who work there. It is a situational characteristic that links to thoughts and feelings of workers that shape the common perception of employees as a result of organizational policies and procedures. It is a psychological and social dimension of the environment, including people's perceptions (Abun et al., 2021). Thus, the organizations recruit, train, and evaluate employees based on the set standards in the public's best interest (Boselie et al., 2019).

Organizational Empowerment (OE) and Work Engagement (WE) are two key factors that influence the performance and well-being of Academic Service Personnel. Organizational Empowerment refers to the extent to which employees feel empowered, in terms of Skills, Purpose, Autonomy and Community Engagement. Work Engagement, on the other hand, reflects the dedication and enthusiasm that employees bring to their work: vigor, dedication and absorption (Flores et. al., 2024). Work engagement can be characterized by absorption, vigor and dedication. When an employee has a high level of energy and mental peace, she/he then is said to have vigor to perform. An employee who has pride, inspiration and enthusiasm has the quality of dedication. The employee working for the organization and accepting challenges at work is marked as a dedicated employee. The third factor, that is absorption refers to being happy and fully concentrated in one's work so that time passes quickly, with difficulty detaching from work. Both have been shown to have positive effects on individual and organizational outcomes, such as job satisfaction, performance, and retention (Gera et al., 2019).

Employee empowerment is a critical element in creating a positive organizational climate. It stems from the concept of inclusion. The feeling of being empowered leads to several favorable consequences. Enriched work environments that provide access to authority, information, resources, support and opportunity to learn are empowering and can lead to improved performance (Le et al., 2021). In the context of higher education, a strong OE can foster a sense of autonomy, ownership, and involvement among ASPs, leading to increased motivation, creativity, and innovation. When ASPs feel empowered to make decisions and contribute their ideas, they are more likely to feel valued and engaged in their work. This can lead to improved performance, higher job satisfaction, and a reduced likelihood of turnover. Work Engagement is also essential for the success of full-time faculty and ASPs in higher education. Engaged faculty and ASPs are passionate about their work and committed to the success of their institutions. They are more likely to go the extra mile, provide excellent service, and contribute to a positive work environment. WE can lead to improved student outcomes, enhanced institutional reputation, and a more competitive edge in the higher education market.

Despite the importance of OE and WE in higher education, there is a dearth of research on these factors among full-time faculty and ASPs. Many studies on OE and WE have focused on employees in the private sector, with limited attention paid to the unique context of higher education. This gap in literature highlights the need for more research to understand the relationship between OE, WE, and the performance and well-being of full-time faculty and ASPs in higher education institutions.

This study addressed the gap by investigating the relationship between OE and WE among faculty and ASPs in a selected higher educational institution in Lipa City. The findings offered valuable insights for institutional leaders seeking to cultivate an empowering and engaging workplace. By fostering a strong OE and promoting WE, institutions can optimize the performance and well-being of their faculty and ASPs, ultimately leading to improved student outcomes, enhanced institutional reputation, and a more competitive edge in the higher education market. Aside from that, faculty members and academic service personnel play a crucial role in shaping students' learning experiences. The researcher also believed that empowered and engaged employees are more likely to be motivated, innovative, and committed to delivering high-quality education. They can also drive creativity and productivity, benefiting both the institution and the broader academic community.

With considerable years of tenure, the researcher has reflected on the leadership style and its impact on the work environment. Understanding the organizational empowerment climate and work engagement could benefit the institution by creating a positive and supportive work environment that could be instrumental in navigating and facilitating positive transformations.

Objectives of the Study - This study assessed organizational empowerment and work engagement among full-time faculty and academic service personnel in selected Higher Educational Institutions (HEIs) in Lipa City. Specifically, it determined the organizational empowerment in the higher educational institution in terms of skills, purpose, autonomy and community engagement; described the work engagement of employees in terms of vigor, dedication and absorption; tested the significant relationship between organizational empowerment and work engagement; and proposed an action plan to enhance the organizational empowerment and improve work engagement based on the results of the study.

2. Methods

Research Design - This study utilized quantitative and descriptive methods. The relationship between organizational empowerment and work engagement of employees was described in this study. The researcher sought to gather information from the respondents through providing survey questionnaires and distributing these to them. This descriptive kind of research was helpful in collecting the respondents' data efficiently. Correlational research design was used because the researcher intended to draw the relationship between organizational empowerment and work engagement of employees.

Participants of the Study - The targeted respondents of the study were full-time faculty and academic service personnel from a higher educational institution. It included but not limited to teaching staff, administrative staff, technical staff, and librarians, with at least 6 months of tenure. According to its Human Resource Department, there were a total of 299 teaching staff and 210 non-teaching staff who were actively working at the said institution. Sampling ratio was used. Hence, the number of respondents is 118 full-time faculty, and 82 academic service personnel sampling ratio was determined by dividing the sample size by the total population.

Instruments - The researcher used an adapted and modified questionnaire in data gathering. It was validated by professionals in the field and was subjected to pilot testing. The questionnaire included two parts. Part 1 determined the organizational empowerment in the Higher Educational Institution in terms of skills, purpose, autonomy and community engagement. Part 3 consisted of the work engagement of employees in terms of vigor, dedication and absorption. The items in the questionnaire were given corresponding weights of 1 to 4, 1 - Strongly Disagree, 2 - Disagree, 3 - Agree, 4 - Strongly Agree. The reliability test used the Cronbach Alpha with Acceptable results for all of the domains. Organizational empowerment has 0.944 with excellent marks. Skill has 0.772 with acceptable remarks, Purpose has 0.913 with excellent remarks, Autonomy has 0.918 with excellent remarks, Community engagement with 0.901 with excellent remarks. While work engagement has 0.876, vigor has 0.894, dedication has 0.861, and absorption has 0.896; all acquired good marks.

Data Gathering Procedure - The researcher presented the proposal for comments, and upon final approval

by the thesis adviser, the researcher started to adapt and modify the questionnaire. A validation process was conducted with assistance from the research adviser and a university statistician. The researcher asked permission from the Human Resource Department of the selected higher educational institution in Lipa City to distribute a questionnaire to the employees who were working in the different departments/offices. The researcher distributed the questionnaire through sending them the hard copy to their respective offices. An electronic questionnaire was generated through Google Forms which was sent via messenger or email of the employees. The responses to the survey items were tallied and sent to the university statistician for statistical analysis.

Ethical Considerations - Ethical considerations were applied during the study process to ensure that any information obtained was used solely for research purposes, preserving the research's quality and integrity. Prior to data collection, formal clearance was obtained from the participating universities, ensuring institutional approval for conducting the study. The researcher additionally sought consent through letter to ensure that the target respondents were prepared to answer the research's essential questions. It also protected the respondents' privacy and identity by not soliciting their names while they were filling out the surveys. The researcher also guaranteed that the respondents filled out the surveys willingly and in accordance with their wishes. Lastly, it guaranteed that no research participants were injured or harmed in the entire research process, and that their safety and security was a major concern.

Data Analysis - Weighted Mean was used to determine the organizational empowerment climate in a selected higher educational institution in terms of skills, purpose, autonomy, community and engagement and to describe the work engagement of employees in terms of vigor, dedication and absorption. Pearson's R Correlation was used to determine the relationship of organizational empowerment and work engagement of employees. To interpret the correlation value, the following classifications were used. A p-value of less than ($<$) .05 means that there was significant relationship with the dimensions of organizational empowerment and the dimensions of work engagement of employees. While those with p-value of or greater than ($>$) or equal to .05 means that there was no significant relationship.

3. Results and discussion

Table 1
Summary Table of Organizational Empowerment

	Mean	Interpretation	Rank
Skills	3.64	Very High	1
Purpose	3.61	Very High	3
Autonomy	3.35	High	4
Community Engagement	3.61	Very High	2
<i>Overall</i>	<i>3.55</i>	<i>Very High</i>	

Legend: 3.50-4.00=Very High ; 2.50-3.49=High; 1.50-2.49=Low; 1.00-1.49=Very Low

Table 1 shows the assessment of organizational empowerment across multiple dimensions offered a comprehensive overview of the institution's effectiveness in fostering a conducive environment for its members. The indicators encompassed skills development, clarity of purpose, autonomy in decision-making, and community engagement, reflecting various facets of organizational empowerment. With a composite mean score of 3.55 and a verbal interpretation of very high, it suggests that the organization is well-positioned to thrive, with a competent workforce aligned with its mission and values, actively engaged in community initiatives, and equipped with the necessary skills to succeed. Knowing that people are engaged and equipped to succeed brings a sense of confidence in the organization's future and its positive impact beyond its immediate environment.

Skills with a composite mean of 3.64 and a verbal interpretation of very high. This indicates a competent and capable workforce equipped with the necessary skills to effectively perform their roles. Community Engagement ranked second, with a composite mean of 3.61 and a verbal interpretation of very high, indicating a highly engaged workforce committed to making a positive impact on the local community. Purpose ranked 3rd,

with a composite mean score of 3.61 and a verbal interpretation of very high indicating a strong alignment between individual roles and the broader mission and goals of the organization. Employees who find purpose in their work are more engaged, motivated, and committed, leading to higher levels of performance and well-being (Bailey et al., 2020).

Autonomy ranked 4th, with a composite mean of 3.35 and a verbal interpretation of high. It reflects a moderate level of autonomy in decision-making and work arrangements within the organization. While autonomy can empower employees and foster innovation and creativity it's essential to balance autonomy with organizational goals and guidelines to ensure alignment and effectiveness. This balance suggests that while the organization trusts its people enough to give them some independence, it also maintains necessary structures to keep everyone aligned with broader goals. Autonomy can be a powerful motivator, encouraging creativity and innovation, but it works best when paired with clear guidelines that help employees channel their efforts effectively and contribute to the organization's success.

Self-determination theory explains that when employees have autonomy, it satisfies their basic need to feel in control of their work, which naturally boosts their motivation, engagement, and overall well-being (Deci et al., 2019). When people feel trusted to manage their own tasks, they tend to take greater ownership, often leading to more creativity and satisfaction in their roles. However, autonomy alone isn't enough. It needs to be balanced with clear organizational goals and guidelines to make sure everyone is moving in the same direction and working efficiently. This balance helps maintain consistency and alignment with the institution's broader mission, allowing autonomy to foster innovation without sacrificing focus or cohesion (Parker et al., 2020).

Table 2
Work Engagement

	Mean	Interpretation	Rank
1. Vigor	3.62	Very High	2
2. Dedication	3.70	Very High	1
3. Absorption	3.27	High	3
<i>Overall</i>	<i>3.53</i>	<i>Very High</i>	

Legend: 3.50-4.00=Very High ; 2.50-3.49=High; 1.50-2.49=Low; 1.00-1.49=Very Low

The table presents an assessment of work engagement in terms of absorption with the composite mean of 3.53 and verbal interpretation of high. Dedication with a composite mean of 3.70 and verbal interpretation of very high, indicating employees' profound sense of purpose and investment in their work. This kind of dedication reflects more than just completing tasks; it shows a true emotional investment in the organization's mission and values. When employees are connected, they are motivated to perform at their best and find personal meaning in their daily responsibilities. Such profound dedication has been linked to increased job satisfaction, higher productivity, and stronger organizational loyalty (Nguyen, 2021). It also reflects employees' strong commitment, engagement, and emotional attachment to their work roles (Bakker et al., 2019).

Vigor is characterized by sustained levels of energy, enthusiasm, and resilience that employees bring to their work, enabling them to engage actively and persistently with their tasks. Recent research continues to emphasize vigor as a critical component of work engagement that fosters both well-being and high performance (Breevaart et al., 2020). It has a composite mean of 3.62 and verbal interpretation of very high, suggesting a robust level of vigor among employees, contributing positively to their performance and well-being. Ranked the last, Absorption has a composite mean of 3.27 with a verbal interpretation of high is slightly lower compared to Vigor and Dedication, suggesting a relatively lower level of absorption among employees. This suggests that, although they bring energy and commitment to their roles, moments of deep focus or "flow" might be less frequent. It highlights an opportunity for the organization to explore ways to create work environments that better support concentration and sustain attention, helping employees feel more connected and absorbed in their tasks.

Fostering an environment that supports absorption involves creating conditions where employees can deeply focus and fully engage with their work tasks. Key factors in this process include offering task variety, which

prevents monotony and keeps employees mentally stimulated by providing diverse challenges that capture their interest. Minimizing the distractions through physical workspace design, clear communication protocols, or supportive management practices helps employees maintain concentration without frequent interruptions. Together, these elements create a workplace atmosphere conducive to flow experiences, where individuals feel fully absorbed, energized, and connected to their work, ultimately leading to improved job satisfaction, creativity, and productivity (Bakker et al., 2019).

Table 3
Relationship Between Organizational Empowerment and Work Engagement

Variables	rho	p-value	Interpretation
Vigor			
Skills	.545**	0.000	Significant
Purpose	.504**	0.000	Significant
Autonomy	.514**	0.000	Significant
Community Engagement	.457**	0.000	Significant
Dedication			
Skills	.539**	0.000	Significant
Purpose	.543**	0.000	Significant
Autonomy	.472**	0.000	Significant
Community Engagement	.533**	0.000	Significant
Absorption			
Skills	.421**	0.000	Significant
Purpose	.373**	0.000	Significant
Autonomy	.427**	0.000	Significant
Community Engagement	.305**	0.000	Significant

** . Correlation is significant at the 0.01 level/* . Correlation is significant at the 0.05 level

The table presents the correlations between organizational empowerment and different dimensions of work engagement, namely vigor, dedication, and absorption. These dimensions are assessed through variables such as skills, purpose, autonomy, and community engagement. The correlation coefficients (rho) and their associated p-values indicate the strength and significance of the relationships. In terms of Vigor, there were statistically significant positive correlations between the variables such as skills, purpose, autonomy, and community engagement. This suggests that when employees perceive higher levels of empowerment in terms of these dimensions, they tend to exhibit more energy, enthusiasm, and resilience in their work. Similarly, all dimensions of organizational empowerment (Skills, Purpose, Autonomy, and Community Engagement) showed significant positive correlations with dedication. Employees who feel empowered in these aspects are more likely to demonstrate strong commitment, loyalty, and involvement in their work tasks.

Skills, purpose, and autonomy exhibit significant positive correlations with absorption, indicating that employees who perceive empowerment in these dimensions are more likely to become deeply engrossed and fully concentrated in their work. However, the correlation with community engagement, while still significant, is relatively weaker compared to the other dimensions. The consistent findings across all dimensions suggested that organizational empowerment significantly influences various aspects of work engagement. Studies during this period have emphasized different facets of empowerment, including autonomy, skill development, meaningful work, and social support, as crucial factors in fostering employee engagement.

Table 4
Action Plan

Key Result Areas	Objectives	Strategies	Persons Involved
Increase organizational empowerment in terms of autonomy from high to very high	Enhance employee autonomy and decision-making authority.	Implement empowerment training programs to educate employees on decision making processes and encourage autonomy in their roles.	Human Resource Department Employees
	Foster a culture of continuous learning and skill development.	Establish a mentorship program to facilitate knowledge sharing and skill development among employees.	Human Resource Department Employees

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	Promote a sense of purpose and meaningfulness in work tasks.	Align organizational goals with individual employee.	Human Resource Department
	Strengthen community engagement and social support networks within the organization.	Create opportunities for team building activities, cross departmental collaboration, and social events to strengthen interpersonal relationships and foster a sense of belonging.	Human Resource Department
Improve work engagement in terms of absorption from high to very high	Increase over all levels of work engagement among employees.	Recognize and reward employees for their contributions and achievements to boost morale and motivation.	Human Resource Department
	Enhance specific dimensions of work engagement, including vigor, dedication, and absorption.	Provide opportunities for professional development and career advancement to promote a sense of progress and growth.	Human Resource Department
	Create a supportive work environment that fosters employee well-being and satisfaction.	Foster open communication channels and solicit feedback from employees to address concerns and to improve the work environment.	Human Resource Department Employees

4. Conclusions and recommendations

The respondents exhibited a strong agreement on organizational empowerment in terms of skills, purpose, autonomy, and community engagement. The respondents demonstrated strong agreement on work engagement in terms of vigor, dedication, and absorption. A significant relationship was found between organizational empowerment and work engagement. An action plan was developed to enhance organizational empowerment and improve work engagement. Human Resource Department may build upon the existing empowerment initiatives within the institution by further enhancing programs related to skill development, clarifying organizational purpose, providing opportunities for autonomy, and fostering community engagement. Human Resource Department may extend the mentorship program to emphasize continuous learning and development opportunities for employees. Leaders may encourage faculty and academic service personnel to take an active role in planning and organizing community engagement activities. Organizational leaders and managers may engage as champions of empowerment and engagement initiatives by providing leadership training and with the skills and knowledge needed to effectively support and empower their teams. The proposed action plan may be implemented by higher academic institutions to enhance organizational empowerment and enhance work engagement of full-time faculty and academic service personnel. Further researchers may explore underlying variables regarding the organizational empowerment and work engagement of higher educational institutions that would help enhance work engagement.

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Structural equation model on the effect of entrepreneurial orientation on enterprise resilience and business performance

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Abstract

This study investigated the effect of Entrepreneurial Orientation (EO) on enterprise resilience and business performance among micro-enterprises in Lipa City. A total of 367 micro-enterprise owners, each with at least three years of business experience, participated in the research. Specifically, the study aims to assess the level of EO across its five dimensions: innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness. It also explores the level of enterprise resilience in terms of resourcefulness, dynamic competitiveness, and learning and culture. Using partial least squares structural equation modeling (SEM) WARPPS8, the findings reveal that EO significantly influences both enterprise resilience and business performance. The results indicate that micro-enterprises exhibit high levels of EO across all five dimensions, as well as high levels of resilience. Moreover, the study finds that enterprise resilience serves as a partial mediator between EO and both financial and non-financial business performance. This suggests that resilience plays a crucial role in translating entrepreneurial orientation into tangible business outcomes. Based on these findings, the researcher proposes a conceptual model that can offer valuable insights for micro-enterprise owners, helping them better understand the interplay between EO, resilience, and performance.

Keywords: entrepreneurial orientation, enterprise resilience, structural equation model, financial and non-financial business performance

Structural equation model on the effect of entrepreneurial orientation on enterprise resilience and business performance

1. Introduction

Business performance plays a vital role in the survival of a firm's operations. Almost all business owners and managers want their firms to perform well by improving or enhancing their operational performance. To achieve this, they implement a range of strategic Initiatives aimed at driving continuous improvement across key areas in their operation. Hence, various initiatives are carried out. Most business owners and managers strive to enhance their companies' operational efficiency and effectiveness. To achieve this, they implement a range of strategic initiatives aimed at driving continuous improvement across key areas of operation.

Entrepreneurial Orientation (EO) has received widespread attention from research scholars for several decades. The contribution of EO to organizational practice and its effects on performance, innovation, and organizational growth continued to evolve. There are different measures of business performance as either financial or non-financial performance. Due to limitations in the data being obtained by researchers, many studies subjectively present financial performance. Financial performance may be described as how excellent the enterprises are and how they utilize their assets from their primary enterprise activity and generate future cash inflow to the business. The performance reflects an overall financial status over a specific period and can be used to compare another enterprise within the same industry to evaluate the performance. In this study, the inclusion of Return on Asset as a measure of financial performance makes it more challenging. ROA measures how well a company uses its assets, and it varies from one industry to another thus, its best measure is to compare the company's ROA that operates in similar industries or compare the current ROA from its previous.

Non-financial performance measures are expected to be the leading indicators of future performance measurement. In this study, the non-financial performance includes measures of the relations of the enterprise with its suppliers, employees, and customers. Measurement of the non-financial performance of micro-enterprises in terms of their valued customer, employee condition, and network with suppliers. The non-financial of the enterprise can be measured by customer loyalty and employee satisfaction that ultimately affects the profitability of the enterprise. As there are more customers and employee loyalty in the enterprise due to satisfaction with the products/services provided, then the enterprise has a good performance. A business will generate customer satisfaction and a loyal customer when the business can take care of customer needs.

The occurrence of the pandemic poses a big challenge for all business owners, particularly the micro and small business owners. The covid-19 pandemic had impacted not only the health conditions of people but the micro-enterprises as well. Its restrictions on the mobility of the people affected business performance (Fabeil et. al.,2020). A survey conducted by Asian Development Bank (ADB, 2020), it shows that the imposed quarantine restrictions had a significant impact on business activity. Further, in the article posted by the Department of Trade and Industry (DTI) in March 2021, the percentage of businesses who closed their operation was 4.3% while those in partial operation consisted of 39.3%. Businesses that are in full operation were 56.4% and in June 2021, 53.8% of companies still reported a decline in sales (PNA, 2021). Based on the survey, the majority of the businesses that closed were micro-enterprises (ADB, 2020).

Micro enterprises are categorized as businesses whose total assets value is not more than 3 million pesos, with one to nine people or employees. (Angeles et. al.,2019). There is a total of 957,620 business enterprises in the Philippines of which 952 (99.51%) are micro, small, and medium enterprises (MSMEs). They comprise the majority of the business sectors in the country. Further, this majority can be found in the National Capital Region (NCR) which has 201,123 (21.10%) followed by Region 4-A (CALABARZON) which has a total of 139,363 (14.62%). Lipa City as part of the CALABARZON, and the second region which has the highest number of

MSMEs in the country. Situated in the southwestern part of Luzon, Lipa City consists of 72 barangays (13 urban and 59 rural) in the heart of Batangas Province. The majority of the income of Lipa City comes from manufacturing, services, and retail industries (Malaluan, 2019).

Based on the list provided by the Lipa City Permits & Licensing Office, the City has a total of 8,002 registered micro enterprises out of the 8,698 total business registrations. Most of these enterprises experience the consequences of the unanticipated global health crisis that place them in a struggling situation. The 2020 Covid-19 Rehabilitation Support Program of the government and the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Law is government subsidies to aid the micro-enterprise sectors in their financial dilemma. Thus, this study explored how the micro-enterprises owners experiment and learn in the face of disruptions. Subsequently, owners may causally adapt their resources and networks to achieve resilient outcomes. It adds to knowledge about the interaction between the cause and effect of the behavior of the business owners. Because of this, the researcher is challenged on how the model or framework that will produce can serve as a guide to all entrepreneurs and in the academe. As an entrepreneur herself, the result will be useful in the pursuit of the sustainable and excellent performance of their family business and the other business she handles. In addition, the result will be of great contribution to the existing literature.

Objectives of the Study - This study aims to determine the effect of entrepreneurial orientation on enterprise resilience and business performance among micro-enterprises in Lipa City. Specifically, it aims to describe the level of Entrepreneurial Orientation (EO) in terms of the five dimensions namely: Innovativeness, risk taking, pro-activeness, autonomy and competitive aggressiveness. Likewise, it also intends to investigate the level of resilience among the micro-enterprises owners in terms of resourcefulness, dynamic competitiveness, and learning and culture. Furthermore, this study opted to describe the business performance in terms of financial performance (profit, sales revenue/growth and ROA) and non-financial performance (supplier relations, employee relations and customer relations). The study also tests the effect of EO on enterprise resilience and business performance. In addition, it seeks to discover the role of enterprise resilience on the relationship between EO and business performance. Finally, the study, therefore, set out to propose a model for the effect of EO on enterprise resilience and business performance using Structural Equation Model Warp plus.

2. Methods

Research Design - This study employed a quantitative descriptive research design to capture the relevant data that exhibits the perceptions of the micro business owners on EO, enterprise resilience and business performance (financial and non-financial). This research is limited to the micro enterprises in Lipa City who are already operating for 3 years and up. The owners of the selected micro enterprises in different industries are the target respondents since they are in the position to experience the operation of the business. Purposive sampling technique was used to select the respondents in this study. Both primary and secondary were used in this study. Primary data were gathered with the use of survey questionnaires that was distributed and collected via online or face to face. Online questionnaires were facilitated with the use of Google forms while the face-to-face distribution of the questionnaire was done by visiting the store where the owner is available and/or willing to answer the survey.

Participants of the Study - The study targeted micro enterprise owners in Lipa City, Batangas. Currently, there are 8,001 micro enterprises out of the 8,698 registered MSMEs in the city. Lipa City is renowned to be one of the competitive and advanced cities in the country. With the use of Raosoft following 95% level of confidence and 5% margin of error, the minimum target respondents computed was 367 micro-enterprise owners. In this study, the researcher was able to distribute a total of 400 questionnaires, but only 389 were retrieved and considered valid.

Data Gathering Procedure - To obtain the list and contact information of micro and small business owners, the researcher sent an email request to the head of the Licensing and Business Permits Division in Lipa City.

Once the questionnaire was approved, the target respondents were contacted via social media and invited to participate by completing the survey through a Google Forms link. Prior to answering the questionnaire, each respondent was required to review and submit a consent form indicating their agreement to participate. Responses submitted online were automatically collected through Google Forms. For surveys administered in person, the questionnaires were retrieved immediately after completion. All responses—both digital and manual—were consolidated into a single data set for analysis.

ta Gathering Instruments - The questionnaire was composed of four (4) parts such as demographic profile, entrepreneurial orientation, enterprise resilience, and business performance. Part I consists of the demographic profile of the micro business owners Including their gender, age, educational attainment, years of business in operation and the business sector they belong to. On the other hand, Part II is a 23-subset dimension for EO where the respondents were asked to rate their perceptions on entrepreneurial orientation using a 4-point Likert scale which ranges from 1 (strongly disagree) to 4 (strongly agree). The higher the rating, the greater the estimate of EO exhibited and perceived by the respondents. Further, Part III of the instrument is about enterprise resilience where the respondents were asked to indicate how the business is able to cope with the problems/crises encountered. This section is composed of 15 items which the respondents were also asked to indicate their level of agreement using a 4-point which ranges from 1(strongly disagree) to 4 (strongly agree). Lastly, Part IV is about Business Performance. Similarly, the respondents were asked to rate their level of agreement regarding each statement relative to financial and non-financial performance. A 4-point Likert scale was used to determine their score: 1(strongly disagree) to 4 (strongly agree). Since the questionnaires were obtained from different sources, they were subjected to evaluation of the constructs' reliability and validity and their correlations with the use of a PLS-SEM approach.

Table 1

Distribution of items for Entrepreneurial Orientation

Dimensions of Entrepreneurial Orientation	Item Number	Total Number of Items	Percent
Innovativeness	1 – 7	7	25.92%
Risk taking	8 -12	5	18.52%
Proactiveness	13-17	5	18.52%
Autonomy	18 - 23	5	18.52%
Competitive Aggressiveness	24-28	5	18.52%
Total		27	100%

Distribution of items for Enterprise Resilience

Dimensions of Enterprise Resilience	Item Number	Total Number of Items	Percent
Assets and Resourcefulness	1 – 5	5	33.33%
Dynamic Capabilities	6 -10	5	33.33
Learning and Culture	11-15	5	33.33
Total		15	100%

Distribution of items for Business Performance

Dimensions of Business Performance (Financial)	Item Number	Total Number of Items	Percent
Profit	1 – 5	5	33.33%
Sales Revenue/Growth	6 -10	5	33.33
ROA	11-15	5	33.33
Total		15	100%
Dimensions of Business Performance (NonFinancial)	Item Number	Total Number of Items	Percent
Supplier/s Relations	1 – 5	5	33.33%
Employee Relations	6 -10	5	33.33
Customer Relations	11-15	5	33.33
Total		15	100%

Data Analysis - The parameters of the relationship model of entrepreneurial orientation, enterprise resilience and business performance were estimated using the partial least square– structural equation modeling (PLS-SEM) with WarpPLS 8.0 software. A PLS-SEM is a variance-based estimating approach that evaluates the constructs' reliability and validity and their correlations. It also allows estimating complex cause-effect relationship models with latent variables. The PLS-SEM is utilized as means in determining the framework for process improvement.

Table 2*Mean Interpretation*

SCORE	Range	Verbal Interpretation for EO and ER	Verbal Interpretation for Business Performance (Financial and Non-financial)
4	3.50-4.00	Very High	Strongly agree
3	2.50-3.49	High	Agree
2	1.50-2.49	Low	Disagree
1	1.00-1.49	Very Low	Strongly disagree

Validity and reliability tests are included in the evaluation of the research instrument. Table 3 presents a Consistency and Reliability test of all the variables. Cronbach's alpha (CA) and the composite reliability (CR) were measured in this study. CA and CR coefficients of 0.70 and higher are considered valid and acceptable.

*Consistency and Reliability Test of All Variables***Table 3***Item Loading for Consistency and Reliability tests of all variables*

ENTREPRENEURIAL ORIENTATION	ITEM LOADING	AVE	CR	CA
AUTONOMY1	0.778	0.496	0.872	0.827
AUTONOMY2	0.826			
AUTONOMY3	0.855			
AUTONOMY4	0.601			
AUTONOMY5	0.823			
INNOVATIVE1	0.567			
INNOVATIVE2	0.625			
INNOVATIVE3	0.637	0.686	0.916	0.885
INNOVATIVE4	0.727			
INNOVATIVE5	0.734			
INNOVATIVE6	0.803			
INNOVATIVE7	0.800			
COMPAGRESSIVE1	0.811			
COMPAGRESSIVE2	0.847			
COMPAGRESSIVE3	0.831			
COMPAGRESSIVE4	0.855			
COMPAGRESSIVE5	0.795			
PROACTIVE1	0.648	0.551	0.880	0.835
PROACTIVE2	0.730			
PROACTIVE3	0.799			
PROACTIVE4	0.780			
PROACTIVE5	0.801			
PROACTIVE6	0.683			
RISKTAKING1	0.741	0.650	0.902	0.864
RISKTAKING2	0.778			
RISKTAKING3	0.863			
RISKTAKING4	0.857			
RISKTAKING5	0.784			
Enterprise Resilience		0.752	0.900	0.833
Assets and Res	0.887	0.809	0.93	0.882
Dynamic Capabilities	0.794			
Learning and Culture	0.915			
Financial				
Profit	0.916	0.665	0.86	0.748
Sales/growth	0.871			
ROA	0.991			
Non-Financial				
Supplier Relations	0.832	0.665	0.86	0.748
Employee Relations	0.775			
Customer Relations	0.838			

Since all Cronbach alpha generated is above .70, all items are acceptable and valid for distribution. As regards Composite Reliability, the results are within the acceptable thresholds because the values generated are not less than .50. For item loading, Hair et al. (2010) require that each item is considered a satisfactory item when item loadings are greater than 0.70, however, the threshold is between .04 to .70 if acceptable values are

obtained on other indices (Internal consistency reliability, AVE, and HTMT). For this study, item loading passed the validity following the threshold of .04 to .70.

Table 4

Model Fit Indices

Average Path Coefficient (APC)	Values must be greater than greater than 0.50
Average R-squared (ARS)	Average R-squared P value should be less than .05*.
Average Adjusted R-squared (AARS)	Average Adjusted R-squared P value should be less than .05*.
Average Block VIF (AVIF)	acceptable if ≤ 5 , ideally ≤ 3.3
Average Full Collinearity VIF (AFVIF)	acceptable if ≤ 5 , ideally ≤ 3.3
Tenenhaus GoF (GoF)	GoF considers values > 0.1 to indicate low adjustment, values > 0.25 to indicate medium adjustment, and values > 0.36 to indicate a high setting
Simpson's Paradox Ratio (SPR)	acceptable if ≥ 0.7
R-squared contribution ratio (RCSR)	R-squared contribution ratio (RSCR)=1.000, acceptable if ≥ 0.9 , ideally = 1
Statistical Suppression Ratio (SSR)	Statistical suppression ratio (SSR)=1.000, acceptable if ≥ 0.7
Nonlinear Bivariate causality direction ratio (NLBCDR)	Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if ≥ 0.7
RSCR	Acceptable if ≥ 0.90

Source (Kocakaya & Kocakaya, 2014; Weston & Gore, 2006)

Ethical Considerations - The researcher ensured that the respondents gave their consent before asking them to answer the survey questionnaire. They were given ample time to answer the questionnaire and none of them were forced to participate in this study. Their participation and the information they have shared will be treated with the utmost confidentiality.

3. Results and discussion

Table 5 provides a summary of the perception of respondents on Entrepreneurial orientation in terms of the five (5) dimensions such as autonomy, Innovativeness, competitive aggressiveness, pro activeness and risk taking. The composite mean of 3.24 implies that business owners perceived Entrepreneurial orientation as high. Among the 5 dimensions, pro-activeness obtained the highest composite mean of 3.30. According to Bakar 2015, pro-activeness is the obtaining of intelligence and information about competitors and customers, innovativeness is redirecting and allocating of resources to devise a strategic response, and in the implementation of the responses, involves some degree of risk and uncertainty.

Table 5

Summary of Perception of Respondents on Entrepreneurial Orientation in all its Dimensions

Entrepreneurial Orientation	CM	Verbal Interpretation	Rank
1. Autonomy	3.29	High	2
2. Innovativeness	3.21	High	4
3. Competitive Aggressiveness	3.26	High	3
4. Proactiveness	3.30	High	1
5. Risk taking	3.14	High	5
Overall mean	3.24	High	

Legend: 3.50 – 4.00 – Very high; 2.50 – 3.49 – High ; 1.50 – 2.49 – Low; 1.00 – 1.49 – Very Low

This paper presents a summary of the perception of respondents on the various dimensions of Enterprise Resilience as shown in Table 6. With a mean of 3.49, it is noted that Assets and Resourcefulness obtained the highest mean followed by Dynamic Capabilities with a mean of 3.43, then Learning and Culture with 3.41. While, Table 7, on the other hand, is the summary table for the perception of respondents on business performance (Financial) which shows that the respondents agree with the given statements with mean score of 3.24, 3.19, and 3.16 for Profit, ROA and Sales Revenue and Growth respectively.

Table 6*Summary Table for the Perception of Respondents on Enterprise Resilience*

Enterprise Resilience	Composite Mean	Verbal Interpretation
1.Assets and Resourcefulness	3.49	High
2. Dynamic Capabilities	3.43	High
3. Learning and Culture	3.41	High
Composite Mean	3.44	High

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

Table 7*Summary Table for Perception of Respondents on Business Performance (Financial)*

Business Performance (Financial)	CM	Verbal Interpretation
1. Profit	3.24	Agree
2.Sales Revenue and Growth	3.16	Agree
3. ROA	3.19	Agree
Overall mean	3.20	Agree

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

As presented in Table 8, the summary of respondents' perceptions of non-financial business performance highlights Supplier relations as the strongest area, with the highest mean score of 3.49. This is followed by Employee relations at 3.43, and Customer relations at 3.41, both reflecting generally positive perceptions, though slightly lower in comparison to supplier engagement.

Table 8*Summary Table for Perception of Respondents on Business Performance (Non-Financial)*

Business Performance (Non-Financial)	CM	Verbal Interpretation
1. Supplier Relations	3.49	Agree
2. Employee Relations	3.43	Agree
3. Customer Relations	3.41	Agree
Overall mean	3.44	Agree

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

Structural Equation Model

Measuring goodness of fit is a critical aspect of statistical modeling, as it assesses how well a model represents the relationships among variables. Goodness-of-fit metrics allow researchers to evaluate the validity of their inferences, compare competing models, detect potential mis-specifications, assess model reliability, and effectively communicate research findings.

Table 9*Square Roots of AVE Coefficients and Correlation Coefficient*

Entrepreneurial Orientation	Square roots of average coefficient
Autonomy	0.782
Innovativeness	0.784
Competitive Aggressiveness	0.828
Proactiveness	0.743
Risk taking	0.806
Enterprise Resilience	0.867
FINANCIAL	0.900
Profit	
Sales/Revenue/Growth	
ROA	
NONFINANCIAL	0.816
Supplier Relations	
Employee Relations	
Customer Relations	

Table 9 shows the assessment among variables using the square roots of Average Variances Extracted (AVE)

coefficients to determine the instrument's discriminant validity. This is a test whether the statement is related to one another and not confused with the statements connected with another variable (Discriminant Validity). As the respondents completed the questionnaire, the discriminant validity determines if the statements linked with each latent variable are clear. It also checks those statements about one variable, for example, aren't mixed up with statements about other variables. The square root of the AVEs for each variable should be greater than any of the variables' correlations.

The Square Roots of AVE coefficients are as follows: autonomy (0.782), innovation (0.704), competitive aggressiveness (0.828), proactiveness (0.743), and risk taking (0.806); enterprise resilience (0.867), financial (0.900), and non-financial (0.816) for business performance. The results indicate a high discriminant validity among the assessed variables. The higher scores in the constructs of entrepreneurial orientation dimensions, enterprise resilience, and business performance—such as financial and non-financial—indicate higher question quality or convergent validity, thus reflecting that each dimension's statements are related to one another instead of confusing with statements linked to different constructs.

Table 10*Predictive Relevance, Collinearity, and Coefficient of Determination*

Construct	VIF
Autonomy	1.548
Innovativeness	1.988
Competitive Aggressiveness	1.721
Proactiveness	2.206
Risk taking	1.775
Resilience	3.003
Financial	3.339
Non-Financial	4.080

The full co-linearity VIF, predictive relevance (Q²), and coefficient of determination are shown in Table 10. The full co-linearity variance inflation factor of the path model of the latent variables of Entrepreneurial orientation such as autonomy (1.548), innovativeness (1.988), competitive aggressiveness (1.721), proactive (2.206) and risk taking (1.775); Enterprise resilience (3.003); Financial (3.339) and Non-financial (4.080), all are within the acceptable value of 5 or less.

Further, Table 11 indicates the relationship of the paths between dimensions of EO to enterprise resilience that are all significant with values ($\beta=0.159$, $p<0.001$; $\beta=0.134$, $p<0.004$; $\beta=0.408$, $p<0.001$; $\beta=0.303$, $p<0.001$; $\beta=0.219$, $p<0.001$), This can also confirm that the variables of EO indirectly affect enterprise resilience.

Table 11*Direct and Indirect Effects of the PLS Path Model*

	β coefficient	SE	p-value	f2
Autonomy---->Enterprise Resilience	0.159	.050	<.001	0.069
Innovativeness-->Enterprise Resilience	0.134	0.050	0.004	0.052
Competitive Aggressiveness----->Enterprise Resilience	0.408	0.048	<.001	0.253
Proactiveness---->Enterprise Resilience	0.303	0.049	<.001	0.179
Risk taking----->Enterprise Resilience	0.219	0.049	<.001	0.122

β coefficient t, SE, p=value (.05 level of significance), f2 or Effect size

Direct Effects of EO on Performance

The path concerning entrepreneurial dimensions (autonomy, innovativeness, competitive aggressiveness, pro-activeness and risk-taking) to business performance (financial) are as follows; ($\beta=0.087$, $p<0.008$), ($\beta=0.073$, $p<0.021$), ($\beta=0.222$, $p<0.001$), ($\beta=0.165$, $p<0.001$), and ($\beta=0.199$, $p<0.001$), respectively, are all significant at .05 level of significance. Likewise, ($\beta=0.099$, $p<0.003$), ($\beta=0.083$, $p<0.010$), ($\beta=0.254$, $p<0.001$), ($\beta=0.189$, $p<0.001$), and ($\beta=0.136$, $p<0.001$) of all EO dimensions to business performance (non-financial) are significant at .05 level of significance. The path confirms that all EO dimensions significantly and directly affect business

performance, both financial and non-financial.

Table 12

Effect of EO on Financial Performance

Autonomy->Financial Perf	0.089	0.050	0.039	0.028	Significant	Partial Mediation
Innovativeness-->Financial Perf	0.240	0.049	<.001	0.088	Significant	Partial Mediation
Competitive Aggressive-->Financial	0.357	0.048	<.001	0.105	Significant	Partial Mediation
Proactiveness->Financial Perf	0.175	0.049	<.001	0.072	Significant	Partial Mediation
Risk taking-->Financial Perf	0.248	0.049	<.001	0.106	Significant	Partial Mediation
Resilience to Financial	0.543	0.047	<.001	0.320	Significant	
Resilience to Non Financial	0.622	0.047	<.001	0.428	Significant	
Autonomy->Non-Financial Perf	0.151	0.050	0.001	0.059	Significant	Partial Mediation
Innovativeness-->Non-Financial Perf	0.212	0.049	<.001	0.085	Significant	Partial Mediation
Competitive Aggressive-->Non-F	0.366	0.048	<.001	0.134	Significant	Partial Mediation
Proactiveness->Non-Financial Perf	0.241	0.049	<.001	0.120	Significant	Partial Mediation
Risk taking-->Non-Financial Perf	0.196	0.049	<.001	0.089	Significant	Partial Mediation

The findings, as shown in Table 12, indicate that all dimensions of entrepreneurial orientation (EO) exert statistically significant direct effects on both financial and non-financial performance. In the study by Al-Mamary et al. (2020), it was noted that EO is a key ingredient for organizational success, leading to higher financial performance. The study clarifies the interaction between entrepreneurial orientation and the financial and non-financial performance of firms. It is also worth noting that Competitive Aggressive emerged as the most influential factor, highlighting the advantage of asserting pursuing market opportunities and actively confronting competitors to secure superior outcomes. Pro-activeness and risk-taking also demonstrated strong direct effects as compared with Autonomy and Innovativeness, which exhibited a comparatively lower direct effect; their significance reinforces the critical role of employee empowerment and creative problem-solving in enhancing organizational performance. Enterprise resilience serves a vital role in the relationship between entrepreneurial orientation (EO) and Enterprise performance. This mediating role suggests that EO alone is not sufficient to guarantee performance; resilience is the mechanism that operationalizes entrepreneurial intent into real-world success.

Table 13

Mediating Effect of Enterprise Resilience in the Relationship between EO and Business Performance

	β	SE	p-value	f2	Verbal Interpretation
Direct effect					
Autonomy->Financial Perf	0.087	0.035	0.008	0.028	Significant
Innovativeness-->Financial Perf	0.073	0.035	0.021	0.027	Significant
Competitive Aggressive->Financial P	0.222	0.035	<.001	0.065	Significant
Proactiveness->Financial Perf	0.165	0.035	<.001	0.068	Significant
Risk taking-->Financial Perf	0.199	0.035	<.001	0.051	Significant
Autonomy->Non-Financial Perf	0.099	0.035	0.003	0.038	Significant
Innovativeness-->Non-Financial Perf	0.083	0.035	0.010	0.034	Significant
Competitive Aggressive-->Non-finan	0.254	0.035	<.001	0.093	Significant
Proactiveness->Non-Financial Perf	0.189	0.035	<.001	0.094	Significant
Risk taking-->Non-Financial Perf	0.136	0.035	<.001	0.062	Significant
Indirect Effect and Total effect					
Autonomy->Enterprise Resilience	0.159	0.050	<.001	0.069	Significant
Innovativeness-->Enterprise Resilien	0.134	0.050	0.004	0.052	Significant
Competitive Aggressive->Enterprise	0.408	0.048	<.001	0.253	Significant
Proactiveness->Enterprise Resilience	0.303	0.049	<.001	0.179	Significant
Risk taking-->Enterprise Resilience	0.219	0.049	<.001	0.122	Significant
Autonomy->Financial Perf	0.089	0.050	0.039	0.028	Significant PM
Innovativeness-->Financial Perf	0.240	0.049	<.001	0.088	Significant PM
Competitive Aggressive->Finance	0.357	0.048	<.001	0.105	Significant PM
Proactiveness->Financial Perf	0.175	0.049	<.001	0.072	Significant PM
Risk taking-->Financial Perf	0.248	0.049	<.001	0.106	Significant PM
Resilience to Financial	0.543	0.047	<.001	0.320	Significant PM
Resilience to Non Financial	0.622	0.047	<.001	0.428	Significant PM
Autonomy->Non-Financial Perf	0.151	0.050	0.001	0.059	Significant PM
Innovativeness-->Non-Financial	0.212	0.049	<.001	0.085	Significant PM
Competitive Aggressive-->Non-F	0.366	0.048	<.001	0.134	Significant PM

Proactiveness->Non-Financial P	0.241	0.049	<.001	0.120	Significant PM
Risk taking-->Non-Financial Perf	0.196	0.049	<.001	0.089	Significant PM

Table 13 shows the mediating effect of enterprise resilience in the relationship between EO and business performance, both with financial and non-financial. It is worth noting that since the p-value in all paths are less than .05 level of significance, all relationships are significant. Therefore, the role of Enterprise resilience is declared as partial mediation. Even without Enterprise resilience, the relationship between all the dimensions of EO such as autonomy, innovativeness, competitive aggressive, proactive and risk taking and business performance (financial and non-financial) are significant. In a study published by McLeod (2022), it was claimed that partial mediation occurs when the mediator explains some, but not all, of the relationship. This means that the independent variable still has a direct effect on the outcome, but the effect is weaker than it was before considering the mediator variable.

4. Conclusion and recommendation

This study concludes the following: EO has significant effect on enterprise resilience and business performance; The level of EO in terms of five (5) dimensions such as Autonomy, Innovativeness, Dynamic Capabilities, Pro activeness and Risk taking are all high. The level of resilience in terms of assets and resourcefulness, dynamic capabilities learning and culture is also high; EO has significant effect on enterprise resilience Enterprise resilience acts as a mediator between EO and financial and non-financial performance. It partially mediates the relationship of EO to business performance-financial and non-financial. Given the results, below is the proposed framework for the study using partial least-square measure (SEM WARPPLS8). The proposed applied in the study may provide insights and overview for the micro-business owners by explaining the effect of EO to business performance both for financial and non-financial. It may also add to the entrepreneurship literature as it applies the five dimensions of EO and the inclusion of enterprise resilience as a contributing factor for the success of any business. Further, the business today is much more challenging due to several factors that may affect the business and staying in the business requires better strategy. For future researchers, the results of this study may be helpful in further investigating on the effect of EO and the role of enterprise resilience in the performance of business for specific types of industry.

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Green innovation, environmental dynamics and organizational resilience: Basis for enhanced green competitive advantage framework in manufacturing enterprises in China

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Abstract

As the world's largest manufacturing country, the green transformation of China's manufacturing industry is of crucial significance to global environmental protection and economic development. With the Chinese government vigorously promoting green development and advancing the goals of carbon peaking and carbon neutrality, enhancing the green competitive advantage of manufacturing enterprises has become an urgent practical need. This study aimed to explore green innovation, environmental dynamics, and organizational resilience among manufacturing enterprises in China, to put forward a framework for enhancing green competitive advantage. It assessed green innovation in terms of product, process, and management innovation; described environmental dynamics through market, technology, and policy and regulation factors; determined organizational resilience via adaptability, recovery capability, and situation awareness; tested the significant relationships among the three; and developed a framework to improve enterprises' green competitive advantage. Using questionnaires, data were gathered from 400 employees of five manufacturing enterprises in Fujian Province to examine the synergistic role of these factors in advancing green transformation and sustainable development. The study analyzed the internal relationships between green innovation, environmental dynamics, organizational resilience, and green competitive advantage, providing a theoretical basis for constructing a framework to enhance the latter. Results show respondents positively recognized green innovation implementation effects, moderately agreed on environmental dynamics and resilience performance, and confirmed a highly significant relationship among all three. Finally, a framework to improve manufacturing enterprises' green competitive advantage was developed, contributing to their green transformation and sustainable development.

Keywords: green innovation, environmental dynamics, organizational resilience, green competitive advantage

Green innovation, environmental dynamics and organizational resilience: Basis for enhanced green competitive advantage framework in manufacturing enterprises in China

1. Introduction

Against the backdrop of intensified climate change, increasing resource constraints, and rising consumer awareness of environmental issues, the global business environment is undergoing profound transformation. Enterprises are compelled to seek a dynamic balance between achieving economic benefits and fulfilling environmental responsibilities. Green and low-carbon practices have become a core aspect of enterprise competitiveness in the new era, rather than a marginal strategy in the traditional sense. At the same time, governments worldwide are increasingly guiding businesses toward sustainable development through environmental policies and carbon regulations. This trend poses higher demands for corporate strategic adjustment and organizational adaptability.

From the perspective of global corporate practices, green transformation has evolved from an optional strategy to a matter of survival. In recent years, Apple has leveraged green product design, Tesla has relied on innovations in battery recycling technology, and Siemens has capitalized on environmental management system certification, each building competitive barriers across the three dimensions of green innovation. These cases affirm the synergistic value of multidimensional green innovation (Khan et al., 2021). To cope with the challenges of green transformation, enterprises urgently need to build a systemic capability framework suited to complex environments. Green innovation, as a key pathway to sustainable development, mainly includes green product innovation, green process innovation, and green management innovation. It helps enterprises achieve differentiated competitive advantages while reducing energy consumption and emissions (Qiu et al., 2020). Meanwhile, the external environment in which firms operate is increasingly uncertain and highly dynamic, characterized by three typical dimensions: rapid changes in market preferences, continuous technological innovation, and frequent policy adjustments.

Facing this complexity and volatility, an enterprise's ability to promptly perceive external changes and quickly reallocate internal resources hinges on its organizational resilience, which comprises key elements such as adaptability, recovery capability, and situational awareness (Duchek, 2020). Globally, more and more companies are integrating green innovation into their core strategies. However, whether green practices can effectively translate into competitive advantages is often influenced by both environmental dynamism and organizational resilience. In this context, exploring the interaction pathways among the three is of significant theoretical and practical value for understanding how green strategies are implemented within firms.

As a core link in the global industrial chain, China's manufacturing sector plays a decisive role in achieving global sustainability goals. Known as the "world's factory", Chinese manufacturing contributes over 30% of global industrial output, yet it faces the stringent constraints of the "dual carbon" targets (carbon peaking by 2030 and carbon neutrality by 2060) and increasingly tight environmental regulations (Jin et al., 2022). An empirical study by Lu et al. (2020) on China's manufacturing industry indicates that green product innovation indirectly influences firms' competitive advantage through green dynamic capabilities. However, this effect is significantly constrained by policy stability, reflecting the practical challenges enterprises face. Specifically, frequent policy changes, such as revisions to environmental regulations and the improvement of carbon trading mechanisms, can trigger compliance risks (Zhang et. al.,2021). Meanwhile, consumers' reluctance to pay a premium for green products may lead to operational volatility for firms (Qi et. al.,2023). These real-world challenges highlight the urgent need for the manufacturing sector to explore effective pathways to enhance green competitive advantage.

Although existing literature has explored the effects of green innovation, environmental dynamism, or organizational resilience on firm performance from various perspectives, there remains a lack of systematic integration and empirical analysis regarding the synergistic mechanisms and interaction pathways among the three. Most current studies focus on the direct impact of single variables on firm performance, overlooking the moderating role of environmental dynamism on the outcomes of green strategies, and lacking in-depth analysis of the bridging role of organizational resilience in addressing green uncertainty. Therefore, this study constructed a conceptual model linking “Green Innovation—Organizational Resilience—Green Competitive Advantage,” with environmental dynamism introduced as a contextual variable, aiming to reveal how the interplay among these dimensions jointly drove the formation of sustainable competitive advantage. Theoretically, this research contributed to the integration of strategic management and organizational theory within the green context; practically, it offered a roadmap for Chinese manufacturing enterprises navigating green transformation amid high uncertainty.

The researcher had long been concerned with China’s manufacturing transformation and had witnessed traditional energy-intensive firms fall into business distress due to their failure to adapt to the green transformation trend, and found it necessary to deeply understand the confusion enterprises faced regarding “how green investments can be converted into competitive advantages.” This study not only responded to the dual national strategies of “Made in China” and “Beautiful China,” but also aimed to provide generalizable insights for green transformation in manufacturing sectors of developing countries (Zhong et al., 2022).

Objectives of the Study - The study aimed to explore green innovation, environmental dynamics, and organizational resilience among manufacturing enterprises in China, in order to put forward a framework for enhancing green competitive advantage. Specifically, the study sought to describe green innovation practices in terms of green product innovation, green process innovation, and green management innovation; assessed environmental dynamics in terms of market environment dynamics, technology environment dynamics, and policy and regulation dynamics; assessed organizational resilience in terms of adaptability, recovery capability, and situation awareness; tested the significant relationships among green innovation, environmental dynamics, and organizational resilience; and developed a framework to improve the green competitive advantage of enterprises.

2. Methods

Research Design - The study will used a descriptive research design for an adequate and precise interpretation of the findings, explored green innovation, environmental dynamics, and organization resilience among manufacturing enterprises in China. This method included all the studies that aimed to present facts concerning the nature and status of anything including survey and correlational.

Participants of the Study - In this study, 400 employees from different levels of enterprises in Fujian Province were selected as samples and conducted a questionnaire survey through random sampling at different levels. Moreover, the final number of samples were determined through testing to ensure that the alpha error is 5% and the confidence level is 95%. The selection of these five listed companies, namely Contemporary Amperex Technology Co., Ltd. (CATL), Zijin Mining Group Co., Ltd., Fuyao Glass Industry Group Co., Ltd., Xiamen Tungsten Co., Ltd., and Fujian Sangang Minguang Co., Ltd., as research samples is based on multiple reasons beyond the researcher's geographical location in Fujian and the availability of data. These enterprises belong to key manufacturing sectors such as new energy batteries, mining, glass manufacturing, non-ferrous metals, and steel manufacturing, with prominent industry representativeness, which can reflect the characteristics of green transformation in different sub-fields. They have rich practices in green innovation, covering various aspects such as technological research and development, process optimization, and resource recycling. They have demonstrated significant organizational resilience in the face of complex environments, providing practical cases for the research. Moreover, as listed companies, their public reports and multi-channel information can ensure the comprehensiveness and accuracy of research data, making them suitable for exploring issues related to green innovation, environmental dynamics, organizational resilience, and the framework of green competitive

advantage in manufacturing enterprises.

Among them, the selection of participants is divided according to their job responsibilities, and a questionnaire survey will be conducted on the post employees involved in green innovation, environmental dynamic and organization resilience. Among the basic profiles of the respondents, the gender distribution is relatively balanced, with males accounting for 51.2%. In terms of age, the 30-39 age group is the largest, making up 38.0%. Regarding educational attainment, those with a college degree dominate, accounting for 41.5%. As for income, the group with a monthly income of 5,001-10,000 yuan has the highest proportion, reaching 60.3%. In terms of job positions, ordinary employees are the majority, accounting for 59.8%.

Data Gathering Instrument - This study adopted the method of questionnaire survey. Discussed the green innovation, environmental dynamics and organizational flexibility of Chinese manufacturing enterprises: basis of enhancing the framework of green competitive advantage of Chinese manufacturing enterprises, the researcher completed the questionnaire through on-site survey and copy of questionnaire star form to provide the respondents with choices. According to the objectives of this study, the researcher conducted predictive analysis on employees in the Chinese manufacturing industry. During the questionnaire development stage, project design was conducted through literature analysis and expert interviews, combined with the questionnaires and research results of Zhang et. al.,(2021), Mohsin (2020), and Mo et. al.,(2023). A pilot test was undertaken to determine the survey questionnaire's efficacy. Fifty samples were subjected to a reliability test using Cronbach's alpha via SPSS 28.

Table 1

Reliability Result of a Pre-Test of the Questionnaire Reliability Summary

Indicators	No of Items	Cronbach Alpha	Remarks
Green Product Innovation	5	0.924	Excellent
Green Process Innovation	5	0.903	Excellent
Green Management Innovation	5	0.920	Excellent
Market Environment Dynamics	5	0.943	Excellent
Technology environment dynamics	5	0.891	Good
Policy and Regulation Dynamics	5	0.937	Excellent
Adaptability	5	0.950	Excellent
Recovery Capability	5	0.925	Excellent
Situation Awareness	5	0.876	Good

George and Mallery (2003) provide the following rules of the thumb: “_> .9 – Excellent, _> .8 – Good, _> .7 – Acceptable, _> .6 – Questionable, _> .5 – Poor, and _< .5 – Unacceptable”

According to the table 1, the Cronbach Alpha coefficients are all above 0.8. Among them, the coefficients of Green Product Innovation, Green Process Innovation, Green Management Innovation, Market Environment Dynamics, Policy and Regulation Dynamics, Adaptability, and Recovery Capability are all greater than 0.9, and the conclusion is "excellent". The coefficients of Technology environment dynamics and Situation Awareness are greater than 0.8, and the conclusion is "good". The maximum coefficient is 0.950 and the minimum coefficient is 0.876. This indicates that the reliability and quality of the study data are high enough to be used in subsequent analyses.

Data Gathering Procedure - This questionnaire was completed online through the Tencent Questionnaire platform, with the data collection period accessible via <https://www.wjx.cn/vm/hrDZ9Xd.aspx>. Tencent Questionnaire, developed by Tencent Holdings Limited of China, is a user-friendly online survey tool that provides users with a complete solution from questionnaire creation and distribution to data analysis. In this study, data could be efficiently collected, statistically analyzed, and presented through Tencent Questionnaire, helping researchers understand respondents' perspectives and supporting research decision-making and data-driven research processes.

Since the questionnaire content involves issues such as green innovation, environmental dynamics, and the integration of organizational resilience in manufacturing industries, five listed companies in Fujian were selected

as research samples. These enterprises belong to key manufacturing sectors such as new energy batteries, mining, glass manufacturing, non-ferrous metals, and steel manufacturing, with prominent industry representativeness. Researchers contacted the person in charge of the human resource management department in each enterprise, who then distributed the questionnaires to active employees, grass-roots managers, middle managers, and senior managers. Active employees filled out and returned the questionnaires voluntarily. A total of 400 valid questionnaires were collected between March 1, 2025, and May 30, 2025, with an effective rate of 100%.

Data Analysis - To perform data analysis, the following statistical tools were used. Weighted mean and ranking were used to describe green innovation practices in terms of green product innovation, green process innovation and green management innovation; assess environmental dynamics in terms of market environment dynamics · technology environment dynamics, and policy and regulation dynamics; assess organizational resilience in terms of adaptability, recovery capability, and situation awareness. Likewise, Spearman rho was used as part of the non-parametric tests to determine the significant relationship. In addition, post hoc test was also conducted. The following Likert Scale was used in assessing the variables: 3.50-4.00 = Strongly Agree; 2.50-3.49 = Agree; 1.50-2.49 = Disagree; and 1.00-1.49 = Strongly Disagree. All data were treated using a statistical software known as JAMOV version 2.6 to further interpret the result of the study using an alpha level of 0.05 and 0.01.

Ethical Considerations - Prior to conducting the study, the research design underwent thorough ethical review and approval by the Lyceum of the Philippines University-Batangas Campus Ethics Committee. The study strictly adhered to ethical principles, ensuring participant rights were protected and upholding values of voluntariness, confidentiality, and well-being. Participants were informed about the study's purpose and significance, provided with informed consent forms, and assured of their anonymity and data privacy. They were free to withdraw at any point and offered psychological support if needed. The researchers prioritized the safety and security of all participants throughout the data collection process.

3. Results and discussion

Table 2

Summary Table on Green Innovation

Indicators	Weighted Mean	Verbal Interpretation	Rank
Green Product Innovation	3.20	Agree	1
Green Process Innovation	3.03	Agree	2
Green Management Innovation	3.00	Agree	3
Composite Mean	3.08	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Based on the results of green innovation practices, the table 5 shows that the three sub-dimensions, Green Product Innovation (WM: 3.20), Green Process Innovation (WM: 3.03), and Green Management Innovation (WM: 3.00), exhibit minimal differences in their scores. The overall composite mean is 3.08, all falling within the “Agree” range (2.50–3.49). This indicates that respondents generally recognize the implementation of green innovation practices in enterprises. It also reflects that green innovation has become a crucial pathway for building green competitive advantages and achieving sustainable development. Chen et. al.,(2025) from the perspective of resources and capabilities, argue that green innovation strategies, by integrating environmental resources and cultivating green capabilities, provide core support for enterprises to build sustainable competitive advantages. The synergy of product, process, and management innovation is a concrete manifestation of such resource integration and capability development.

Among the sub-dimensions, green product innovation received the highest score (ranked first), indicating that innovation practices in this area are more widely recognized. By focusing on green product innovation, enterprises not only improve product quality and environmental performance in market competition but also provide a practical platform for pollution reduction. This, in turn, helps enterprises accumulate reputational

capital and develop unique resources, further consolidating their competitiveness.

Although green process innovation and green management innovation scored slightly lower, they still fall within the “Agree” range. This suggests that enterprises have also achieved tangible results in green innovation practices related to process optimization and management coordination. The research by Wang et. al.,(2020) on ambidextrous green innovation provides theoretical support for this. They pointed out that green process innovation and green product innovation are complementary, while green management innovation serves as the institutional guarantee for their synergy. It establishes standards and coordinates resource allocation to provide stable support for both process and product innovation. This corresponds with the observed practical logic among the three dimensions: Green management innovation lays the foundation by improving institutional mechanisms and coordinating cross-departmental resources; Green process innovation then optimizes energy consumption and emission control in production, ensuring environmental attributes at the source; Ultimately, these efforts form a synergistic innovation chain of “product – process –management.”

Table 3

Summary Table on Environmental Dynamics

Indicators	Weighted Mean	Verbal Interpretation	Rank
Market Environment Dynamics	3.18	Agree	1
Technology environment Dynamics	3.14	Agree	2
Policy and Regulation Dynamics	2.91	Agree	3
Composite Mean	3.08	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 presents an integrated view of enterprises’ perceptions of environmental dynamism across three dimensions: market, technology, and policy/regulatory environments. The composite mean score is 3.08, falling within the “Agree” range, indicating that surveyed firms generally acknowledge the profound impact of environmental dynamism on their operations and strategic decisions. Specifically, market environmental dynamism scored the highest (3.18), ranking first; technological dynamism followed closely (3.14), ranking second; and policy and regulatory dynamism scored relatively lower (2.91), ranking third. This result revealed a clear hierarchy, reflecting the varying degrees to which enterprises perceive dynamism in different environmental dimensions, with market and technology dimensions posing more significant shocks, while policy/regulatory changes, though less intense, still act as important external forces driving strategic adjustments.

In terms of market environmental dynamism, the highest score reflected that enterprises are widely experiencing ongoing pressures from changing market demands and competitive structures, requiring them to respond through innovation and dynamic capabilities. Le et. al.,(2024)noted that growing consumer preferences for environmentally friendly products and corporate social responsibility are pushing companies to strengthen green training and innovative responses in order to gain competitive advantages. This aligns closely with the logic in the table that “market dynamism drives strategic adjustment.” Barlette et. al.,(2022) further emphasized that in today’s fast-changing markets, enterprises must build dynamic capability systems centered on big data analytics and rapid response mechanisms to achieve flexible resource allocation and timely strategic alignment. These studies collectively support the view that market dynamism plays a vital role in fostering firms’ dynamic capability development and enhancing their market adaptability, confirming the high perception and responsiveness reflected in the market dimension of the table.

Regarding technological environmental dynamism, which ranked second with a score of 3.14, enterprises show high sensitivity to rapid technological iteration and the urgency of green technology adoption. Qiu et al. (2020), based on a study of Chinese manufacturing firms, found that green technological innovation must be integrated with dynamic capabilities, as the uncertainty and pace of technological change compel firms to enhance green dynamic capabilities, promote product innovation, and gain an early advantage in the green transformation. This finding is fully aligned with the table’s logic that “technological dynamism drives technological innovation.” Enterprises must engage in green energy innovation to adapt to technological shifts,

balancing economic benefits with environmental sustainability. This further validates the shaping role of technological dynamism in directing innovation and underscores the increasing demand it places on sustainable strategy formulation.

As for policy and regulatory environmental dynamism, it scored 2.91, the lowest among the three dimensions but still within the “Agree” range, indicating that companies widely recognize the changing nature of regulations and the strategic pressure these changes generate. Maghyreh et al. (2025) examined the impact of policy dynamism on corporate ecological footprints in the European context and pointed out that shifts in trade policies and energy regulations can constrain energy use and production behaviors, guiding companies toward green transformation. This demonstrates the external guiding force of policy and regulatory dynamism on corporate behavior. Furthermore, Qiu et al. (2020) noted that dynamic adjustments in green regulations directly influence firms’ decisions regarding green innovation strategies. Companies must leverage green dynamic capabilities to respond quickly to policy changes, transforming compliance pressures into innovation opportunities and maintaining competitiveness in a constantly evolving regulatory landscape. This supported the conclusion in the table that policy/regulatory dynamism, although perceived less strongly, remains a crucial external driver of green transformation.

Table 4

Summary Table on Organizational Resilience

Indicators	Weighted Mean	Verbal Interpretation	Rank
Adaptability	3.08	Agree	2
Recovery Capability	2.98	Agree	3
Situation Awareness	3.12	Agree	1
Composite Mean	3.06	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 4 presents a comprehensive evaluation of the three dimensions of organizational resilience. With a composite mean score of 3.06 (within the “Agree” range), the results indicate that manufacturing enterprises possess a certain level of resilience in the context of green competition. However, the uneven development across dimensions suggests a need to optimize the resilience system by leveraging green competitive advantages such as green innovation and low-carbon operations. In the landscape of green competition, the three dimensions of organizational resilience form an organically integrated system characterized by progressive layering and mutual support: Situational Awareness acts as the “outpost,” playing a crucial role in identifying green policies and market demands. It provides accurate information anchors that help enterprises capture green opportunities and avoid policy risks, thus serving as the foundation and directional guide for green competition. Adaptability, as the “engine,” builds upon the output of situational awareness. It enables rapid adjustments in production processes and agile responses to green market changes, transforming perceived opportunities into actionable strategies. This dimension empowers enterprises to remain flexible and competitive during green transitions. Recovery Capability serves as the “moat,” supporting enterprises in resuming operations after green-related crises while simultaneously strengthening green practices. It ensures the sustainability of green competition and reinforces the advantages established through prior situational awareness and adaptability. Together, these dimensions form a closed loop of green competitiveness, perception, action, and consolidation. In the manufacturing sector, situational awareness aids in identifying green transformation opportunities, recovery capability reduces trial-and-error costs during transitions, and adaptability ensures pace and resource alignment with green transformation efforts.

Among the three dimensions, situational awareness scored the highest at 3.12, ranking first. This suggests that manufacturing enterprises are relatively strong in perceiving green policies and market demands, such as identifying carbon tariff policies or consumer preferences for low-carbon products. Zhang et al. (2023) highlight that under environmental uncertainty, situational awareness must focus on green risks and opportunities. By monitoring policy shifts and fluctuations in green demand, enterprises can inform strategies such as low-carbon technology R&D and circular supply chain deployment, aligning with the logic of “precise identification of

green value” within green competitive advantage. Adaptability scored 3.08, ranking second, indicating a moderate level of capability. It reflects room for improvement in how enterprises adjust during green transitions, such as modifying production lines for low-carbon output or restructuring supply chains toward green suppliers. One major challenge in green competition is that green transformation requires significant resources, such as purchasing eco-friendly equipment or training employees in green skills. Some enterprises may suffer from path dependency or resource constraints, leading to adaptability lagging behind green market demands. Wang et al. (2022) also found that manufacturing firms focusing solely on low-carbon production processes while neglecting green culture development weaken adaptability’s contribution to green competitive advantage. Finally, recovery capability received the lowest score of 2.98, ranking third. This exposes a vulnerability in how manufacturing enterprises recover from green-related crises. For example, after experiencing environmental incidents or green supply chain disruptions, firms may struggle to resume production efficiently or improve their green practices. When penalized for exceeding carbon emission limits, some enterprises show slow recovery in both resuming operations and implementing green improvements.

Table 5*Relationship Between Green Innovation and Environmental Dynamics*

Green Product Innovation	r-value	p-value	Interpretation
Market Environment Dynamics	0.515 ***	<.001	Highly Significant
Technology environment dynamics	0.607 ***	<.001	Highly Significant
Policy and Regulation Dynamics	0.696 ***	<.001	Highly Significant
Green Process Innovation			
Market Environment Dynamics	0.533 ***	<.001	Highly Significant
Technology environment dynamics	0.597 ***	<.001	Highly Significant
Policy and Regulation Dynamics	0.630 ***	<.001	Highly Significant
Green Management Innovation			
Market Environment Dynamics	0.502 ***	<.001	Highly Significant
Technology environment dynamics	0.566 ***	<.001	Highly Significant
Policy and Regulation Dynamics	0.587 ***	<.001	Highly Significant

Table 5 presents the relationships between various dimensions of green innovation, including green product innovation, green process innovation, and green management innovation, and aspects of environmental dynamism, including market dynamism, technological dynamism, and policy and regulatory dynamism. These relationships are interpreted through correlation coefficients (r-values) and corresponding p-values. The correlation coefficients range from 0.502 to 0.696, all of which are statistically significant at the 0.001 level, as indicated by ***.

These findings demonstrate strong positive correlations between the dimensions of green innovation and environmental dynamism: the positive and relatively high correlation values suggest that as environmental dynamism increases, firms tend to engage more actively in green innovation across product, process, and managerial aspects. Conversely, proactively engaging in green innovation also helps enterprises better perceive and adapt to environmental changes, forming a virtuous cycle in which “environmental change drives innovation, and innovation enhances environmental adaptability.” The fact that all p-values are below 0.001 indicates an extremely high level of confidence in the observed correlations, suggesting these associations are not random but rather reflect stable and intrinsic relationships. Thus, the positive links between environmental dynamism and various dimensions of green innovation are reliable and replicable, providing robust statistical and theoretical support for enterprises to advance green innovation amid environmental uncertainty.

This comprehensive analysis underscores the critical role of green innovation practices in enabling manufacturing firms to adapt to and thrive in dynamic environments. The positive correlation coefficients imply that implementing green innovation allows manufacturing firms to carve out a path toward enhanced green competitiveness. Through green innovation, enterprises can better respond to environmental dynamism, establish a proactive green image, enhance brand value, and achieve sustainable development. Moreover, strengthening

green innovation helps firms better fulfill their “green responsibilities,” including environmental responsibility, social responsibility, and economic responsibility. Green innovation also guides the internal reallocation of resources and adjustment of operations, thereby improving overall efficiency.

Furthermore, as the importance of green innovation for the sustainable development of manufacturing enterprises becomes increasingly apparent, firms that actively participate in green innovation tend to be more proactive in adapting to environmental changes, thereby achieving stronger and more lasting green competitiveness. The high significance of these correlations highlights the robustness and reliability of the relationship between green innovation and environmental dynamism. This has profound implications for Chinese manufacturing enterprises, emphasizing the necessity of enhancing environmental responsiveness and investing in green innovation initiatives, such as green product development, process optimization, and management upgrades to strengthen enterprise resilience under environmental uncertainty. Active green innovation can guide business activities, optimize products to meet green market demands, improve economic performance, and foster an internal organizational climate that supports innovation and sustainability.

In conclusion, recognizing the correlation between green innovation and environmental dynamism is essential for Chinese manufacturing firms aiming to achieve efficient and sustainable development in a competitive and dynamic market. Firms that invest in green innovation are generally more capable of coping with environmental changes and will gain greater reputation, brand value, and overall performance in the evolving green economy.

Table 6

Relationship Between Green Innovation and Organizational Resilience

Green Product Innovation	r-value	p-value	Interpretation
Adaptability	0.313 ***	<.001	Highly Significant
Recovery Capability	0.622 ***	<.001	Highly Significant
Situation Awareness	0.402 ***	<.001	Highly Significant
Green Process Innovation			
Adaptability	0.340 ***	<.001	Highly Significant
Recovery Capability	0.640 ***	<.001	Highly Significant
Situation Awareness	0.425 ***	<.001	Highly Significant
Green Management Innovation			
Adaptability	0.342 ***	<.001	Highly Significant
Recovery Capability	0.591 ***	<.001	Highly Significant
Situation Awareness	0.425 ***	<.001	Highly Significant

Table 6 presents the correlations between the dimensions of green innovation and organizational resilience, interpreted through correlation coefficients (r-values) and p-values. The correlation coefficients range from 0.313 to 0.640, and all values are statistically significant at the 0.001 level, denoted by ***. These findings indicate a strong positive correlation between green innovation and organizational resilience: as green innovation advances across its various dimensions, corresponding dimensions of resilience are also enhanced. Conversely, enterprises with high levels of resilience are better equipped to implement green innovation, forming a positive feedback loop where “green innovation empowers resilience enhancement, and strengthened resilience, in turn, supports innovation practice.”

The p-values below 0.001 suggest that these correlations are not coincidental but rather stable and reliable, providing solid empirical support for simultaneously strengthening innovation and resilience during green transformation in manufacturing enterprises. This conclusion is also supported by relevant studies. Gao et al.,(2024), from a network relationship perspective, confirmed that enterprises implementing green innovation exhibit greater resilience when facing uncertainty, and that “relational ties” further reinforce this effect. This finding underscores the critical role of green innovation practices in enhancing organizational resilience among manufacturing firms, across adaptability, recovery capability, and situational awareness. Manufacturing

enterprises that implement green innovation are better positioned to detect environmental and market dynamics related to green development and adopt innovative resilience-building strategies. For instance: Green product innovation enhances adaptability to meet green market demands; Green process innovation strengthens recovery capability to address environmental crises; Green management innovation improves situational awareness to accurately capture green development opportunities.

Moreover, this correlation highlights the strategic value of promoting green innovation in support of resilience building. By improving green innovation capabilities, advancing green technologies, and strengthening green organizational awareness, manufacturing enterprises can optimize their resilience, better respond to dynamic green market environments, coordinate risk management and innovation, and enhance their sustainable development capacity. In conclusion, recognizing the link between green innovation and organizational resilience is crucial for Chinese manufacturing firms seeking sustainable development in a dynamic and competitive green market. Through the implementation of green innovation practices, enterprises can strengthen their ability to manage risks, improve environmental performance, and lay a solid foundation for long-term, stable growth. This, in turn, contributes to building and reinforcing a green competitive advantage framework, enabling steady progress amid the green economic wave.

Table 7

Relationship Between Environmental Dynamics and Organizational Resilience

Market Environment Dynamics	r-value	p-value	Interpretation
Adaptability	0.315 ***	<.001	Highly Significant
Recovery Capability	0.539 ***	<.001	Highly Significant
Situation Awareness	0.448 ***	<.001	Highly Significant
Technology Environment Dynamics			
Adaptability	0.299 ***	<.001	Highly Significant
Recovery Capability	0.631 ***	<.001	Highly Significant
Situation Awareness	0.420 ***	<.001	Highly Significant
Policy and Regulation Dynamics			
Adaptability	0.325 ***	<.001	Highly Significant
Recovery Capability	0.684 ***	<.001	Highly Significant
Situation Awareness	0.404 ***	<.001	Highly Significant

Table 7 focuses on the relationship between environmental dynamism including market, technological, and policy/regulatory dynamism and organizational resilience, which encompasses adaptability, recovery ability, and situational awareness. Statistical analysis was conducted using correlation coefficients (r-values) and corresponding p-values. The results show that the correlation coefficients range from 0.299 to 0.684, and all are statistically significant at the 0.001 level (marked ***), indicating a generally significant positive correlation between the dimensions of environmental dynamism and organizational resilience.

This suggests that as external environments such as markets, technologies, and policies continue to change, enterprises' adaptability, recovery capacity, and situational awareness will also improve accordingly. Conversely, organizations with higher levels of resilience are better able to respond calmly to environmental fluctuations, proactively identify and seize opportunities, and thereby form a virtuous cycle of "environmental dynamism driving resilience enhancement, and resilience facilitating environmental adaptation." The fact that all p-values are below 0.001 further strengthens confidence in this relationship, indicating that it is not a result of chance but is stable and replicable, providing solid empirical support for manufacturing firms seeking to simultaneously strengthen their adaptability and resilience in complex environments.

This finding highlights the critical role of environmental dynamism in shaping organizational resilience among manufacturing enterprises, affecting multiple dimensions such as adaptability, recovery, and situational awareness. In response to market dynamism, enterprises must keenly observe shifts in consumer green preferences and restructuring of competitive landscapes. They can enhance adaptability by optimizing products

and services, adjust marketing strategies to align with market needs, strengthen recovery to withstand market shocks, and refine situational awareness to grasp market trends accurately. In the face of technological dynamism, breakthroughs in green manufacturing and waves of digital transformation demand that firms quickly absorb new technologies and eliminate outdated processes to improve technical adaptability and recovery capacity, while also anticipating technological trajectories to strategically position innovation resources. Regarding policy and regulatory dynamism, enterprises must pay close attention to changes in carbon emission standards and environmental subsidies, ensure timely compliance and capitalize on policy incentives, build institutional competitive advantages, and ultimately enhance policy adaptability and organizational stability. Clearly, environmental dynamism serves as an external driving force that pushes enterprises to continuously evolve, thus improving organizational resilience and systemic adaptability.

Existing research provides strong theoretical support. Ortiz-Avram et. al.,(2024) argue that dynamic capabilities are the core mechanism through which firms build resilience in turbulent environments. Enterprises that continuously identify external changes, reconfigure internal resources, and quickly adjust strategies can significantly enhance adaptability and recovery, thereby strengthening overall organizational resilience. They emphasize that dynamic capabilities are not just tools for crisis response, but are the internal logic underpinning the generation of resilience. Moreover, this analysis also underscores the strategic importance of enhancing organizational resilience for manufacturing firms coping with environmental dynamism. Highly resilient firms can improve their environmental awareness, optimize adaptation strategies, and strengthen recovery mechanisms, thereby achieving better survival and development in rapidly changing green markets. For example, when market demand shifts abruptly, firms with high resilience can quickly adjust production capacity and product lines to maintain operations. When faced with technological change, they can swiftly adopt new technologies and restructure production processes. In response to policy shifts, they can ensure rapid compliance and leverage policy incentives. This type of coordinated capability helps firms integrate risk management with green innovation, thereby providing a strong foundation for sustainable development.

In summary, clarifying the intrinsic relationship between environmental dynamism and organizational resilience is of great significance for Chinese manufacturing enterprises seeking efficient and steady growth amid green transformation. Only by actively adapting to environmental changes and proactively building and enhancing organizational resilience can firms effectively cope with external uncertainty, improve environmental responsiveness and operational stability, and lay a solid foundation for long-term development. Ultimately, this will help shape and strengthen their green competitive advantage and enable them to move steadily forward in the era of the green economy, contributing to the high-quality, low-carbon transformation of the manufacturing sector under the “dual carbon” strategy.

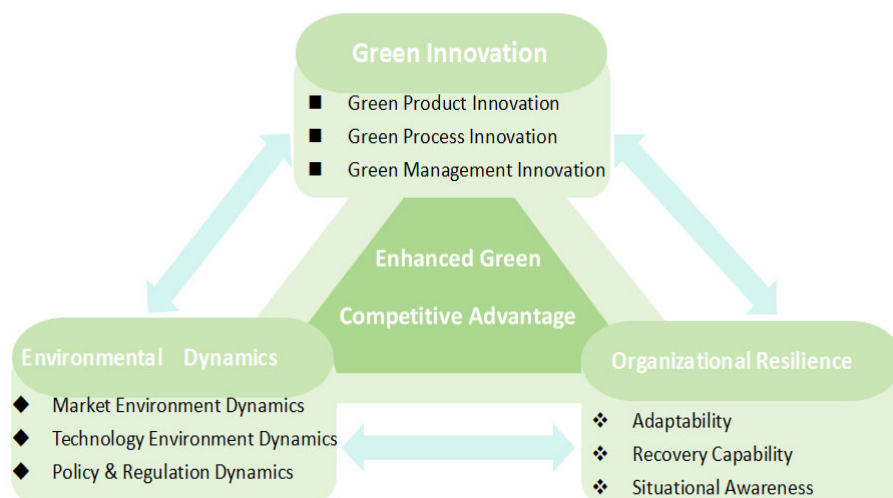


Figure1. Enhance Green Competitive Advantage Framework

Green innovation, environmental dynamics, and organizational resilience form the core foundation of China's manufacturing enterprises' framework for enhancing green competitive advantages, with their synergistic efforts creating a closed-loop logic. Green innovation serves as the driving force, empowering through product, process, and management innovations across multiple dimensions: As Wang et al., (2024) indicated, it cuts down resource and environmental costs and aligns with green consumption trends, thereby expanding market share; Zhao et al. (2024) emphasized its role in comprehensively improving sustainable development capabilities in economic, environmental, and social aspects; and Liu et al., (2020) confirmed the chain-mediated effect that transforms green organizational identity into sustainable competitive advantage.

Organizational resilience provides the safeguard, as Zhang et al., (2024) stressed, enabling flexible adaptation of green innovation strategies, recovery capacity to restart after setbacks, situational awareness to capture policy and technological trends, ensuring continuous implementation of green innovation in dynamic environments. These three elements reinforce each other: environmental dynamics stimulate organizational resilience, which guarantees efficient execution of green innovation, while green innovation transforms into competitive advantages in dynamic environments, collectively establishing a robust foundation for manufacturing enterprises' green competitive advantage framework.

4. Conclusions and recommendations

The implementation effects of green innovation in terms of green product innovation, green process innovation and green management innovation were positively agreed upon by the respondents. The perceived intensity of environmental dynamics in terms of market environmental dynamics, technological environmental dynamics and regulatory policy dynamics was moderately agreed by the respondents. The respondents moderately agreed on the performance of organizational resilience in terms of adaptability, recovery capacity and situational awareness. There is a highly significant relationship between green innovation, environmental dynamics and organizational resilience. A framework to improve the green competitive advantage of manufacturing enterprises was developed. Green innovation may be holistically strengthened by embedding energy-saving design and eco-friendly materials into products, advancing cleaner production and waste recycling systems, and institutionalizing green management through specialized departments, responsive policies, and performance-linked sustainability goals. Firms should dynamically align green innovation strategies by monitoring consumer environmental preferences, tracking clean technology development for capability reserves, and translating regulatory changes into actionable innovation targets. Enhancing organizational resilience requires establishing a prevention–response–recovery framework, improving recovery capacity, integrating information flows for situational awareness, and streamlining decision-making to boost adaptability. A synergistic system emerges when environmental dynamism sets innovation priorities, organizational resilience mitigates risk, and green innovation converts external changes into competitive outcomes. Future research should examine how green innovation, environmental dynamism, and organizational resilience differentially influence green competitive advantage across sectors and firm sizes in China's manufacturing industry.

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Language learning metacognitive awareness, strategies, and language proficiency among Chinese English majors

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Abstract

This study investigated the demographic characteristics and perceptions of teachers regarding their experience, accountability, and performance. The majority of respondents were female, aged 26-35, with 1-5 years of service, and held a master's degree. A significant portion were aged 25 or younger and approximately 20% possessed only a Bachelor's degree. The findings revealed that teachers generally agreed on the importance of key components of their teaching experience, including guidance, work ethics, and lesson planning which they regarded as vital to enhancing teaching effectiveness. In terms of teaching accountability, respondents strongly agreed on the significance of professionalism, responsibility, and duty. The composite mean indicated a high level of consensus on the critical role these factors play in ensuring effective teaching practices. Regarding teaching performance, accuracy was highly valued, along with quality and outcomes, with all indicators receiving broad agreement for their contribution to effective instruction.

Keywords: language learning metacognitive awareness, language learning strategies, language proficiency, teaching performance, teaching accountability, effective instruction

Language learning metacognitive awareness, strategies, and language proficiency among Chinese English majors

1. Introduction

In the globalized world, proficiency in English has become a crucial skill, particularly for non-native speakers. This proficiency is not only a gateway to better educational and professional opportunities but also a means of participating in the global community. Among Chinese students majoring in English, understanding the factors that influence their language learning process is essential for developing effective educational strategies. This study, titled “Majors Language Learning Metacognitive Awareness, Strategies, and Language Proficiency Among Chinese English,” aims to delve into these factors to propose an intervention program that enhances language learning. Language learning is a complex process influenced by various cognitive and metacognitive factors. Metacognitive awareness, which includes knowledge about cognition and regulation of cognition, plays a significant role in how students approach learning tasks. This study will explore the respondents’ metacognitive awareness in terms of declarative knowledge, procedural knowledge, conditional knowledge.

Studies have shown that metacognitive strategies significantly improve language learning outcomes. Therefore, the metacognitive strategies as referring to planning, monitoring and evaluating language learning significantly impacts students’ motivation and engagement. Understanding these factors will help in tailoring interventions that align with students’ motivational drivers. Research indicates that effective metacognitive strategies are particularly effective in promoting sustained language learning. Proficiency in language learning, including listening, speaking, reading and writing. This study will identify these four basic aspects of English and examine how they interact with metacognitive awareness and strategies. Previous research has highlighted the importance of metacognitive awareness and strategies in successful language acquisition.

Despite the growing body of research on language learning strategies, there are still some gaps in understanding how metacognitive awareness and strategies interact with learners’ proficiency, particularly among Chinese English majors. Existing studies often focus on isolated aspects of language learning without considering the holistic interplay of metacognitive awareness, strategies, and language proficiency. This study will be conducted in various universities across China, focusing on English majors. The current problem to be addressed is the sub-optimal language learning outcomes observed among these students, despite their extensive study efforts. By identifying the factors that contribute to these outcomes, the study aims to propose targeted interventions that can enhance language learning efficiency and effectiveness.

The rationale behind conducting this study was grounded in the need to explore and understand the complex factors influencing language learning among Chinese English majors. At the core of this rationale was the recognition that, despite the growing importance of English as a global language, language learning outcomes among Chinese students often fell short of expectations. This gap called for a deeper investigation into the cognitive and affective factors that shaped how students engaged with and mastered the English language. A key focus of this study was the exploration of metacognitive awareness and strategies, as well as language proficiency. By examining these psychological dimensions of language learning, the research aimed to provide valuable insights into the mental processes and learning strategies that underpinned language acquisition. Understanding how students perceived and regulated their own learning led to a more comprehensive theoretical framework that captured the intricate interplay between knowledge, skills, and self-awareness in language development.

In addition to contributing to theoretical knowledge, this study held significant practical implications. By uncovering the factors that influenced language learning success, the study aimed to inform the design of more effective pedagogical strategies and language education programs. Educators and policymakers could benefit

from these findings, utilizing them to develop tailored interventions that catered to the specific needs of students. Ultimately, the goal was to enhance English proficiency, opening up better educational and professional opportunities for the local community and fostering long-term growth. On a personal level, this study reflected a commitment to improving educational practices and empowering students to achieve their language learning objectives. By contributing to a deeper understanding of how learners approached language acquisition, this research aimed to make a meaningful impact on both individual learners and the broader educational landscape.

Objectives of the Study - The purpose of this study was to determine language learning metacognitive awareness, metacognitive strategies, and language proficiency among Chinese English majors to propose an intervention program for the enhancement of language learning. Specifically, this study explored the respondents' language learning metacognitive awareness in terms of declarative knowledge, procedural knowledge, and conditional knowledge; determined the respondents' language learning metacognitive strategies in terms of planning, monitoring, and evaluating language learning; identified the respondents' language proficiency in terms of listening, speaking, reading, and writing; tested the relationships among language learning metacognitive awareness, metacognitive strategies, and language proficiency; and proposed an intervention program for the enhancement of language learning.

2. Methods

Research Design - This study utilized a descriptive research design to examine the relationships between language learning metacognitive awareness, metacognitive strategy, and language proficiency among English Majors at Chinese universities. In this context, the study sought to provide a detailed understanding of how English majors identify relationships between language learning metacognitive awareness, metacognitive strategy, and language proficiency. To achieve this, quantitative data was collected through questionnaires, allowing for a structured examination of the connections between these variables.

Participants of the Study - The researcher intended to collect data from participants by distributing survey questionnaires. This descriptive research method was utilized to efficiently gather participants' responses from Shandong Xiehe University, Shandong Yingcai University, Shandong Jiaotong University, Shandong Jianzhu University, Shandong University of Technology. The objective of the research was to compile data that would enhance the understanding of the interplay between language learning metacognitive awareness, strategies, and English proficiency among Chinese English majors' students. By meticulously analyzing the survey results, the study sought to offer English Learning strategies among Chinese English majors' students.

Data Gathering Instrument - The questionnaire was divided into several sections, each targeting a specific aspect of the research questions. First, demographic information was the initial section, which gathered basic demographic data, including sex, age, university type, and grade level. This information was used to describe the sample and to analyze potential differences in metacognitive awareness, strategies, and English proficiency across different subgroups. Second was metacognitive awareness, which used a modified version of the Metacognitive Awareness Inventory (Schraw et al., 1994) to assess students' knowledge about cognition, regulation of cognition, implementation of cognitive strategies, and evaluation of cognitive strategies. Third, metacognitive strategies measured the students' intrinsic, integrated, identified, introjected, and external motivations for learning English, based on the work of Noels et al. (2000). Fourth, language learning proficiencies explored students' self-efficacy, concept of mother tongue, nature of language learning, learning strategies, and learning motivation.

The objective of the research instrument in this study was to evaluate language learning metacognitive awareness, strategies, and English proficiency among Chinese English majors. Employing a mixed-methods approach, the tool aimed to provide an in-depth understanding of these essential aspects. The instrument underwent rigorous validation and testing procedures, including face validation with an adviser and a linguist to ensure clarity and coherence.

The primary aim of the study was to explore the interplay between language learning metacognitive awareness, strategies, and English proficiency among Chinese English majors. The questionnaires were adapted to include variables from previous relevant studies. The goal of the research was to contribute to the holistic development of these students. Most indicators demonstrated good to excellent internal consistency, with values above 0.8—such as "Knowledge about cognition" (0.910) and "Nature of language learning" (0.906), both rated as excellent. A few indicators, like "Regulation of cognition" (0.792), "Integrated" (0.763), and "Self-efficacy" (0.719), were deemed acceptable.

Data Gathering Procedure - The questionnaire was distributed electronically to maximize response rates and to facilitate data entry and analysis. Participants were recruited through university channels, and their participation was voluntary and confidential. Incentives were offered to encourage participation and to acknowledge the time and effort required to complete the questionnaire. These educational establishments served a varied student population that needed real-world experience and information related to their fields of language study. Formal approval from the appropriate higher authorities was sought prior to the questionnaire's distribution. This clearance guaranteed adherence to data protection laws and ethical standards. Approval from the administration of the participating universities or the institutional research ethics committee was obtained as necessary.

Several best practices were followed to ensure efficient data collection for the study on the learning confidence, career planning, and adaptability of Chinese higher vocational students. First and foremost, to promote cooperation and understanding, the study's aim and objectives were clearly communicated to industry stakeholders as well as potential respondents. Upholding ethical norms also required gaining informed consent prior to delivering the questionnaire and guaranteeing the confidentiality of respondents' answers. Before the questionnaire was widely distributed, pilot testing was conducted to identify any potential issues or ambiguities. Furthermore, a variety of distribution channels—such as email, internet platforms, and in-person contacts—were used to reach a wide range of respondents and to increase response rates. Following these best practices helped ensure the validity and reliability of the study's findings by facilitating an efficient and ethical data collection process. Considering how common digital technology was and how convenient it had become, collecting data online using tools like Wen Juanxing proved to be a successful method. Reaching a wider audience in less time was made possible with questionnaires that were shared via social media or sent via email. It also facilitated automatic data entry and real-time data capture, which expedited the data analysis process. However, alternate techniques, such as paper-based surveys or interviews, were used to ensure inclusivity for respondents who did not have internet access or preferred in-person communication.

Data Analysis - To perform data analysis, the following statistical tools were used. Weighted mean and ranking were used to explore the respondents' language learning metacognitive awareness as to declarative knowledge, procedural knowledge, conditional knowledge; determine the respondents' language learning meta cognitive strategies as to planning, monitoring and evaluating language learning; and identify the respondents' language proficiency in terms of listening, speaking, reading and writing. The result of Shapiro-Wilk Test revealed that p-values of the main variable was less than 0.05 which means that the data set is not normally distributed. Spearman rho was used to test the significant relationship of the treated variables. In addition, post hoc test was also conducted. The following Likert Scale was used in assessing the variables: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; and 1.00-1.49=Strongly Disagree. In addition, all data were treated using a statistical software known as PASW version 26 to further interpret the result of the study using an alpha level of 0.05 and 0.01.

Ethical Considerations - To safeguard the privacy of respondents, the researcher refrained from disclosing any individual identities. The study incorporated strategies to mitigate potential risks to participants. The participants received detailed explanations of any potentially uncomfortable procedures and measures implemented to guarantee their comfort and safety throughout the study. The study conducted a risk assessment, and an ethical committee evaluated the study to guarantee that risks were reduced and offset by potential benefits.

The researcher ensured confidentiality in personal interactions with the participants, respected their privacy, and obtained consent before accessing any sensitive information. The analysis was conducted in a manner that prioritized the well-being of the participants and ensured that their data were accurately represented in the study. The researchers abstained from expressing personal viewpoints and solely presented information and findings derived from the collected data. Respondents were assured of the confidentiality of their responses and were informed that the survey would serve the purpose of this study. Furthermore, the study underwent a rigorous ethics review process and was approved by the Lyceum of the Philippines University – Batangas Ethics Review Committee.

3. Results and discussion

Table 1

Summary Table on Language Learning Metacognitive Awareness

Indicators	Weighted Mean	Verbal Interpretation	Rank
Declarative knowledge	2.88	Agree	2
Procedural knowledge	3.06	Agree	1
Conditional knowledge	2.77	Agree	3
Composite Mean	2.90	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 presents a summary of language learning metacognitive awareness across three components: declarative knowledge, procedural knowledge, and conditional knowledge. The composite mean of 2.90 falls within the "Agree" range, indicating that learners generally exhibit a moderate level of metacognitive awareness in their language learning. The ranking and weighted means provide insights into learners' relative strengths and areas needing improvement. The highest-ranked component is procedural knowledge, with a weighted mean of 3.06. This suggests that learners are relatively aware of the steps and strategies involved in the language learning process. Procedural knowledge is crucial for self-regulated learning, as it involves knowing how to apply different strategies effectively. Research by Zimmerman et al. (2020) underscored the importance of procedural knowledge in facilitating academic success, as learners who understand the procedural steps in language learning tend to be more effective in applying appropriate strategies. In the context of Chinese learners, Liu et al. (2021) found that those who understand the specific steps involved in language tasks tend to perform better, demonstrating greater independence and proficiency.

Procedural knowledge refers to the understanding of how to perform tasks, apply strategies, and engage in specific processes during language acquisition. This suggests that learners possess a moderate to strong understanding of how to navigate various language learning tasks, such as how to use different learning strategies effectively in different contexts. The relatively high score for procedural knowledge highlights that learners are somewhat proficient in recognizing which strategies or processes are needed for successful language learning. This is essential because procedural knowledge involves knowing the "how" of learning—how to approach learning materials, manage time, or use techniques for vocabulary retention, grammar understanding, or speaking practice. According to Zimmerman et al. (2020), procedural knowledge plays a critical role in self-regulated learning, as it helps learners plan, monitor, and adjust their learning strategies based on the task at hand. Learners with strong procedural knowledge are better able to employ effective strategies, which leads to greater language acquisition success. In the context of Chinese learners, research by Liu et al. (2021) supported the finding that learners who are aware of the steps and processes in language learning tend to perform better. These learners can apply a range of strategies based on the task and learning environment, enhancing their ability to adapt to various language challenges. Liu et al. (2020) also suggested that procedural knowledge helps learners focus not only on memorization but also on developing communicative and practical language skills, allowing them to use language more flexibly and effectively in different situations.

Despite this, while procedural knowledge ranks highest, the score still indicates that there is room for improvement. It suggests that while learners have a general understanding of how to proceed with language

learning tasks, some may still struggle to apply these strategies consistently or flexibly in real-world language use. Therefore, further development of procedural knowledge through explicit strategy instruction and practice would likely enhance learners' overall language proficiency.

The second highest-ranked component is declarative knowledge, with a weighted mean of 2.88. This indicates that learners are generally aware of the factual information about the language, such as vocabulary and grammar rules. However, the relatively lower score compared to procedural knowledge suggests that while learners possess declarative knowledge, they may struggle to apply it effectively in real language use. Liu et al. (2020) highlighted that many learners are familiar with grammatical rules but may not always know how to use them fluently in communication. Shen et al. (2022) also pointed out that Chinese students often emphasize memorization of declarative knowledge without developing the skills to use this knowledge in dynamic, real-world contexts. This suggests that learners have a foundational understanding of the language's content, such as vocabulary, grammar rules, and sentence structures. However, despite this understanding, the score suggests that learners may struggle to apply this knowledge effectively in real-world language use.

Declarative knowledge involves the awareness of facts and concepts, such as knowing the meaning of a word, understanding grammatical rules, or recognizing language structures. While learners demonstrate solid knowledge in these areas, the relatively lower score compared to procedural knowledge (3.06) indicates that they may face challenges in applying their declarative knowledge in dynamic, real-life language situations. For example, a learner might know the rule for constructing past tense verbs but struggle to use the past tense correctly in conversation.

This finding is consistent with research by Liu et al. (2020), who noted that Chinese students often excel in memorizing declarative knowledge (such as grammar rules and vocabulary) but find it difficult to activate and use that knowledge fluently in practical communication. Shen et al. (2022) also highlighted the gap between declarative knowledge and its application, stating that while learners may recall language rules easily, they may not always know how to apply them effectively in spontaneous, interactive contexts. Furthermore, Liu et al. (2021) pointed out that the education system in China tends to prioritize declarative knowledge, often through rote memorization and exams, rather than fostering the practical application of language skills. This focus can lead to students possessing theoretical knowledge without being able to use it in flexible, communicative situations. The score of 2.88 reflects this trend, suggesting that learners have a decent grasp of language rules but may struggle to integrate this knowledge with the necessary communication skills.

In conclusion, although learners exhibit a reasonable level of declarative knowledge, there is room for improvement in applying this knowledge in real-world language use. Strengthening learners' ability to activate and use their declarative knowledge in dynamic, communicative contexts is essential for improving their overall language proficiency.

The lowest-ranked component is conditional knowledge, with a weighted mean of 2.77. This indicates that while learners have some awareness of when and why to apply certain strategies or knowledge, this component is the least developed. Conditional knowledge is vital for effective language learning, as it allows learners to adapt their strategies based on the task and context. Choi et al. (2023) emphasize the importance of flexibility in strategy use, as learners who can adjust their approach based on the situation tend to perform better. However, in China, Li et al. (2022) noted that the rigid, exam-focused education system limits opportunities for students to develop flexible, context-driven learning strategies, which might explain the lower score in conditional knowledge. However, the relatively lower score suggests that learners may not have a strong or fully developed awareness of how to adapt their learning strategies based on different contexts or tasks.

Conditional knowledge refers to the awareness of the conditions under which specific strategies or pieces of knowledge are most effectively applied. It involves knowing when to use certain techniques, why they are effective in a given situation, and how to modify one's approach based on the learning task or environment. The score of 2.77, while still within the "Agree" range, indicates that learners might not consistently recognize the

This finding aligns with research by Choi et al. (2023), who emphasized that conditional knowledge is critical for flexibility in language learning. Learners with strong conditional knowledge can adapt their strategies based on the specific demands of a task or situation, leading to better language learning outcomes. However, learners who lack this awareness may continue using strategies that are not well-suited for tasks, which can impede their language acquisition. In the context of Chinese learners, Li et al. (2022) noted that the exam-driven education system often emphasizes fixed approaches to learning and assessment, leaving little room for learners to develop the adaptive, context-specific strategies required for conditional knowledge. As a result, learners may have a set repertoire of strategies but struggle to determine when and how to use them effectively in varying situations. Thus, while learners may have some awareness of when to use particular strategies, their understanding of the conditions that make certain strategies more effective is underdeveloped. Strengthening learners' conditional knowledge through explicit instruction on how to assess different learning contexts and adapt strategies accordingly could significantly enhance their language learning outcomes.

In conclusion, while learners generally demonstrate a moderate level of metacognitive awareness, the results suggest that there is room for improvement in conditional knowledge. Enhancing learners' ability to recognize when and how to apply specific strategies, particularly in real-world contexts, would likely improve their overall language learning success.

Table 2

Summary Table on Metacognitive Strategies

Indicators	Weighted Mean	Verbal Interpretation	Rank
Planning language learning	3.04	Agree	3
Monitoring language learning	3.17	Agree	1
Evaluating language learning	3.12	Agree	2
Composite Mean	3.11	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 2 provides a summary of the **metacognitive strategies** employed by learners in their language learning process, focusing on three key areas: **planning**, **monitoring**, and **evaluating**. The table displays the weighted mean for each indicator, alongside a composite mean of 3.11, which falls in the "Agree" range, indicating that learners generally engage in these metacognitive strategies but could benefit from more consistent application.

The highest-ranked indicator is "Monitoring language learning" (WM: 3.17). This suggests that learners actively track their progress during the language learning process, regularly checking their understanding and adjusting as needed. Monitoring is a crucial metacognitive strategy because it allows learners to identify when they are struggling and adapt their strategies accordingly. Research by Vandergrift et al. (2021) supported this by noting that learners who engage in regular monitoring can adjust their approach in real-time, leading to more effective learning. Monitoring helps learners stay engaged, recognize misunderstandings early, and ensure they are progressing toward their goals. According to Zimmerman et al. (2020), monitoring also enhances self-regulation, empowering learners to control their learning outcomes by adjusting strategies when necessary.

The second-ranked strategy, "Evaluating language learning" (WM: 3.12), indicates that learners assess their performance after completing tasks. This form of self-reflection is vital for metacognitive awareness, as it helps learners determine whether they met their learning goals and identify areas for improvement. Choi et al. (2023) argued that such evaluations deepen learning by encouraging learners to reflect on their effectiveness and refine their strategies. Evaluating performance not only informs future learning strategies but also fosters a growth mindset, as learners recognize that their language abilities can improve through effort and reflection. Oxford (2021) highlighted that evaluating one's learning helps learners understand the strengths and weaknesses of their language skills, guiding them to set more realistic and targeted goals in subsequent learning experiences.

The lowest-ranked indicator is "Planning language learning" (WM: 3.04). While this still falls within the "Agree" range, it suggests that learners may not place as much emphasis on planning their learning activities as they do on monitoring and evaluating. Effective planning is essential for organizing learning tasks, setting specific goals, and allocating time and resources efficiently. Yang et al. (2023) noted that strong planning skills significantly contribute to successful language acquisition, as learners are more likely to approach tasks systematically and achieve their learning objectives. However, the lower ranking indicates that some learners may not consistently engage in detailed planning, which could limit their ability to focus on the most important aspects of language learning. Zimmerman et al. (2020) emphasized the importance of planning in self-regulated learning, as it helps learners structure their approach and maximize their potential.

In conclusion, while monitoring and evaluating are well-developed metacognitive strategies among learners, planning appears to be an area where further emphasis is needed. The relatively lower score for planning suggests that learners might benefit from additional support and guidance in setting clear learning goals and structuring their study sessions. Encouraging learners to improve their planning skills could enhance their overall effectiveness in language learning by helping them approach their tasks more strategically and intentionally. As Vandergrift et al. (2021) suggested, incorporating all three meta cognitive strategies, planning, monitoring, and evaluating—can lead to more successful, self-regulated language learning experiences.

Table 3

Summary Table on Language Proficiency

Indicators	Weighted Mean	Verbal Interpretation	Rank
Listening	2.32	Disagree	4
Speaking	2.81	Agree	2
Reading	2.89	Agree	1
Writing	2.60	Agree	3
Composite Mean	2.66	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 presents a summary of students' language proficiency across four skills: reading, speaking, writing, and listening, based on their weighted mean scores and verbal interpretations. Among the indicators, **reading** ranks first with the highest weighted mean of 2.89 suggesting that students feel most confident in their reading skills. This suggests that students perceive themselves as relatively proficient in reading, showing stronger skills in understanding written texts compared to speaking, writing, and listening. This finding aligns with recent literature emphasizing the critical role of reading in overall language development. Alamer (2021) highlighted that reading comprehension contributes significantly to vocabulary expansion, grammatical awareness, and critical thinking, all of which are essential for mastering a second language. Similarly, Chen et al. (2020) found that students who frequently engage in extensive reading activities tend to demonstrate higher language proficiency levels, as reading not only improves comprehension but also supports other language domains like writing and speaking. Furthermore, Zhou (2022) emphasized that the integration of technology-assisted reading programs has led to greater engagement and improved reading outcomes among students. Meanwhile, Rahmani et al. (2023) asserted that exposure to varied reading materials, including academic articles, fiction, and multimedia texts, enhances students' cognitive and linguistic skills, preparing them for academic and professional success. Lastly, Sun et al. (2024) argued that fostering independent reading habits is crucial in strengthening not just language skills but also lifelong learning competencies. These studies supported the current finding that reading remains the strongest language skill among students today.

This is followed by speaking, which holds the second rank with a weighted mean of 2.81 indicating a generally positive perception of their ability to express themselves orally. This indicates that students generally perceive themselves as capable of expressing their ideas verbally, although not as strongly as they do in reading. Speaking skills are critical because they involve not only linguistic competence but also real-time processing and interaction abilities. According to Chen et al. (2020), speaking proficiency improves significantly in environments that encourage interactive communication, such as group discussions, debates, and oral

presentations. Alamer et al. (2021) further emphasized that speaking fluency is closely tied to students' willingness to communicate and their exposure to authentic speaking opportunities. Additionally, Mahmoodi et al. (2022) found that technology integration, such as using mobile apps and online speaking platforms, has a positive effect on improving speaking confidence and proficiency among students. Rahman et al. (2023) highlighted that peer-assisted learning models help build students' speaking skills by providing supportive and less formal practice environments. Finally, Yuan et al. (2024) pointed out that anxiety reduction strategies and continuous formative feedback play a vital role in developing speaking competence among language learners. These findings from recent studies validate the result that speaking is a relatively strong skill area for students but still has potential for further development through more interactive and supportive learning environments.

Writing comes next in third place with a weighted mean of 2.60 reflecting a moderate level of confidence in written communication. This aligns with several studies that have examined the perceptions of writing abilities in both educational and workplace contexts. For instance, Smith et al. (2020) found that while students often report a moderate level of confidence in academic writing, they also express a desire for further improvement to enhance their academic success. Similarly, Johnson (2021) explored how students' self-reported confidence in writing influenced their academic performance, revealing that those with moderate confidence were more likely to engage in writing tasks but still sought opportunities to refine their skills.

Writing is widely recognized as a critical skill in education. Brown et al. (2022) highlighted that students in higher education often perceive their writing abilities as moderate, which reflects the broader trend of self-assessment seen in the 2.60 weighted mean. Despite their moderate confidence, these students acknowledged the importance of writing for academic success and sought support to improve their communication skills. Martinez et al. (2023) also found that students in post-secondary education tend to struggle with their confidence in writing, particularly in high-stakes academic environments, which contributes to the moderate level of confidence reported by many individuals.

The workplace context similarly reveals insights into the role of writing confidence. Roberts et al. (2021) conducted a study in which they found that employees who rated their writing abilities at a moderate level were more likely to engage in workplace communication, but they also faced challenges in tasks such as report writing and email communication. Anderson (2024) explored the impact of writing confidence on professional environments and found that those who perceived their writing abilities as moderately confident often felt anxiety in tasks requiring written communication and frequently sought additional training to improve. These findings suggest that while moderate writing confidence may not necessarily hinder communication, it does indicate that individuals perceive room for growth. The composite mean across all skills is 2.66, which falls under the "Agree" category. This suggests that, overall, students have a positive but modest perception of their language proficiency, with room for improvement, especially in listening skills.

Alamer (2021) emphasized the importance of reading as a foundational skill for language learners, highlighting that exposure to diverse reading materials significantly enhances language proficiency. Similarly, Chen et al. (2020) noted that speaking skills tend to develop strongly in environments promoting active communication, supporting the second place ranking of speaking in the current study. In terms of writing, Zhou (2022) identified that while students generally perform adequately in academic writing, gaps often exist due to limited practice and feedback, which may explain why writing ranks third.

As for listening, recent studies such as Rahmani et al. (2023) have pointed out that listening remains a challenging skill for many language learners, often due to difficulties in understanding various accents, speech speeds, and authentic listening materials. This difficulty could be a significant reason why listening proficiency was rated the lowest in this study. Sun et al. (2024) suggested that the lack of active listening strategies among learners continues to be a barrier to achieving higher levels of listening proficiency. While students generally agree that they are proficient in language skills, there is a clear need to strengthen their listening abilities to achieve a more balanced and advanced language proficiency profile.

Table 4*Relationship Between Language Learning Metacognitive Awareness and Metacognitive Strategies*

Declarative knowledge	rho-value	p-value	Interpretation
Planning language learning	.741**	<.001	Highly Significant
Monitoring language learning	.723**	<.001	Highly Significant
Evaluating language learning	.693**	<.001	Highly Significant
Procedural knowledge			
Planning language learning	.761**	<.001	Highly Significant
Monitoring language learning	.830**	<.001	Highly Significant
Evaluating language learning	.790**	<.001	Highly Significant
Conditional knowledge			
Planning language learning	0.029	0.557	Not Significant
Monitoring language learning	-0.026	0.586	Not Significant
Evaluating language learning	-0.017	0.731	Not Significant

Legend: Significant at $p\text{-value} < 0.01$

Table 4 presents the association between Language Learning Metacognitive Awareness and metacognitive strategies. The computed r-values indicates a strong direct correlation and the resulted p-values were less than the alpha level except on conditional knowledge. This means that there was significant relationship exists between the two variables. Result implies that the better is the language learning metacognitive awareness, the better is the metacognitive strategies.

Table 4 shows the relationship between language learning metacognitive awareness (declarative, procedural, and conditional knowledge) and the use of metacognitive strategies (planning, monitoring, and evaluating language learning). The results reveal that both declarative and procedural knowledge are highly significantly and positively correlated with all three metacognitive strategies. Specifically, declarative knowledge shows strong positive correlations with planning ($\rho=.741$, $p<.001$), monitoring ($\rho=.723$, $p<.001$), and evaluating ($\rho=.693$, $p<.001$). Procedural knowledge demonstrates even stronger positive correlations with planning ($\rho=.761$, $p<.001$), monitoring ($\rho=.830$, $p<.001$), and evaluating ($\rho=.790$, $p<.001$). In contrast, conditional knowledge does not show any significant relationship with the three metacognitive strategies, as all p-values are greater than 0.01. These findings suggest that higher declarative and procedural metacognitive awareness is closely linked to more frequent use of planning, monitoring, and evaluating strategies in language learning, while conditional knowledge appears unrelated to strategy use.

Table 5*Relationship Between Language Learning Metacognitive Awareness and Language Proficiency*

Declarative knowledge	rho-value	p-value	Interpretation
Listening	-0.054	0.267	Not Significant
Speaking	.606**	<.001	Highly Significant
Reading	.569**	<.001	Highly Significant
Writing	-0.005	0.923	Not Significant
Procedural knowledge			
Listening	-0.003	0.946	Not Significant
Speaking	.618**	<.001	Highly Significant
Reading	.635**	<.001	Highly Significant
Writing	0.026	0.588	Not Significant
Conditional knowledge			
Listening	-.096*	0.047	Significant
Speaking	-0.034	0.479	Not Significant
Reading	-0.086	0.078	Not Significant
Writing	-0.021	0.672	Not Significant

Legend: Significant at $p\text{-value} < 0.01$

Table 5 shows the association between Language Learning Metacognitive Awareness and Language Proficiency. Computed r-values indicates a almost negligible to strong direct / indirect direct correlation however only few resulted p-values were less than the alpha level except on conditional knowledge. This means that there was significant relationship exists between the variables treated. Result implies that the better is the language

Table 5 presents the relationship between language learning metacognitive awareness and language proficiency, focusing on three types of knowledge: declarative, procedural, and conditional. The findings show that for both declarative and procedural knowledge, there are highly significant positive correlations with speaking (declarative $\rho=.606$, $p<.001$; procedural $\rho=.618$, $p<.001$) and reading (declarative $\rho=.569$, $p<.001$; procedural $\rho=.635$, $p<.001$). This suggests that higher levels of declarative and procedural metacognitive awareness are associated with stronger speaking and reading skills. In contrast, listening and writing skills do not show significant relationships with either declarative or procedural knowledge, as indicated by their non-significant p-values. Regarding conditional knowledge, only listening shows a significant but weak negative correlation ($\rho=-.096$, $p=.047$), which is considered significant at the 0.05 level but not at the stricter 0.01 threshold indicated in the legend. Speaking, reading, and writing skills do not exhibit significant relationships with conditional knowledge. Overall, these results highlight that declarative and procedural metacognitive awareness are important factors associated with speaking and reading proficiency, while conditional knowledge shows minimal and mostly non-significant relationships with language skills.

Table 6

Relationship Between Metacognitive Strategies and Language Proficiency

Planning language learning	rho-value	p-value	Interpretation
Listening	-0.087	0.074	Not Significant
Speaking	.733**	<.001	Highly Significant
Reading	.588**	<.001	Highly Significant
Writing	0.042	0.387	Not Significant
Monitoring language learning			
Listening	-0.052	0.281	Not Significant
Speaking	.657**	<.001	Highly Significant
Reading	.677**	<.001	Highly Significant
Writing	0.069	0.158	Not Significant
Evaluating language learning			
Listening	-0.058	0.233	Not Significant
Speaking	.681**	<.001	Highly Significant
Reading	.704**	<.001	Highly Significant
Writing	0.081	0.096	Not Significant

Legend: Significant at p-value < 0.01

Table 6 illustrates the association between Metacognitive Strategies and Language Proficiency. The computed r-values indicates a almost negligible to strong direct/indirect direct correlation however only few resulted p-values were less than the alpha level except on conditional knowledge. This means that there was significant relationship exists between the variables treated. Result implies that the better is the metacognitive strategies, the better is the language proficiency. It presents the relationship between metacognitive strategies and language proficiency across four language skills: listening, speaking, reading, and writing. Results show that for the skill of speaking, there is a highly significant positive correlation with all three metacognitive strategies—planning ($\rho=.733$, $p<.001$), monitoring ($\rho=.657$, $p<.001$), and evaluating ($\rho=.681$, $p<.001$). Reading also shows highly significant positive correlations with planning ($\rho=.588$, $p<.001$), monitoring ($\rho=.677$, $p<.001$), and evaluating ($\rho=.704$, $p<.001$).

In contrast, listening and writing skills do not exhibit significant correlations with any of the metacognitive strategies, as their p-values exceed the 0.01 significance threshold. Specifically, the correlations for listening range from $\rho = -0.087$ to -0.058 , and for writing from $\rho = 0.042$ to 0.081 , all with non-significant p-values. Overall, these findings suggest that metacognitive strategies are strongly associated with higher proficiency in speaking and reading, but not significantly related to listening and writing skills. The program aims to enhance language learning by improving metacognitive awareness and strategies, focusing on declarative, procedural, and conditional knowledge. It includes pre-assessments, interactive training sessions, practice with feedback, and post-assessments.

Table 7*Proposed Enhancement of Language Learning Metacognitive Awareness and Strategies*

Key Result Area (KRA)	Objective	Activities	Success Indicators	Persons Involved
1. Language Learning – Metacognitive Awareness – Conditional Knowledge	To enhance students' understanding of when, why, and how to use specific language learning strategies effectively.	- Conduct orientation seminars on metacognitive awareness. - Integrate strategy-awareness modules in English classes. - Facilitate reflective journaling sessions on learning experiences.	- At least 80% of students demonstrate improved metacognitive awareness based on pre- and post-assessment surveys. - Regular reflective journals submitted and evaluated.	English Faculty Language Instructors Guidance Counselor
2. Metacognitive Strategies – Planning Language Learning	To develop students' abilities to effectively plan and manage their language learning processes.	- Introduce goal-setting and self-directed learning workshops. - Design a Language Learning Planner for students. - Encourage peer mentoring and collaborative planning.	- 75% of students regularly use Language Learning Planners. - Improvement in autonomous learning tasks. - Positive feedback from peer mentoring sessions.	English Faculty Academic Advisers Student Leaders
3. Language Proficiency – Listening	To improve students' listening comprehension skills through targeted strategies and activities.	- Integrate listening strategy training in class. - Use authentic audio materials (podcasts, news, etc.) for practice. - Conduct listening comprehension exercises with metacognitive reflection.	- Increase in listening proficiency test scores. - Student reflections show increased awareness of listening strategies. - Consistent engagement in listening tasks.	English Language Instructors Curriculum Developer ICT Coordinator

4. Conclusions and recommendations

Respondents exhibit a moderate level of metacognitive awareness in language learning, with the highest agreement in procedural knowledge. While declarative knowledge also shows strong agreement, conditional knowledge ranks lowest, suggesting a gap in applying learning strategies to diverse contexts. Respondents moderately use metacognitive strategies, with the highest emphasis on monitoring language learning. Respondents agree more with their proficiency in reading, followed by speaking and writing, while listening proficiency is the lowest. There is a highly significant relationship between metacognitive awareness (declarative and procedural knowledge) and metacognitive strategies (planning, monitoring, and evaluating language learning), with all correlations showing strong positive values. Created a program that enhances language learning through targeted metacognitive strategies, focusing on declarative, procedural, and conditional knowledge.

The **Program Director may** ensure the program remains tailored to the needs of students with a focus on improving conditional knowledge, as this area showed the lowest level of awareness. The **Language Learning Experts may encourage** incorporate more context-based learning strategies that encourage students to apply knowledge in real-world scenarios, especially focusing on conditional knowledge. The **Program Participants may** engage more actively in monitoring and evaluating their learning, focusing on using metacognitive strategies to bridge the gap in conditional knowledge. The **School Support Staff may** provide consistent logistical and resource support to ensure smooth program implementation, particularly for participants from public universities. The **School Administration may** consider allocating resources and creating opportunities for further research on the relationship between sex, type of school, and metacognitive awareness, as well as ensuring that programs targeting metacognitive strategies are institutionalized and supported by long-term strategies. **Future Researchers may** explore further into the relationship between conditional knowledge and real-world language application. Future studies could focus on the effectiveness of various metacognitive strategies and how they influence different aspects of language proficiency, particularly in listening and speaking.

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Teaching competence, quality, and professional growth of professors in Chinese universities

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Abstract

This paper examined the mechanisms of teaching competence, quality, and professional growth of professors in Chinese universities. The research adopted a descriptive correlational research design, and data was collected from 425 teachers at Chinese universities through an effective questionnaire survey. The research sought to determine the profile of the respondents in terms of age, sex, years of service, highest educational attainment. It also identified the teaching competence in terms of teaching skills, cognitive ability and communication skills; described the teaching quality in terms of knowledge depth and breadth, leadership and management and operational administration capacity; assessed the professional growth in terms of professional knowledge, ability and capacity expansion. It tested the significant difference among teaching competence, teaching quality and professional growth when grouped according to demographic profile and tested the significant relationship among the key variables. The research results showed that there was a positive and significant relationship among teaching competence, quality and professional growth. Chinese universities may prioritize school culture development through various activities, strengthen teacher training, and promote various teaching methods. Also, teachers may strengthen subject mastery by organizing professional development focusing on cognitive ability, communication skills and leadership. Lastly, universities may integrate digital tools and platforms that may enhance the continuous learning resources for training and development. These efforts will promote educational innovation, promote professional collaboration, and promote sustainable progress in Chinese universities education sector.

Keywords: professional growth, teaching competence, teaching quality

Teaching competence, quality, and professional growth of professors in Chinese universities

1. Introduction

In the contemporary educational environment, the effectiveness of university professors is increasingly recognized as a pivotal factor in determining institutional success and student outcomes. This is particularly pertinent in China, where rapid economic growth and an increasing emphasis on global academic standards have reshaped the higher education landscape. Despite expanded institutional efforts to improve performance indicators, persistent gaps remain in the evaluation, development, and integration of key faculty competencies—particularly in the domains of teaching competence, teaching quality, and professional growth. Teaching competence, while acknowledged as critical to achieving educational excellence, is often unevenly defined and assessed across institutions. The absence of standardized criteria for evaluating pedagogical effectiveness, student engagement, and adaptive strategies contributes to inconsistencies in teaching outcomes and instructional quality (Huang, 2021; Khan et al., 2019). Moreover, faculty members are frequently left to navigate evolving educational demands without sufficient institutional guidance or professional development resources tailored to diverse learning contexts (Chen, 2020).

Teaching competence has emerged as a central focus in the discourse on educational effectiveness, particularly within the context of higher education. Defined broadly, teaching competence encompasses the ability of educators to effectively convey subject matter, engage students, and utilize pedagogical strategies that foster meaningful learning experiences (Khan et al., 2019). This multidimensional concept not only includes the mastery of content and instructional techniques but also the capacity to adapt to diverse student needs and evolving educational contexts (Chen, 2020). Simultaneously, the concept of teaching quality—though central to institutional rankings and student success—is complicated by fragmented assessment practices and a lack of shared frameworks for stakeholder involvement. As universities aim to align with global standards, challenges persist in systematically integrating instructional clarity, inclusive pedagogy, and formative assessment across disciplines (Li et al., 2022; Smith et al., 2021). These gaps hinder efforts to measure impact consistently and reinforce a reactive rather than proactive approach to quality assurance. Additionally, the personal growth of professors, encompassing professional development, career progression, and well-being, plays a fundamental role in sustaining a productive and supportive academic environment (Zhang, 2023).

Teaching quality is a critical component of educational effectiveness, significantly impacting student learning and institutional success. Defined as the extent to which teaching practices foster student understanding, engagement, and academic achievement, teaching quality encompasses various dimensions including instructional clarity, pedagogical strategies, and the ability to create a supportive learning environment (Brown et al., 2019). It is not only concerned with the delivery of content but also with the interactions between educators and students, and the use of assessment to enhance learning outcomes (Smith et al., 2021). By examining recent trends, challenges, and opportunities within this context, the research seeks to offer recommendations for enhancing the academic environment and supporting faculty development. Zhang (2021) highlighted that effective teaching practices are closely linked to enhanced student engagement and academic performance, thereby contributing to the overall quality of education. Furthermore, the role of teaching competence extends beyond the classroom, impacting institutional reputation and the broader educational landscape (Li et al., 2022).

Recent research has emphasized that high teaching quality is integral to achieving educational goals and improving student performance. For example, studies by Johnson et al., (2020) demonstrate that well-structured and interactive teaching methods are linked to higher student satisfaction and better academic results. Moreover, the assessment of teaching quality often involves multiple stakeholders, including students, peers, and institutional leaders, highlighting its multifaceted nature (Martin et al., 2022). In parallel, the professional growth

of professors—defined as professional development, career progression, and well-being—remains an under-supported area despite its direct influence on teaching effectiveness, research productivity, and retention (Wang et al., 2019). Institutional initiatives often fall short in addressing the holistic needs of faculty, particularly in terms of work-life balance, access to mentoring, and structured advancement pathways (Zhao et al., 2023). As a result, faculty experiences and contributions are variably nurtured, limiting opportunities to sustain a motivated and resilient academic workforce.

Professional growth of professors in Chinese universities is an increasingly vital area of focus in the evolving landscape of higher education. Personal growth refers to the professional development, career advancement, and well-being of faculty members, which significantly impacts their teaching effectiveness, research productivity, and overall job satisfaction (Wang et al., 2019). This concept encompasses various dimensions, including continuous learning, skill enhancement, and the attainment of personal and professional goals (Chen, 2020). Professional growth is crucial for fostering a positive academic environment and achieving institutional excellence. Liu et. al.,(2021) emphasized that opportunities for professional development and career progression not only enhance faculty members' competencies but also contribute to their motivation and job satisfaction. Additionally, research by Zhao et. al.,(2023) suggests that a supportive work environment and work-life balance are integral to personal growth and, consequently, to the overall effectiveness of professors. As universities continue to strive for excellence and adapt to global educational demands, understanding and enhancing teaching competence has become increasingly crucial. This introduction explores the evolving definitions and dimensions of teaching competence, emphasizing its importance in shaping effective educational environments.

As educational institutions face increasing pressure to meet global standards and improve student outcomes, understanding and enhancing teaching quality has become paramount. This introduction explores contemporary definitions and dimensions of teaching quality, underscoring its importance in fostering effective learning environments and advancing educational excellence. As Chinese universities continue to advance in a competitive global academic arena, understanding and promoting the personal growth of professors has become essential. This introduction explores the definitions and dimensions of personal growth for university faculty, highlighting its significance in enhancing academic performance and institutional success. Investigating teaching competence, quality, and personal growth provides a comprehensive understanding of how these factors interrelate and affect educational outcomes in Chinese universities. By analyzing these dimensions, institutions can develop targeted strategies to enhance teaching practices, improve academic quality, and support faculty members' personal and professional development. This approach aligns with broader goals of enhancing educational standards and institutional reputation in a rapidly evolving global academic landscape.

As Chinese universities advance in the global academic arena, it becomes increasingly imperative to understand the intersection of teaching competence, teaching quality, and professional growth. The interplay of these factors determines the overall vitality of academic environments and influences the ability of institutions to cultivate excellence, equity, and innovation. By critically analyzing existing frameworks, identifying areas for structural improvement, and foregrounding faculty needs, this study aims to offer strategic recommendations for enhancing educational outcomes and promoting sustainable institutional success. It contributes to broader efforts to elevate the standards of teaching and learning within China's dynamic higher education landscape.

Objectives of the Study - This study aimed to determine the teaching competence, quality, and professional growth among university professors in China. The study comprehensively evaluated various aspects related to teaching and professional growth. Specifically, the research assessed teaching competence by examining teaching skills, cognitive ability, and communication skills. Additionally, the study identified the quality of teaching with respect to knowledge depth and breadth, leadership, and management and operational administration capacity. Professional growth was assessed by evaluating professional knowledge, ability, and capacity expansion. Finally, based on the findings, the study proposed a training program designed to enhance school improvement efforts and deepen the understanding of factors that contribute to effective teaching and

student success.

2. Methods

Research Design - The research investigated the association between teaching competence, teaching quality, and personal growth among selected University teachers in China in Sichuan Province, using a descriptive research approach. University teachers completed a verified questionnaire survey that collected quantitative data. Quantitative data refers to information that is quantifiable and expressed in numerical terms, which enables statistical analysis and precise measurement of variables (Creswell, 2014). It is collected through structured instruments such as surveys, experiments, and standardized tests, and is instrumental in testing hypotheses, measuring variables, and making predictions (Field, 2013). The importance of quantitative data lies in its ability to provide objective, consistent, and generalizable findings. By allowing researchers to analyze patterns, relationships, and statistical significance, quantitative data facilitates the identification of trends and the evaluation of interventions across larger populations (Babbie, 2020). This approach supports empirical research by providing a rigorous framework for validating theories and making data-driven decisions (Denscombe, 2017). Overall, quantitative data plays a crucial role in advancing scientific knowledge, ensuring accuracy in research, and informing policy and practice with measurable evidence.

Participants of the Study - The participants in this study were university professors from three universities located in Sichuan, China. The respondents were aged between 20 and 60 years, with varying lengths of service ranging from one month to 25 years. To be included in the study, participants must be current university faculty members, regardless of gender. Exclusion was done among any individuals who are not employed as university teachers or those whose age or length of service falls outside the specified range. This selection ensured a diverse and representative sample of the teaching population across different stages of their academic careers. The respondents for this study were selected from the largest universities in Sichuan, China, with a focus on a total population of 425 individuals drawn from an overall pool of 3,000 teachers. This selection process ensured a representative sample of university faculty members from these major institutions, reflecting a broad range of teaching experiences and perspectives within the largest academic environments in the region.

Data Gathering Instrument - The research instruments consist of three questionnaires, each designed to collect specific data related to the research objectives. Relevant background information of the participants, including sex, age, years of service, highest educational attainment will be collected before the questionnaires. The Questionnaire on teaching Competence was adapted from the study of Xue (2017), relating to the improvement of young University teachers and has been used many times in the literature of core journals. A total of 30 entries are scored on a 4-point scale, and the higher the score, the higher the teaching competence. The questionnaire was divided into three dimensions: Teaching Skills (11 questions), teaching cognitive ability (9 questions) and teaching communication skills (10 questions).

The Teaching Quality Questionnaire was modified from Liu (2001), *On the quality of College Teachers*, which consisted of a total of 21 questions including two dimensions. There were (7 questions) was about the depth and breadth of knowledge, (16 questions) for, and the scale was scored on a 4-point scale, with higher scores indicating the better the teaching quality. While, the Personal Growth Questionnaire was adapted from Peng (2021), *Research on Professional Growth Path of College Teachers in the Era of Intelligent Education*. All items were rated on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The questionnaire consists of 26 items, which are classified into three dimensions, professional knowledge, professional ability and expanding capacity with higher scores indicating the more profound the personal growth.

To ensure the reliability of the questionnaire, a pilot study was conducted among 30 teachers from Selected University teachers from the schools chosen. Data from these participants will be collected via “Questionnaire Star” (www.wjx.cn), and then were coded and entered into SPSS 27.0 for analysis. The Cronbach Alpha coefficients of the subscales as well as that of the whole questionnaire were calculated. Reliability results for

three variables under investigation, which illustrated that the Cronbach Alpha coefficients of all the subscales ranged from 0.915 to 0.936. Also, the Cronbach Alpha of the whole questionnaire reached 0.936.

Table 1

Reliability Test Summary

Indicators	Cronbach Alpha	Remarks
Teaching Skills	0.947	Excellent
Teaching cognitive ability	0.950	Excellent
Teaching communication skills	0.944	Excellent
The depth and breadth of knowledge	0.909	Excellent
Leadership	0.942	Excellent
Professional Knowledge	0.939	Excellent
Professional Ability	0.929	Excellent
Expanding Capacity	0.927	Excellent

George and Mallery (2003) provide the following rules of thumb: “_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable”

The table presents the Cronbach Alpha values for various indicators used to measure different aspects of teaching and professional abilities. The values for each indicator—Teaching Skills, Teaching Cognitive Ability, Teaching Communication Skills, Depth and Breadth of Knowledge, Leadership, Professional Knowledge, Professional Ability, and Expanding Capacity—are all above 0.9, which is categorized as “Excellent”. This indicates a very high level of internal consistency and reliability for these indicators, suggesting that they provide highly reliable measurements of the respective areas they are assessing. In essence, the data reflects that all the measured aspects of teaching and professional ability are highly dependable and consistent.

Data Gathering Procedure - As for the data gathering, questionnaires were distributed through an online survey -- “Questionnaire Star” (www.wjx.cn) to participants of teachers from, Chongqing University, Chongqing University of Education and Sichuan Fine Arts Institute, which represents the largest population in the area. The questionnaires were sent to them in the form of a QR code, and they were explained in detail about the specific purpose of the questionnaire. Therefore, it was assumed that the teachers who can answer the questions could cooperate with the investigation in a serious manner. Once teachers received the QR code, those who were interested and willing to participate in the survey could scan the code directly in WeChat to get the link and answer the questions on their cell phones. After the questionnaire was submitted, data were collected and finally treated statistically with the use of frequency count, percentage, ranking and weighted mean in interpreting, analyzing, and comparing the responses of the participants by using SPSS 27.0.

Data Analysis - Weighted average and ranking calculations were then used to determine the data’s average, considering different variables’ weights for more accurate reflection. This method offered a comprehensive and precise data description. The Shapiro-Wilk test was performed to check the normality of the data distribution. With p-values for the main variables under 0.05, the data set was found to be non-normally distributed, necessitating non-parametric statistical methods for further analysis. To evaluate significant relationships among talent introduction, talent support, and talent competency, the Spearman rho correlation coefficient was used. This method effectively assessed correlations between non-normally distributed variables, determining the significance, direction, and strength of their relationships. A Likert scale was employed to capture respondents’ attitudes and opinions in detail, providing richer information for data analysis. Verbal interpretation ranges were: “Strongly Agree” (3.50-4.00), “Agree” (2.50-3.49), “Disagree” (1.50-2.49), and “Strongly Disagree” (1.00-1.49). All analyses were performed using SPSS version twenty-eight software, with an alpha level of 0.05 for interpreting results. This comprehensive approach allowed the researcher to understand the data set’s characteristics and patterns, providing a reliable basis for interpreting and applying the research results.

Data collection focused on assessing the professional identity, perceived teacher support, and academic resilience of English majors, analyzed using the weighted mean to ensure precision. In summary, the combination of weighted averages, normality tests, correlation coefficients, and Likert scale assessments

provided a thorough and detailed analysis framework. These methods collectively enabled the researcher to propose informed recommendations for improving the talent admission system in higher vocational colleges.

Ethical Considerations - This study rigorously adhered to ethical principles to safeguard the rights and privacy of Sichuan Professors who participated. Legitimacy was established by obtaining consent from schools and teachers during data collection. All questionnaires and interviews were conducted anonymously, with personally identifiable information strictly confidential. The researcher provided comprehensive information about the study's purpose and ensured voluntary participation. Potential risks were minimized, and research results were solely used for academic purposes. These ethical considerations ensured both moral compliance and the protection of participating teachers' rights. Regarding confidentiality, respondents' personal information remained undisclosed, except for sex, age, length of employment, and educational background. Throughout, participants were well-informed about instructions, procedures, and survey objectives. The voluntary investigation approach further safeguarded respondents' rights. Confidentiality was paramount during data collection. Ethical approval was obtained from the research center at the University of the Lyceum in the Philippines.

3. Results and discussion

Table 2

Summary Table on Teaching Competence

Indicators	Weighted Mean	Verbal Interpretation	Rank
Teaching Skills	2.66	Often	1
Cognitive Ability	2.52	Often	3
Teaching Communication Skills	2.58	Often	2
Composite Mean	2.59	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 = Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

Table 2 presents a comprehensive overview of three key teaching competencies: Teaching Skills, Cognitive Ability, and Teaching Communication Skills, with each category evaluated using a weighted mean. The composite mean of 2.59, which falls within the “Often” range, suggests that teachers display a solid level of competence in these areas, but there is still room for improvement.

Among the three indicators, Teaching Skills ranks the highest with a weighted mean of 2.66, indicating that teachers often demonstrate effective teaching methods and strategies. This suggests that teachers are capable of tailoring their teaching approaches to meet the diverse needs of students, which is crucial for maintaining an engaging and productive learning environment. The high importance of teaching skills has been emphasized in recent studies, with research showing that well-developed teaching skills significantly contribute to student engagement and academic success (Zhou et al., 2021). However, the “Often” verbal interpretation implies that teachers may still have areas for growth, such as refining their techniques or incorporating more diverse teaching methods. This indicates that teachers frequently exhibit effective teaching skills, which are essential for creating a productive and engaging learning environment. The high ranking reflects that teachers generally understand how to apply a variety of teaching methods and strategies to meet the diverse needs of their students, although it suggests that there is still room for refinement and growth in this area.

Teaching skills encompass a range of abilities, including lesson planning, classroom management, and the adaptation of teaching techniques to suit different learning styles. Research consistently highlights that the quality of teaching directly impacts student learning outcomes, and teachers who are equipped with strong teaching skills are better able to foster student engagement and academic achievement (Zhou et al., 2021). Teachers who frequently demonstrate teaching skills ensure that lessons are clear, accessible, and well-paced, which helps students grasp new concepts and actively participate in their learning. The fact that the weighted mean of 2.66 places this indicator in the “Often” category rather than “Always” suggests that while teachers are generally effective in their teaching practices, there is potential for further development. Areas for growth might

include diversifying instructional strategies, utilizing more technology in the classroom, or refining communication techniques to better cater to individual student needs. By continuing to build on their teaching skills, educators can improve student learning experiences and outcomes.

Teaching Skills is the highest-ranked competency, reflecting that teachers are effective in their instructional practices, though there remains an opportunity to enhance and diversify these skills for even better results. The second-highest indicator is Teaching Communication Skills, with a weighted mean of 2.58, which also falls in the “Often” category. This reflects that teachers often utilize effective communication strategies in the classroom, enabling them to explain concepts clearly, engage students, and build rapport. Strong communication is vital for enhancing teacher-student relationships and promoting a positive classroom environment (Zhang et al., 2022). While teachers exhibit a solid communication ability, the ranking indicates that there could be further improvements in communication practices to increase engagement and foster deeper connections with students. The relatively high score indicates that teachers understand the importance of communication in the classroom and actively engage in communication with students, colleagues, and possibly parents, but it also highlights that practices are not always at the level of excellence or frequency that would elevate them to “Always” category.

Effective teaching communication skills are crucial for creating a positive classroom environment, ensuring that students fully understand the material, and fostering meaningful relationships. Communication in teaching involves clear explanations, active listening, providing feedback, and being responsive to students’ needs. Teachers who excel in communication can facilitate student engagement, improve academic performance, and contribute to a supportive learning atmosphere (Zhang et al., 2022). However, the fact that the weighted mean of 2.58 places it in the “Often” category suggests that while teachers generally use communication effectively, there may be areas for further improvement. For instance, teachers might benefit from more regular and personalized interactions with students, especially in larger classrooms where individual attention is limited. Additionally, there could be room for growth in terms of fostering more open lines of communication with parents and the school community, which is essential for creating a collaborative educational environment.

The second highest ranking, Teaching Communication Skills reflects a solid competency in communication among teachers, but it also points to opportunities for further development in this area to ensure that communication is a continuous and dynamic part of the teaching process. Cognitive Ability ranks third, with a weighted mean of 2.52, placing it in the “Often” category as well. This suggests that teachers generally have a solid understanding of the subjects they teach and can apply critical thinking and problem-solving skills in their teaching. Cognitive ability is essential for adapting to students’ academic needs and ensuring that content is presented in a way that fosters higher-order thinking (Wang et al., 2023). However, the relatively lower ranking of this indicator compared to the others highlights the need for potential development in subject mastery and its application in diverse classroom situations. This indicates that teachers frequently demonstrate strong cognitive abilities, including understanding the subjects they teach and applying critical thinking to their teaching methods. The relatively high ranking shows that teachers possess the necessary knowledge and intellectual skills to make informed decisions and adapt their teaching strategies to suit students’ academic needs. However, the “Often” interpretation also suggests there is room for improvement in how teachers consistently apply these cognitive skills in all aspects of their teaching.

Cognitive ability in teaching involves not just subject matter expertise but also the capacity for problem-solving, critical analysis, and the application of various teaching methods to ensure effective learning outcomes. Teachers with strong cognitive abilities are able to navigate complex classroom situations, make adjustments based on students’ performance, and critically evaluate the effectiveness of their teaching approaches. These skills are essential for fostering higher-order thinking among students and encouraging them to engage deeply with the content (Wang et al., 2023). While teachers are demonstrating cognitive abilities “often,” the ranking indicates that there could be areas for further development. Teachers might benefit from additional professional training focused on advanced cognitive strategies for enhancing student learning, such as meta-cognitive techniques, interdisciplinary approaches, or critical thinking exercises. Moreover, teachers could

further enhance their cognitive ability by keeping up with innovative educational practices and research-based methods that challenge both their own thinking and the thinking of their students.

Cognitive Ability suggests that while teachers are generally proficient in understanding their subjects and applying intellectual skills in their teaching, there is room for growth in terms of more consistently and effectively utilizing these abilities in all aspects of the learning process. Overall, the Composite Mean of 2.59 indicates that while teachers perform competently across all areas, there is still room for improvement. This suggests that while teachers consistently demonstrate skills in teaching, communication, and cognitive ability, these areas could benefit from further professional development. Enhancing these competencies could lead to even better classroom environments, higher levels of student engagement, and improved learning outcomes.

Table 3

Summary Table on Teaching Quality

Indicators	Weighted Mean	Verbal Interpretation	Rank
The depth and breadth of the knowledge	2.56	Agree	2
Leadership	2.62	Agree	1
Composite Mean	2.59	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 3 provides a summary of teacher quality based on two key indicators: the depth and breadth of knowledge, and leadership. The composite mean is 2.59, interpreted as “Agree,” indicating that teachers generally perceive themselves as meeting expected standards in both areas. Among these, leadership emerged as the highest-ranked dimension with a weighted mean of 2.62, suggesting that teachers feel more confident in their ability to lead, make decisions, manage classrooms and resources, and collaborate effectively with colleagues and students. This supports the findings of Liu et. al.,(2023) which emphasize that leadership qualities among Chinese educators are increasingly recognized as vital to school success and reform initiatives. This suggests that teachers in the study perceive themselves as generally competent in exercising leadership within the educational context. Leadership in this setting includes the ability to guide students, manage classrooms, collaborate with colleagues, and participate in school decision-making processes. Teachers’ agreement with this indicator reflects a positive self-assessment of their capacity to influence learning environments constructively and promote a culture of collaboration and improvement.

This finding is consistent with current literature emphasizing the increasing importance of teacher leadership in China. According to Liu et. al.,(2023), schools are placing more emphasis on cultivating teachers who can lead not just in administrative roles but also in instructional innovation, peer mentoring, and student engagement. Leadership is also associated with the ability to adapt to educational reforms and implement new pedagogical practices, which are key expectations in China’s evolving education system (Xu, 2024). Therefore, the strong rating in this area may indicate both institutional support for leadership roles and the growing confidence among teachers in fulfilling these expectations effectively. The second-ranked indicator, depth and breadth of knowledge, had a weighted mean of 2.56, still within the “Agree” range. This suggests that teachers believe they have adequate content knowledge and interdisciplinary awareness to deliver their subject matter effectively. However, it also hints at potential gaps, particularly in integrating multicultural perspectives and interdisciplinary approaches—challenges that have been noted in Chinese teacher training programs (Chen, 2022; Huang et al., 2021). These findings underscore the importance of continuous professional development and targeted support in areas where teachers may feel less confident.

This result aligns with recent studies highlighting that Chinese educators generally exhibit strong content knowledge, a core component of professional competence. According to Chen (2022), Chinese teacher education programs place considerable emphasis on deep subject expertise, particularly in core subjects like mathematics, science, and language. However, Huang et. al.,(2021) noted that while teachers demonstrate proficiency in their specific disciplines, challenges remain in integrating multicultural content and interdisciplinary approaches, which could explain why this indicator did not rank first overall. The agreement level suggests that teachers feel

confident in their content delivery, but there is room for improvement in expanding their breadth—particularly in areas like interdisciplinary teaching and cultural responsiveness. These areas are increasingly relevant in a modern Chinese classroom where globalization and diverse learning needs demand broader pedagogical scope.

Table 4

Summary Table on Professional Growth

Indicators	Weighted Mean	Verbal Interpretation	Rank
Professional Knowledge	2.58	Agree	2
Professional Ability	2.69	Agree	1
Expanding Capacity	2.55	Agree	3
Composite Mean	2.61	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 4 presents a summary of the indicators related to professional growth, focusing on three key areas: Professional Knowledge, Professional Ability, and Expanding Capacity. The composite mean is 2.61, which falls under the “Agree” category, suggesting that teachers generally believe they are actively engaged in professional growth across these areas. Professional Ability ranked first with a weighted mean of 2.69, indicating that teachers feel most confident in their professional abilities. This includes their competency in teaching organization, using modern teaching methods, and other core teaching skills. The importance of professional ability is also highlighted by Huang (2023), who emphasizes that effective teaching methods and organizational skills are fundamental to improving classroom learning outcomes. Zhang et. al.,(2024) also noted that developing teachers’ professional ability is critical to improving their capacity to adapt to diverse learning environments and enhance student engagement.

Professional Knowledge ranks second with a weighted mean of 2.58, suggesting that teachers agree they have sufficient theoretical, pedagogical, and vocational knowledge. This aligns with Li et. al.,(2022), who argue that continuous professional knowledge development, especially in pedagogical theories and subject-specific knowledge, is key to fostering student success. Despite this, there appears to be a gap between teachers’ theoretical knowledge and its application in practical settings, a point made by Wang et. al.,(2023), who found that while many teachers possess strong knowledge in theory, they often struggle to integrate it effectively into their daily practices. Expanding Capacity is ranked third with a weighted mean of 2.55, indicating a moderate level of agreement. This area encompasses activities such as attending academic conferences, participating in refresher courses, and engaging in teaching observations. Although teachers recognize the value of expanding their professional capacity, these activities seem to be less frequently pursued compared to improving professional abilities and knowledge. This finding is consistent with the research of Chen et. al.,(2024), who note that while professional development programs are available, teachers may not always prioritize or have access to them due to time constraints or institutional limitations. In summary, while teachers report strong engagement with professional development activities, there are clear areas where further growth and institutional support could enhance their overall professional trajectory.

Table 5

Relationship Between Teaching Competence and Teaching Quality

Teaching Skills	r-value	p-value	Interpretation
The depth and breadth of the knowledge	.140**	0.002	Significant
Leadership	-0.067	0.142	Not Significant
Teaching Cognitive Ability			
The depth and breadth of the knowledge	0.017	0.708	Not Significant
Leadership	-.426**	0.000	Highly Significant
Teaching Communication Skills			
The depth and breadth of the knowledge	-0.022	0.632	Not Significant
Leadership	.272**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 5 illustrates the association between Teaching Competence and Teachers Quality. The computed

r-values indicates a moderate direct correlation but only teaching competence and depth and breadth of the knowledge obtained p-values less than the alpha level. This means that there was significant relationship exists and implies that the better is the teaching competence, the better is the teaching quality as to depth and breadth of the knowledge. The findings indicate that the depth and breadth of knowledge is positively and significantly related to teaching skills, with a correlation coefficient of 0.140 and a p-value of 0.002. This suggests that teachers who perceive themselves as having a broad and deep knowledge base tend to report better teaching skills. However, leadership shows no significant relationship with teaching skills, as evidenced by the negative correlation of -0.067 and a p-value of 0.142.

In terms of teaching cognitive ability, the depth of knowledge has an extremely weak and statistically insignificant correlation, with an r-value of 0.017 and p-value of 0.708. This implies that teachers' cognitive abilities in teaching are not significantly impacted by their perceived knowledge. Conversely, leadership shows a significant negative correlation with teaching cognitive ability (r-value = -0.426, p-value = 0.000), suggesting that teachers with higher leadership skills tend to rate their cognitive abilities in teaching lower. This could reflect the idea that leadership responsibilities, which involve classroom management and decision-making, might limit the mental focus required for cognitive engagement with the subject matter. When considering teaching communication skills, the depth of knowledge again shows a non-significant negative correlation (r-value = -0.022, p-value = 0.632), meaning that knowledge does not significantly influence teachers' communication skills. On the other hand, leadership has a highly significant positive correlation (r-value = 0.272, p-value = 0.000) with communication skills, indicating that teachers with stronger leadership qualities tend to have better communication skills, likely because leadership necessitates effective communication with both students and colleagues. In summary, the table demonstrates that while teaching skills and leadership are positively correlated with knowledge and communication skills, cognitive ability in teaching is more strongly influenced by leadership, though the relationship is negative. The results underscore the critical role of leadership in teaching effectiveness, particularly in communication, but also highlight that knowledge does not significantly enhance cognitive abilities or communication skills in the same way.

Table 6 shows the association between Teaching Competence and professional growth. The computed r-values indicates a moderate direct correlation and the resulted p-values less than the alpha level except on professional knowledge and ability. This means that there was significant relationship exists and implies that the better is the teaching competence, the better is the professional growth. Firstly, teaching skills are positively correlated with all aspects of professional growth. Specifically, there is a highly significant relationship between teaching skills and professional knowledge ($r=0.263$, $p=0.000$), professional ability ($r=0.292$, $p=0.000$), and expanding capacity ($r=0.225$, $p=0.000$). This suggests that teachers who possess higher teaching skills are more likely to demonstrate better professional knowledge, greater professional ability, and a stronger capacity for expanding their expertise. Finding aligns with existing literature, which highlights the role of teaching proficiency in driving professional development (Zhang et al., 2023).

Table 6

Relationship Between Teaching Competence and Professional Growth

Teaching Skills	r-value	p-value	Interpretation
Professional Knowledge	.263**	0.000	Highly Significant
Professional Ability	.292**	0.000	Highly Significant
Expanding Capacity	.225**	0.000	Highly Significant
Teaching Cognitive Ability			
Professional Knowledge	-0.061	0.182	Not Significant
Professional Ability	.357**	0.000	Highly Significant
Expanding Capacity	.265**	0.000	Highly Significant
Teaching Communication Skills			
Professional Knowledge	.104*	0.022	Significant
Professional Ability	0.079	0.081	Not Significant
Expanding Capacity	.172**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Secondly, teaching cognitive ability shows a significant correlation with professional ability ($r=0.357$, $p=0.000$) and expanding capacity ($r=0.265$, $p=0.000$), but it does not significantly correlate with professional knowledge ($r=-0.061$, $p=0.182$). This indicates that while cognitive ability may not directly influence teachers' perceived professional knowledge, it plays a key role in enhancing their professional ability and their capacity for further growth. This supports the view that cognitive ability can significantly impact a teacher's development, particularly in terms of adapting and expanding professional competencies (Huang, 2024).

Lastly, teaching communication skills show a significant positive correlation with professional knowledge ($r=0.104$, $p=0.022$), but they do not significantly correlate with professional ability ($r=0.079$, $p=0.081$). However, communication skills have a highly significant relationship with expanding capacity ($r=0.172$, $p=0.000$). This suggests that strong communication skills are essential for expanding a teacher's professional capacity, as they facilitate better interaction and collaboration with colleagues, ultimately supporting continued professional growth.

In summary, the table underscores that teaching skills and cognitive abilities are crucial for professional development, influencing both professional knowledge and the capacity to grow. Communication skills, while critical for enhancing professional knowledge and expanding capacity, also play an integral role in fostering collaboration and ongoing learning. These findings highlight the importance of comprehensive teaching competence in supporting teachers' professional growth and their ability to adapt to new educational challenges.

Table 7

Relationship Between Teaching Quality and Professional Growth

The depth and breadth of the knowledge	r-value	p-value	Interpretation
Professional Knowledge	.173**	0.000	Highly Significant
Professional Ability	0.033	0.472	Not Significant
Expanding Capacity	.174**	0.000	Highly Significant
Leadership			
Professional Knowledge	.115*	0.011	Significant
Professional Ability	-.265**	0.000	Highly Significant
Expanding Capacity	.219**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 7 presents the association between teaching quality and professional growth. The computed r-values indicates a moderate direct correlation and the resulted p-values less than the alpha level except on professional ability. This means that there was significant relationship exists and implies that the better is the teaching quality, the better is the professional growth.

For the depth and breadth of knowledge, the table shows a highly significant positive correlation with both professional knowledge ($r = 0.173$, $p = 0.000$) and expanding capacity ($r = 0.174$, $p = 0.000$). This suggests that teachers with a deeper and broader understanding of their subject matter are more likely to have a stronger grasp of professional knowledge and are better equipped for continued professional development. These findings align with research that emphasizes the importance of subject matter expertise in fostering both personal and professional growth (Huang, 2024). However, the depth and breadth of knowledge does not show a significant correlation with professional ability ($r = 0.033$, $p = 0.472$), suggesting that while knowledge is crucial for professional development, it may not directly influence teachers' practical abilities in the classroom. This result supports the notion that other factors, such as teaching experience and professional training, may be more important for developing practical teaching skills (Zhang et al., 2023).

Regarding leadership, the table shows a significant positive correlation with professional knowledge ($r = 0.115$, $p = 0.011$) and highly significant positive correlations with both professional ability ($r = -0.265$, $p = 0.000$) and expanding capacity ($r = 0.219$, $p = 0.000$). These results suggest that leadership skills play a crucial role in fostering teachers' professional growth, particularly in the areas of their professional ability and capacity for

development. Teachers with stronger leadership qualities tend to possess a greater capacity to expand their professional skills and adapt to new teaching challenges, aligning with studies that highlight the importance of leadership in driving educational success (Liu, 2022).

In summary, the table indicates that both the depth and breadth of knowledge and leadership qualities significantly influence teachers' professional growth, although their impact varies across different aspects of growth. Teachers' knowledge contributes strongly to their professional development and expanding capacity, while leadership skills have a broader and more significant impact, particularly on professional ability and expanding capacity. This underscores the importance of nurturing both content expertise and leadership skills for fostering continuous professional growth among educators.

Table 8*Integrated Training Program for Enhancing Teaching Cognitive Ability and Professional Growth Capacity*

Key Result Area (KRA)	Objectives	Activities	Success Indicators (80–95%)	Persons Involved
Teaching Cognitive Ability	To enhance understanding and application of cognitive strategies in teaching	• Workshops on cognitive processes and problem-solving • Training on Bloom's Taxonomy in lesson planning • Peer sessions on integrating higher-order thinking in teaching	• 85% of participants demonstrate improved cognitive strategy use in post-training demos • 80% score improvement in assessments on cognitive pedagogy concepts	Subject Experts, Academic Coordinators, Teachers
Assessment & Evaluation Skills	To improve teacher ability to measure student cognitive growth effectively	• Role-play scenarios on student evaluations • Case studies on assessing higher-order thinking • Feedback and reflection on designed assessments	• 90% of teachers apply cognitive assessment tools effectively • Increased use of open-ended tasks and rubrics in classroom assessments (target: 85%)	Instructional Coaches, Teachers, Trainers
Expanding Capacity	To build sustained professional growth habits and utilization of learning tools	• Time management for professional learning • Orientation on online courses, MOOCs, and webinars • Access to curated online learning platforms	• 90% participation rate in at least one online training program per semester • 85% self-reported confidence in finding and using professional resources online	ICT Coordinator, HR Officer, Teachers
Collaborative Development	To foster academic networking and mentorship among teachers	• Internal mentoring programs • Sponsored attendance to academic seminars/conferences • Inter-school collaborative projects and research	• 80% engagement in peer mentoring or joint projects within 6 months • 85% of staff present in one academic seminar/conference annually	School Leaders, HR, External Trainers, Teachers
Scholarly Engagement	To encourage teachers to contribute to academic publications and discourse	• Academic writing workshops • Peer review and paper critique sessions • Support for submitting papers to journals or educational magazines	• 80% of attendees draft at least one paper • 50% of participants publish or submit work for publication within a year	Research Coordinators, Senior Faculty, Teachers

This table presents a targeted training plan aimed at improving the two lowest-rated areas based on summary evaluations: Teaching Cognitive Ability and Expanding Capacity. The plan outlines key result areas (KRAs), objectives, strategic activities, success indicators (with 80–95% effectiveness targets), and the persons involved in implementation. It is designed to strengthen teachers' instructional thinking, assessment strategies, and professional development engagement through structured, collaborative interventions.

4. Conclusions and recommendation

Teachers often demonstrate teaching competence, with teaching skills being the most evident. However, cognitive ability ranks lowest, indicating a need for targeted support to enhance teachers' analytical and decision-making capacities in the classroom. Teachers generally agree they possess qualities of effective educators, with leadership being their strongest area. However, the slightly lower rating in knowledge depth

suggests a need to strengthen subject mastery to support sustained instructional effectiveness. Teachers generally agree on their professional growth, with professional ability being their strongest area. While there is agreement on their knowledge and capacity for development, expanding capacity shows a slight opportunity for improvement in fostering further professional advancement. Significant relationship exists and implies that the better is the teaching competence, the better is the professional growth. A training program was proposed to address key areas of professional development, specifically targeting communication skills, expanding capacity, and cognitive abilities.

Teachers may actively engage in professional development focusing on cognitive ability, teaching communication skills, and leadership. **Instructional Coaches may** provide personalized coaching on teaching methodologies, especially focusing on enhancing cognitive abilities and communication skills. Academic Coordinators may strengthen subject mastery by organizing regular workshops, deep-dive seminars, and content-specific training to enhance knowledge depth. **ICT Coordinators may** integrate digital tools and platforms that enhance cognitive abilities and communication skills. **School Administrators may** support a culture of continuous learning by allocating resources for targeted training and development. **HR Officers may** design professional development opportunities that cater to the specific needs of the teaching staff, particularly focusing on cognitive ability and expanding capacity for further growth. Future Researchers may study the impact of teaching competence and quality so that they may analyze teacher training effectiveness and evaluate educational innovations for professional growth.

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Transformational leadership and work performances in resort businesses in Lipa City Batangas

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Abstract

This quantitative descriptive-correlational study investigated the relationship between transformational leadership and employee work performance in resort businesses in Lipa City, Batangas. Utilizing a survey questionnaire, the study evaluated perceived levels of transformational leadership dimensions and employee work performance, specifically examining Task, Contextual, and Counterproductive performance. Findings revealed that transformational leadership is consistently practiced at a high level across all its dimensions, with leaders notably serving as strong role models. Similarly, employee work performance was perceived as high across all facets, with a particularly low incidence of undesirable behaviors, indicating a highly effective workforce. Statistical analyses confirmed a highly significant positive relationship ($p < .001$) between all dimensions of transformational leadership and both Task and Contextual performance. Importantly, transformational leadership also showed a highly significant negative relationship ($p < .001$) with Counterproductive performance, suggesting that effective leadership helps minimize detrimental workplace actions. The study concludes that transformational leadership is a vital element contributing to superior work performance in the resort sector, strongly advocating for continued investment in and enhancement of these leadership practices.

Keywords: transformational leadership, work performance, resort business

Transformational leadership and work performances in resort businesses in Lipa City Batangas

1. Introduction

In any thriving organization, especially within the dynamic hospitality sector, leadership stands as a cornerstone, profoundly influencing how employees perform and, ultimately, how successful the business becomes. For resort businesses, where guest experience is paramount and service excellence is a daily goal, the quality of leadership can truly make or break an operation. It's fascinating to consider how leaders inspire, motivate, and guide their teams, shaping not just individual tasks but the very culture and spirit of the workplace. This study delves into that vital connection, exploring how leadership styles directly impact the dedicated individuals who bring these resorts to life.

The transformational leader is noted as one of the best and most effective styles of leadership found in many successful organizations; performance and group satisfaction tend to be higher in transformational leadership (Cherry, 2022). It has also been found that this leadership style, especially in the inspirational motivation factor, has a direct influence on the employee's performance, therefore emphasizing the role of good communication and objectives setting (Top et al., 2020). This method emphasizes how leader establishes mutual vision, develops organizational culture so that it empowers employees, motivates them to adopt single idea and increased their sense of social responsibility (Cherry, 2022). Its four factors are those of: Idealized Influence, for role modelling; Inspirational Motivation, for vision articulating; Intellectual Stimulation, for creativity stimulating and new things thinking; and Individualized Consideration, about personalized support and encouragement for each follower. These leadership behaviors are important for optimizing Work Performance, which; concerns what an individual is actually doing in the job role (Ciner, 2019). As such, in the present study, work performance is considered in terms of Task Performance (i.e core job duties), Contextual Performance (i.e, discretionary behaviors), and the significant absence of Counterproductive Performance (i.e, harmful actions).

This study was conducted in the competitive context of the resort-oriented businesses in Lipa City, Batangas. All the learning presented in this paper were directly drawn from the experiences as well as knowledge of the employees from those resort establishment in Lipa City, both of their experiences are their perception. It provides a rare and precious window to view the ways in which leadership works and does not work in this specific local context. Such ideas as transformational leadership and work performance, which are more global in character, had been intensively analyzed all over the world, but very few studies were conducted that integrated both constructs in a single study and related them to the specific cultural atmosphere and work conditions of resort companies operating in a developing area such as Lipa City, Batangas. It was important to better understand these local dynamics in order to craft situationally appropriate strategies. This study aimed to address this gap by offering empirical insights that informed and underpinned contextually relevant leadership practices in this industry sector and region.

An analysis of the results aimed to provide significant contributions to the understanding of leadership and employee performance in the context of Lipa City resorts. The results provided companies with a solid base for recommendations that ensured a return on investment through an inspired, productive, and harmonious working environment, and delivered a closing action plan for resort management and leaders to use in implementing action points that would prevent a recurrence of the challenges.

Objectives of the Study - The study designed to inspect the transformational leadership and its effect to work performances of employees in selected resort businesses in Lipa City, Batangas. Specifically, this study evaluated the transformational leadership in resort businesses in terms of individual considerations Inspirational motivations, Intellectual stimulation and Idealized influence; described the employee work performance in terms of task performances, contextual performances and counterproductive performances; tested the significant relationship between transformational leadership and work performance and to come up with an action plan to

improve leadership and work performance based on the results of the study.

2. Methods

Research Design - A descriptive research design is used when a researcher aims to identify different attributes such as characteristics, frequencies, trends, correlation, and categories. In contrast to experimental research, the investigator observes and measures variables of interest but does not manipulate or control them. This study aims to identify the characteristics of a transformational leader and its effect to the work performances of the local employees of resort business in Lipa City, Batangas. In addition, the descriptive research method will help the researcher to verify and validate existing conditions of work performance of the respondents.

Participants of the Study - A total of 300 employees from locally licensed resort businesses in Lipa City, Batangas served as the respondents of this study. The criteria for selecting the respondents included that their respective businesses had been operating within Lipa City for no less than one year.

Data Gathering Instruments - The instrument used was an adapted survey questionnaire. Assessing the Effects of Leadership Styles on Employees' Outcomes in International Luxury Hotels (Aguiar-Quintana et al., 2014). The first part of the questionnaires deals with the demographic profile of the respondents that the researcher believe would be helpful in finding the relationship of the variables used in this study. Second part of the survey questionnaire deals with dimensions of the variables pertaining the dimensions of work performances which will help the researcher to answer his objective of the study. The respondents were encouraged to put remarks as strongly agree-4, agree-3, disagree-2, and strongly disagree-1 depending on their responses to the questions.

Table 1

Summary of Reliability Test

Constructs	Items	Alpha (α)	Internal Consistency
Idealized Influence	7	.876	Good
Intellectual Simulation	4	.913	Excellent
Individual Consideration	11	.938	Excellent
Inspirational Motivation	9	.929	Excellent
Task Performance	7	.916	Excellent
Contextual Performance	9	.941	Excellent
Counter-Productive Performance	9	.991	Excellent
Overall	56	.961	Excellent

Cronbach's alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. The reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's alpha is one way of measuring the strength of that consistency.

Data Gathering Procedure - The researcher prepared letter of intent to process physical interview with the owner of the business through sent mails, over- the - counter or using electronic mails and social media messaging platforms. After seeking the approval, the questionnaires were being distributed to the respondents and given enough time to answer all of the questions. The researcher help most of the respondents to answer the questionnaire through face to face interview in order to mitigate some factors that could lead to research bias. On the other hand, the researcher immediately responded to the messages of the other respondents saying that their response has already made and done and ready for pick up. Afterwards, the results were being tallied, analyzed, and interpreted through different charts and tables.

Ethical Considerations - The researcher considered ethical factors when conducting the study such as letter of intent to survey and presentation of documents pertaining to data privacy act or information disclosure. The

researcher reassured the willingness of respondents before answering the survey questionnaires by having their permission to do so. The participants have been fully oriented on the process such as refusal to answer some parts which is uncomfortable on their part. Thus, names or any personal information was leave optional on both ends. No any form of recording or taking video or images from the start up to the end of survey process to reserved their rights to privacy. This study was conducted with due adherence to ethical considerations, making sure that all of the data collected has been only utilized for research purposes hence maintaining the quality and integrity of this study. The researcher also requested few letters and communication to the owners or managers of the business enterprises to make sure that those are willing for better clarifications and prepare themselves to answer relevant questions to be included with the main questionnaire based on their experiences as well. It also preserved the privacy and identity of the survey respondents by not asking for their names in completing the questionnaires. Also, the researcher was certain that each participant had voluntarily responded as to what he/she wanted to annotate in the questionnaire. Finally, guaranteeing that no individuals responding to the study were injured or harmed and their personal safety and security remain the most important.

Data Analysis - Weighted Mean. This was to describe the services offered by the respondents as perceived by the owners or proprietors. Lastly, T – Test was used to identify and compare the means of two groups which are the employees and the managers to determine the relationship of transformational leadership and employee work performances. Weighted mean and rank were used to evaluate the transformational leadership in resort businesses in terms of individual considerations Inspirational motivations, Intellectual stimulation and Idealized influence; describe the employee work performance in terms of task performances, adaptive performance and contextual performances; The result of Shapiro-Wilk Test showed that p-values of all variables are less than 0.05 which means that the data set is not normally distributed. Spearman rho was used to test the significant relationship. All analyzes were performed using SPSS version 26.

3. Results and discussions

Table 2

Summary Table on Transformational Leadership in Resort Businesses

Key Result Area	Composite Mean	VI	Rank
Idealized Influenced	3.34	Agree	1
Intellectual Stimulation	3.32	Agree	2
Individual Consideration	3.28	Agree	4
Inspirational Motivation	3.30	Agree	3
Grand Composite Mean	3.31	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 2 shows the Summary Table on Transformational Leadership in Resort Businesses, which states that the overall assessment of transformational leadership, with a Grand Composite Mean of 3.31, which is verbally interpreted as Agree. The research implies that transformational leadership, as a whole, is consistently practiced and positively perceived among leaders in resort businesses in Lipa City, Batangas, indicating that they generally exhibit behaviors that inspire, intellectualize, provide individualized support, and act as role models. This highlights the importance of leaders embodying the organization's values and vision to foster a strong sense of purpose and direction among their teams (Marasigan et al., 2020). This approach enables leaders to transform individual desires into shared, common interests by emphasizing shared values, a clear vision, collective decision-making, and empowerment, ultimately fostering an environment where followers are inspired and motivated to work independently toward a collective purpose (Shahzad et al., 2022).

The dimension of Idealized Influence garnered the highest composite mean of 3.34, with a verbal interpretation of “Agree,” ranking first among the four transformational leadership dimensions. This suggests that employees most strongly perceived their leaders as exemplary role models—individuals who inspire trust, demonstrate ethical conduct, and embody the core values and goals of the organization. Such leaders are not only

respected but are also seen as deeply committed to the vision and mission of the resort companies. This finding reinforces the earlier detailed analysis presented in Table 2, where the indicator “Provides insight and awareness of the vision and mission” ranked highest among all items under this dimension. The convergence of these results underscores the central role of Idealized Influence in shaping employee attitudes, morale, and alignment with organizational objectives.

In the context of the hospitality industry, particularly in the culturally rooted and service-oriented environment of Lipa City resorts, the ability of leaders to project integrity and purpose is crucial. It forms the psychological foundation upon which other leadership behaviors—such as motivational inspiration, intellectual stimulation, and individualized consideration—can take root and be fully effective. Employees are more likely to engage, perform, and commit to their roles when they see their leaders not only directing the path but walking it themselves with conviction. Furthermore, transformational leaders are instrumental in cultivating workplace environments that enhance employee confidence, autonomy, and engagement—factors that significantly contribute to professional growth and improved organizational outcomes. According to Sarong (2023), such leadership practices empower staff to take initiative and responsibility, thereby fostering a culture of continuous learning and professional development. This style of leadership inspires employees not only to meet expectations but to exceed their perceived limitations, aligning personal aspirations with broader organizational goals (Mir et al., 2020).

In addition, transformational leaders play a crucial role in establishing a culture of mutual respect, where management beliefs are closely aligned with the core values of the organization. This alignment fosters trust and shared purpose, which are essential for promoting innovation and adaptability in rapidly evolving work environments (Edralin, 2020). By motivating individuals to transcend their self-interests for the collective good, transformational leaders build unity and a deep sense of organizational belonging (Sasan et al., 2023). Moreover, strategic practices such as investing in employee relationships and implementing recruitment policies that prioritize both technical competence and cultural fit further reinforce this culture of excellence and sustained improvement (Edralin, 2020). These actions ensure that leadership values are consistently reflected across all levels of the organization.

Aside from Idealized Influence, other core dimensions of transformational leadership also received high levels of agreement from respondents. Intellectual Stimulation, with a composite mean of 3.32 (“Agree”), indicates that leaders were perceived as encouraging creative thinking, innovation, and problem-solving among employees. This dimension reflects a workplace environment where employees feel safe to challenge assumptions and explore new approaches without fear of criticism. Similarly, Inspirational Motivation, with a composite mean of 3.30 (“Agree”), shows that leaders are viewed as visionary communicators who instill enthusiasm, optimism, and a shared sense of purpose. This ability to articulate meaningful goals and foster team spirit further contributes to higher levels of engagement and job satisfaction. Overall, the strong scores in these transformational leadership dimensions reveal a leadership culture that is not only visionary and values-driven but also supportive of innovation, motivation, and professional development—all of which are critical to the success and sustainability of resort businesses in Lipa City.

Lastly, Individual Consideration received the lowest composite mean of 3.28, although still interpreted as Agree, ranking fourth. While leaders are generally seen as attending to individual employee needs, this dimension received slightly less agreement compared to others. This aligns with the specific indicators identified as lowest in the detailed Table 4 for Individual Consideration, such as less emphasis on explicitly reminding employees to recheck evaluations for shortcomings. This suggests that while individual support is present, there might be a marginal gap in how consistently leaders are perceived in providing highly personalized coaching or follow-up compared to their role-modeling or inspirational aspects.

Tefera (2018) reiterated to his research the four components of transformational leadership which includes intellectual stimulation in which transformational leaders not only challenge the status quo, they also encourage

creativity among followers and encourages followers to explore new ways of doing things and new opportunities to learn; individualized consideration wherein transformational leadership involves offering support and encouragement to individual followers. For establishing good-natured relationships, transformational leaders maintain a very healthy and open-door kind communication for followers to share their thoughts and in return such leaders provide individualized consideration for each follower so that the leader can give credit when you deserve it; inspirational motivation is mere idea of transformational leaders having a singular clear and vivid image that can be easily presented down to its minute details. Transpiration Leaders are also able to resonate this passion and motivation shared by the transformational followers to achieve these goals who demonstrate idealized Influence; wherein Transpiration leaders act as be role model for their followers.

Table 3

Summary Table on Employee Work Performance

Key Result Area	Composite Mean	VI	Rank
Task performance	3.25	Agree	1
Contextual performance	3.24	Agree	2
Counterproductive performance	1.69	Disagree	3
Composite Mean	2.73	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 3 presents the summary of employee work performance, indicating an overall Composite Mean of 2.73, verbally interpreted as Agree. This finding suggests that employees in resort businesses within Lipa City, Batangas, generally exhibited a commendable level of job performance. They effectively demonstrated proficiency in their assigned tasks, contributed positively to the organizational environment, and showed minimal engagement in counterproductive behaviors. Collectively, this performance profile points to a positive and well-managed work environment, where clear expectations, supportive leadership, and sound human resource practices likely contributed to favorable employee conduct.

Such outcomes are consistent with the idea that effective organizational practices encourage employees to commit to their roles, demonstrate initiative, and maintain professional conduct. Iskandar et. al.,(2023) emphasized that tapping into employees' internal motivation and strength fosters a positive work climate conducive to enhanced performance. Employee performance, as noted by Oplot et. al.,(2020), reflects the degree to which individuals achieve organizational goals through their assigned duties. Subpar performance, in contrast, can affect an organization's competitive standing (Setyawati et al., 2022). Therefore, the favorable employee performance seen here signals a strategic advantage for resort businesses in Lipa City.

The Task Performance dimension obtained the highest composite mean of 3.25 (Agree), indicating that employees were perceived to be highly effective in carrying out their core job responsibilities. This includes efficiently completing daily tasks, meeting operational goals, and maintaining service quality—key drivers of success in the resort and hospitality industry, where customer satisfaction is directly tied to front-line performance. High task performance suggests that employees were capable, reliable, and aligned with organizational expectations.

Close behind, Contextual Performance yielded a composite mean of 3.24 (Agree). This reflects employees' willingness to go beyond their formal job descriptions by engaging in discretionary behaviors such as helping colleagues, being cooperative, and supporting the organization's social climate. These behaviors are essential in service-oriented industries where teamwork, adaptability, and proactive customer service enhance overall service quality and organizational resilience.

The Counterproductive Performance dimension, on the other hand, had a significantly lower composite mean of 1.69 (Disagree). This is a favorable result, as it indicates a strong disagreement with the presence of negative behaviors such as rule-breaking, dishonesty, absenteeism, or interpersonal conflict. In this context, a low mean suggests that such behaviors were uncommon among employees, contributing to a healthy workplace

culture. A low prevalence of counterproductive behavior enhances organizational efficiency and employee morale, particularly in service settings where professionalism and customer-facing behavior are paramount.

These findings are aligned with the insights of Lahap (2022), who argued that employee happiness and a stress-free work environment are fundamental to achieving superior job performance, especially in labor-intensive sectors like hospitality. Furthermore, Edralin (2020) and Phan et. al.,(2023) highlighted the critical role of human resource management practices in fostering innovation and increasing employee engagement, both of which are essential for sustained organizational success. Loyalty, for instance, reflects the employee's commitment to defending and supporting the organization, while work quality captures the thoroughness and skillfulness in completing responsibilities. Collectively, these attributes reinforce the idea that performance is not only about what is produced but also how it is achieved.

Finally, performance also determines the perceived value of an employee to the organization. As noted by Ciner (2019), employee performance represents the effectiveness, efficiency, and impact of their output and behavior. In this study, performance was understood across three key dimensions—task, contextual, and counterproductive—each of which provides valuable insights into how employees contribute to, or detract from, organizational success.

In conclusion, the results from Table 3 suggest that employees in resort businesses in Lipa City displayed generally high levels of task and contextual performance, with minimal counterproductive behavior. These outcomes point to a strong, positive organizational culture, effective leadership, and strategic human resource practices that support sustainable growth and service excellence in the hospitality industry.

Table 4

Relationship between transformational leadership and work performance

Paired Variables	rho-value	p-value	Interpretation
Idealized Influenced			
Task performance	.491**	0.000	Highly Significant
Contextual performance	.448**	0.000	Highly Significant
Counterproductive performance	-.371**	0.000	Highly Significant
Intellectual Stimulation			
Task performance	.513**	0.000	Highly Significant
Contextual performance	.481**	0.000	Highly Significant
Counterproductive performance	-.249**	0.000	Highly Significant
Individual Consideration			
Task performance	.553**	0.000	Highly Significant
Contextual performance	.595**	0.000	Highly Significant
Counterproductive performance	-.375**	0.000	Highly Significant
Inspirational Motivation			
Task performance	.656**	0.000	Highly Significant
Contextual performance	.608**	0.000	Highly Significant
Counterproductive performance	-.353**	0.000	Highly Significant

** . Correlation is significant at the 0.01 level

Table 4 shows the relationship between transformational leadership and work performance, presents the correlation coefficients (rho-values) and p-values, indicating the strength and significance of the relationships between the various dimensions of transformational leadership and employee work performance. This table directly addresses the core objective of the study, examining how different aspects of leadership influence employee output and behavior.

For idealized influence, the analysis shows a highly significant positive relationship with task performance ($\rho=0.491$, $p=0.000$) and contextual performance ($\rho=0.448$, $p=0.000$). This implies that as leaders increasingly serve as role models, earning trust and respect, employees tend to perform their core tasks more effectively and exhibit more positive discretionary behaviors that support the organization. Furthermore, idealized influence shows a highly significant negative relationship with counterproductive performance ($\rho =$

-0.371, $p=0.000$). This means that when leaders exemplify strong idealized influence, employees are significantly less likely to engage in behaviors that harm the organization. Overall, leaders who act as inspiring role models contribute substantially to both the positive and the reduction of negative aspects of employee performance.

Regarding intellectual stimulation, there is a highly significant positive relationship with task performance ($\rho = 0.513$, $p=0.000$) and contextual performance ($\rho = 0.481$, $p=0.000$). This indicates that as leaders encourage innovation, creativity, and new ways of thinking, employees tend to perform their tasks better and contribute more proactively to the work environment. Additionally, intellectual stimulation has a highly significant negative relationship with counterproductive performance ($\rho = -0.249$, $p=0.000$). This suggests that fostering an environment of intellectual growth and challenge also significantly reduces the likelihood of counterproductive behaviors among employees.

For individual consideration, the results show a highly significant positive relationship with task performance ($\rho = 0.553$, $p=0.000$) and a particularly strong highly significant positive relationship with contextual performance ($\rho = 0.595$, $p=0.000$). This implies that when leaders provide personalized attention, coaching, and support to individual employees, it significantly enhances both their ability to execute core tasks and their willingness to engage in helpful, discretionary behaviors. Moreover, individual consideration exhibits a highly significant negative relationship with counterproductive performance ($\rho = -0.375$, $p=0.000$). This indicates that when employees feel individually cared for and supported by their leaders, they are substantially less prone to engaging in detrimental behaviors.

Finally, for inspirational motivation, the analysis reveals a highly significant positive relationship with task performance ($\rho = 0.656$, $p=0.000$) and an even stronger highly significant positive relationship with contextual performance ($\rho = 0.608$, $p=0.000$). These are the strongest positive correlations observed in the table. This signifies that when leaders inspire enthusiasm, communicate a compelling vision, and challenge employees to achieve high standards, it leads to a very substantial increase in both their task effectiveness and their positive contributions beyond their direct duties. Furthermore, inspirational motivation has a highly significant negative relationship with counterproductive performance ($\rho = -0.353$, $p=0.000$). This demonstrates that inspiring and motivating employees significantly reduces the occurrence of counterproductive behaviors.

Overall, the research implies that all four dimensions of transformational leadership are highly significantly related to employee work performance in resort businesses. They positively correlate with task and contextual performance and negatively correlate with counterproductive performance, underscoring the vital role of transformational leadership in fostering high-performing and positive work environments within the resort industry in Lipa City, Batangas.

Transformational leaders emphasize morality and integrity, lead by example, and inspire their colleagues to perform better, which has a positive effect on employee motivation and, consequently, performance (Teoh et al., (2022), Sari et al., (2023)). Specifically, transformational leadership enhances team members' focus on shared objectives by promoting greater responsibility, autonomy, and dedication (Jaroliya et al., 2021) (Alessa, 2021). This approach involves leaders inspiring their teams to pursue common goals and display a dedication that improves job satisfaction and performance (Martinez et al., 2023) (Balasubramaniam et al., 2021). Moreover, they foster creativity and innovation by encouraging employees to approach challenges in novel ways (Susanto, 2021) (Gull et al., 2022).

Furthermore, these leaders motivate employees to align with the organization's goals and reduce negative behaviors, highlighting the comprehensive impact of transformational leadership on cultivating a thriving organizational environment (Alessa, 2021) (Zhang et al., 2022).

Table 5

Proposed Action Plan: Enhancing Transformational Leadership and Work Performance in Lipa City Batangas Resort Businesses

Key Result Area (KRA)	Specific Objectives	Action Steps/Activities	Responsible Party	Timeline	Expected Output/ Outcome
I. Strengthen Transformational Leadership Effectiveness					
Enhance Individualized Support & Development	Increase leaders' perceived ability to provide personalized attention, coaching, and career development	implement mandatory training programs for all leaders focused on advanced coaching techniques, empathetic listening, and structured development planning for individuals. Establish a formalized system for regular (e.g., quarterly) one-on-one performance and development discussions between leaders and their team members	HR Department, Resort Management, Leaders/ Supervisors	Short-term (3-6mos for initial training), Ongoing (regular meetings)	Increased employee satisfaction with personal growth opportunities; improved skill set and talent retention; higher perception of individualized consideration.
Foster Creativity & Intellectual Engagement	Cultivate a work environment that actively stimulates new ideas, innovative thinking, and continuous learning	Establish regular forums (e.g. "innovation challenges", cross-functional brainstorming sessions) where employees are encouraged to propose and discuss new solutions or processes. Provide accessible resources (e.g., internal workshops, online courses) that promote critical thinking and problem-solving skills relevant to resort operations.	Leaders/ Supervisors, HR Department	Mid-term (6mos for new programs) Ongoing (resource access)	Increased employee participation in idea generation; higher number of innovative solutions implemented; improved intellectual stimulation scores.
Reinforce Inspirational Motivation & Idealized Influence	Maintain and leverage leaders' strong ability to inspire and act as positive role models.	Top management to regularly communicate and visibly embody the resort's vision, mission and core values. Encourage leaders to frequently recognize achievements and share positive success stories to inspire enthusiasm and commitment across teams.	Resort Management, Leaders/ Supervisors	Ongoing	Sustained high levels of employee optimism and enthusiasm; strengthened organizational culture and shared purpose.
II. Optimize Key Aspects of Employee Work Performance					
Improve Task Timeliness & Efficiency	Enhance employees' ability to effectively plan and complete their core job responsibilities on schedule	Provide targeted training sessions on practical time management techniques, effective prioritization and workflow optimization specific to resort operations. Team leaders to regularly review task pipelines and help employees identify and mitigate potential bottlenecks to timely completion	HR Department, Team Leaders/ Supervisors, Employees	Short term (initial training) Ongoing (monitoring & support)	Consistent on-time task completion; improved operational efficiency; reduction in work-related stress due to deadlines
Encourage Proactive Engagement & Embracing Challenges	Motivate employees to actively seek out and thrive in new more demanding work assignments.	Implement a structured "stretch assignment" program, clearly defining pathways for employees to volunteer for or be assigned to challenging projects. Leaders to provide explicit encouragement and necessary support (e.g. resources, mentorship) for employees taking on advanced responsibilities	Team Leaders/ Supervisors, HR Department	Mid-term (6-12mos for program roll-out)	Increased Employee initiative and autonomy; higher skill development from new challenges; enhanced adaptability of the workforce.

III. Foster a consistently positive workplace culture.

Uphold High Professional Standards	Maintain the current low incidence of counterproductive behaviors across the organization.	Continuously reinforce the resort's code of conduct, ethical guidelines, and professional standards through regular communication and new employee on-boarding. Ensure fair, transparent and consistent application of company policies and disciplinary procedures when required. Promote open channels for employee feedback and grievances to address issues proactively before they escalate into negative behaviors.	Resort Management, HR Department, Leaders/ Supervisors, All Employees	Ongoing	Sustained low levels of counterproductive behaviors; strong organizational morale; enhanced internal and external reputation

4. Conclusions and recommendation

Transformational leadership is generally well-practiced by leaders in Lipa City resorts, with employees consistently perceiving all its dimensions—especially Idealized Influence—at a high level of agreement. Employee work performance is also generally high, demonstrating strong Task Performance and positive Contextual Performance. Significantly, counterproductive behaviors are perceived as notably low, indicating a healthy and productive workforce. A highly significant and positive relationship exists between transformational leadership and work performance. All four dimensions of transformational leadership are strongly associated with increased task performance and contextual performance, and concurrently, a significant reduction in counterproductive behaviors. Inspirational Motivation shows the strongest positive impact on performance. In light of these findings, targeted interventions are warranted to further strengthen specific leadership dimensions and optimize work performance, building on the established positive correlations.

For Resort Management and Current Leaders: To build upon existing strengths in transformational leadership, it is recommended that resort management and current leaders may consistently reinforce Idealized Influence by acting as strong role models and effectively communicating organizational vision. Furthermore, leaders may actively work to enhance Individualized Consideration by providing more personalized coaching and feedback, and to proactively stimulate Intellectual Growth by creating regular opportunities for creativity, innovation, and intellectual development among their teams. For Resort Management and Team Leaders/Supervisors: To further optimize employee work performance, resort management and team leaders/supervisors are encouraged to focus on strengthening employees' planning and timeliness in task completion by providing appropriate guidance and tools. Concurrently, efforts are recommended to be made to cultivate proactive engagement, motivating employees to confidently take on new and challenging work tasks to foster continuous growth and contribution. For Human Resources Departments and Training & Development Units: Given the significant influence of demographic variables, Human Resources Departments and Training & Development Units may prioritize developing leadership programs that are sensitive to age and educational backgrounds, tailoring approaches to leadership development and communication. Additionally, they may investigate and address any underlying factors contributing to differing perceptions of Individual Consideration based on gender to ensure equitable and effective support for all employees. For All Employees: To maintain the currently high standards of workplace conduct, all employees may continue upholding professionalism, respect for colleagues, and consistent adherence to company policies, thereby sustaining a positive and productive work environment free from counterproductive behaviors. For Future Researchers: It is recommended that future researchers may explore the causal mechanisms between transformational leadership and work performance through longitudinal studies, and utilize qualitative research methods to gain deeper insights into the nuanced perceptions of leadership and performance across various demographic groups. Further investigation into specific barriers to employees taking on challenging tasks is also encouraged.

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Investment climate, strategic business development, and success factors: Basis for expat-preneurship framework

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Abstract

This study intended to examine the Investment Climate, Strategic Business Development, and Success Factors: Basis for Expat-preneurship Framework in Dubai, United Arab Emirates. Specifically, it aims to assess the investment climate faced by expat entrepreneurs in terms of access to capital, regulatory and legal barriers, and cultural adaptation; evaluate the strategic development employed by expat entrepreneurs, focusing on networking, innovation, and market research to overcome the challenges; describe the success factors that contribute to the sustainability of expat businesses including resilience, leadership, and financial planning; test the significant relationship among investment climate, strategic business development, and success factors; to empirically test and analyze the predictors of successful expat-preneurship by examining the interplay between investment climate, strategic business development, and key success factors; and lastly, to develop an enhanced expat-preneurship framework by integrating key elements of investment climate, strategic business development, and success factors. Based on the researcher's findings, access to capital is the most significant challenge. Most entrepreneurs rely on personal funding, citing limited support from financial institutions and government grants. While legal and regulatory barriers are generally perceived as navigable, and cultural adaptation emerges as a key strength, with expats actively embracing and integrating local norms. Innovation is the predominant strategic focus, driven by a commitment to new ideas, technologies, and responsiveness to customer feedback. Networking, particularly via social media, plays a critical role in expanding professional connections. Market research is primarily conducted through direct customer engagement, though collaboration with external firms remains limited. Leadership is recognized as a vital success factor, emphasizing transparent communication and teamwork. Resilience is widely valued, with adaptability viewed as essential, though rapid recovery from setbacks shows some variation. Financial planning is considered important, especially in resource allocation, while external funding remains a secondary priority.

Keywords: investment climate; strategic business development; success factors; expatriate entrepreneurship; expatriate entrepreneur

Investment climate, strategic business development, and success factors: Basis for expat-preneurship framework

1. Introduction

Entrepreneurs are always referred to as someone who takes risks to start and own a business. They start their business based on their own ideas and assume a new opportunity. There will be additional challenges to overcome if the entrepreneurial journey happens in a foreign place. Expatriate entrepreneurs have more risk to overcome like coping up and adapting with culture, learning new government regulations, and knowing the market of host country.

Expatriates in Dubai seek financial autonomy and skill application in a vibrant economy. Similarly, Overseas Filipino Workers (OFWs) prioritize financial self-sufficiency and skill utilization in entrepreneurial initiatives (Niverba et. al.,2024). In the Global Entrepreneurship Index, it has been noted that United Arab Emirates (UAE) had ranked 4th in 2022. This signifies the effort and regulatory framework of nature that bring forth and speed up entrepreneurship. The diverse ecosystem in Dubai enables expatriates to utilize their cultural heritage and connections, benefiting business practices (Nagorskaya, 2024). It is also part of its national agenda to become “the entrepreneurial nation of choice, home to 20 unicorn startups worth \$1 billion each by 2031.” With the continued effort of UAE leading to its vision, free zones are set to support in attracting investments, pushing entrepreneurs and SME to come up local businesses (Knecht, 2022). The entrepreneurial journey of every expatriate in Dubai, or the “expat-preneurs”, United Arab Emirates describes a one-of-a-kind landscape which is characterized by challenges and opportunities. Dubai, as a global hub for commerce and innovation, attracts talents from all around the globe, and yet expat-preneurs often face significant hurdles such as sourcing of capital, regulatory and legal barriers, and cultural adaptation. Recent research emphasizes the strategies these expat-preneurs make use of, which include leveraging to local networks, innovation, and market research in navigating the business environment of the host country effectively. Moreover, Understanding the success factors that contribute to the expat-preneurs’ journey such as resilience, leadership, and financial planning, could offer valuable insights for both the user of the study and the researcher. The research study aims to explore these areas and elucidate on how expat-preneurs thrive in Dubai, UAE’s vibrant entrepreneurial ecosystem.

Existing studies have explored the concept of Expatriate Entrepreneurship in general. Some have already given light on the impact of entrepreneurship on economic development, social, environmental development, its adaptability, entrepreneurial leadership, and entrepreneurial success. However, with the current amount of study and literature related to Expatriate entrepreneurship has not given more focus on the challenges, strategies and successful factors as part of the journey of Expat-preneurs particularly in Dubai, UAE.

The path of success to Entrepreneurship are always obstructed with various challenges. These challenges, ranging from cultural misalignment and regulatory complexities to limited local networks and resource constraints, create a labyrinthine pathway that demands both strategic navigation and personal fortitude. Understanding and overcoming these barriers becomes not merely a business imperative, but a defining characteristic that separates thriving expatriate entrepreneurs from those who struggle to establish sustainable ventures in foreign markets. On the other hand, it is also accompanied by innovation and growth. Strategic business development emerges as a critical variable that fundamentally shapes the trajectory of expatriate entrepreneurial ventures, serving as the cornerstone upon which sustainable competitive advantage is built. This strategic approach is intrinsically intertwined with innovation and organizational growth, creating a symbiotic relationship where deliberate business development efforts catalyze creative solutions and market expansion opportunities. The dual nature of this relationship suggests that expatriate entrepreneurs who prioritize strategic business development not only position themselves for systematic growth but also cultivate an environment conducive to breakthrough innovations that can differentiate their ventures in competitive international markets.

Success factors constitute a multidimensional construct that encompasses the critical determinants and enabling conditions necessary for expatriate entrepreneurs to achieve sustainable venture performance in foreign markets. These factors operate as interconnected elements within a complex ecosystem, where individual capabilities, market conditions, institutional support, and strategic choices converge to either facilitate or hinder entrepreneurial outcomes. The identification and systematic analysis of these success factors becomes paramount for understanding not only what drives expatriate entrepreneurial achievement, but also how these variables can be leveraged to enhance the probability of venture survival and growth in culturally and economically diverse environments.

The result of this study will shed light on challenges encountered, opportunity and how it has been overcome while traversing the journey of entrepreneurship. This will encourage and promote more expatriate to enter and start business not only in the home and local country but also penetrating the foreign country. Furthermore, this study may develop awareness, spark new ideas and aspiration, creativity and innovation. The researcher aims to develop a comprehensive framework that can serve as a practical and strategic guide for expatriates who aspire to establish successful entrepreneurial ventures in Dubai, United Arab Emirates. As an expat herself, the researcher is driven by both personal and professional motivations. With a long-term goal of transitioning from employee to entrepreneur, the researcher recognizes the challenges and opportunities unique to expatriates navigating the local business environment.

This study is especially meaningful to the researcher, as it not only aligns with her personal aspirations but also seeks to contribute valuable knowledge to a broader community of like-minded individuals. By gathering and analyzing the lived experiences, insights, and strategies of fellow expatriate entrepreneurs, the researcher aims to create a resource that can inform and inspire others who share the same ambition of building a business in Dubai, a city known for its dynamic economy and multicultural entrepreneurial landscape.

This research addresses a critical gap in entrepreneurship literature by examining the unique challenges and opportunities faced by expatriate entrepreneurs, particularly relevant given the unprecedented global mobility of skilled workers and the UAE's position as a leading destination for international business ventures. The study is essential because traditional entrepreneurship frameworks fail to capture the complex interplay between foreign investment climates, cultural adaptation, and strategic business development that expatriate entrepreneurs must navigate, leaving a significant void in both academic understanding and practical guidance. The potential impact extends beyond theoretical contributions to provide actionable insights for policymakers in host countries like the UAE who seek to optimize their investment climates for expatriate-driven economic growth, while simultaneously offering evidence-based strategies for international development organizations supporting diaspora entrepreneurship initiatives. As an overseas Filipino worker in Dubai, the researcher brings invaluable insider perspective to this phenomenon, representing the 2.3 million Filipino expatriates in the UAE and the broader 10 million overseas Filipino workers globally who possess entrepreneurial aspirations but lack culturally-informed frameworks for success. The study will directly benefit expatriate communities by providing a systematic framework for navigating foreign business environments, assist host country governments in designing more effective policies to attract and retain entrepreneurial talent, and contribute to the growing body of knowledge on diaspora-driven economic development that is increasingly vital for both origin and destination countries in our interconnected global economy.

Ultimately, the researcher believes that this study will offer practical guidance, foster a spirit of innovation, and empower fellow OFWs and expatriates to take informed steps toward sustainable business ownership in the "City of Gold."

Objectives of the Study - The research examines the Investment Climate, Strategic Business Development, and Success Factors: Basis for Expat-preneurship Framework in Dubai, United Arab Emirates. Particularly, it aims to assess the investment climate faced by expat entrepreneurs in terms of access to capital, regulatory and legal barriers, and cultural adaptation; evaluate the strategic development employed by expat entrepreneurs,

focusing on networking, innovation, and market research to overcome the challenges; describe the success factors that contribute to the sustainability of expat businesses including resilience, leadership, and financial planning; test the significant relationship among investment climate, strategic business development, and success factors; to empirically test and analyze the predictors of successful expat-preneurship by examining the interplay between investment climate, strategic business development, and key success factors; and lastly, to develop an enhanced expat-preneurship framework by integrating key elements of investment climate, strategic business development, and success factors.

2. Methods

Research Design - Descriptive research design was used in this study for a sufficient and accurate interpretation of the findings. According to Deckert et al. (2023), Descriptive research design refers to methods that provide observational data about a population or condition, utilizing tools like surveys and interviews. It captures information as it exists, aiding in understanding contexts and characteristics without manipulating variables. The researcher merely describes the sample and/or the variables without changing any of the other factors. The researcher gathered data from the respondents by providing survey forms to determine the investment climate, strategic business development, and success factors in the Entrepreneurial Journey of Expat-preneurs in Dubai, United Arab Emirates.

Participants of the Study - This study were participated by 380 expatriate entrepreneurs with registered businesses from all over the world who are based in Dubai, United Arab Emirates. Given the absence of a comprehensive database on the total number of expatriate entrepreneurs in Dubai, the study adopted the minimum recommended sample size of 384 respondents. This is based on LPU Batangas' standard sampling guidelines for large or unknown populations. The participants were expatriate entrepreneurs currently managing or owning businesses in Dubai across diverse industries, including retail, services, technology, hospitality, and trade. These expat-preneurs were selected based on their active involvement in strategic business development and their capacity to provide insights into the prevailing investment climate, critical success factors, and entrepreneurial practices within the Emirate.

Respondents were reached through professional networks, business associations, social media platforms, and referrals, ensuring varied representation in terms of nationality, business size, and years of operation. Their responses serve as the foundation for developing a contextualized Expat-preneurship. These entrepreneurs are familiar with the challenges experienced by foreign entrepreneurs in a cutthroat industry. They are the ones who have created and put into practice several strategies to overcome these challenges to sustain their enterprises. These participants will provide insightful information on the factors that influenced their success as entrepreneurs. Their collective experiences will offer a thorough understanding of an expatriate's entrepreneurial journey in Dubai.

Instruments of the Study - The researcher constructed a self-made questionnaire tailored to assess the investment climate, strategic business development practices, and success factors influencing expat-preneurship in Dubai. The questionnaire included four parts namely: expat-preneur's demographic profile, expat-preneur's assessment on the investment climate in terms of access to capital, regulatory and legal barriers, and cultural adaptation, expat-preneur's evaluation on the strategic development focusing on networking, innovation, and market research to overcome the challenges, and expat-preneur's description on the success factors including resilience, leadership, and financial planning. The researcher will use Likert Scale level of agreement. Scale of 1 to 4 will be used where 4 as the highest and 1 as the lowest. The respondents were given the following scales and its equivalent verbal interpretation as follows: 4 – Strongly Agree, 3 – Agree, 2 – Disagree and 1 – Strongly Disagree.

Data Gathering Procedure - The research journey commenced with the formal presentation of the study topic to the dissertation adviser, where the proposed framework examining investment climate, strategic business

development, and success factors for expatriate entrepreneurship received academic approval and guidance for methodological refinement. Recognizing the need for a comprehensive theoretical foundation, the researcher embarked on an extensive literature review utilizing electronic sources including peer-reviewed journals, conference proceedings, and published doctoral dissertations to establish a robust knowledge base and identify existing gaps in expatriate entrepreneurship research.

To ensure the validity and reliability of the research instrument, a pilot testing phase was implemented wherein online survey forms were strategically distributed to a randomly selected sample of overseas Filipino workers who had established registered businesses in Dubai, UAE. However, this initial phase presented several challenges, including limited response rates due to the busy schedules of expatriate entrepreneurs, language barriers despite the bilingual questionnaire design, and initial skepticism from potential participants regarding data confidentiality and research legitimacy. The tallied responses from this pilot study were subsequently submitted for comprehensive reliability testing to assess the internal consistency and statistical validity of the measurement scales. The results of reliability test for the questionnaire were as follows:

Table 1
Summary of Reliability Test

Investment Climate	No of Items	α value	Interpretation
Access to Capital	5	0.750	Acceptable
Regulatory and Legal Barrier	5	0.748	Acceptable
Cultural Adaptation	5	0.979	Excellent
Overall	15	0.874	Good
Strategic Business Development			
Networking	5	0.954	Excellent
Innovation	5	0.926	Excellent
Market Research	5	0.896	Good
Overall	15	0.939	Excellent
Success Factors			
Resilience	5	0.923	Excellent
Leadership	5	0.959	Excellent
Financial Planning	5	0.826	Good
Overall	15	0.956	Excellent

Legend: $\geq .9$ –Excellent, $\geq .8$ –Good, $\geq .7$ –Acceptable, $\geq .6$ –Questionable, $\geq .5$ –Poor, and $< .5$ –Unacceptable.

Following the successful completion of reliability testing and necessary questionnaire refinements, the researcher implemented a mixed-mode data collection strategy, distributing questionnaires both digitally through online platforms and physically through printed hard copies to maximize accessibility and response rates. The digital surveys were embedded as clickable links within popular online communication platforms frequently used by the Filipino expatriate community, while printed questionnaires were personally distributed by the researcher across various business districts and Filipino community gatherings throughout Dubai, UAE. Despite these comprehensive distribution efforts, additional challenges emerged including technological barriers among some participants, seasonal fluctuations in business operations affecting availability, and the need for multiple follow-up communications to achieve the desired sample size. Upon completion of the data collection period, all accomplished questionnaires were systematically compiled, with responses subsequently tabulated, statistically analyzed using appropriate analytical techniques, and comprehensively interpreted to address the research objectives and generate meaningful insights for the proposed expatriate entrepreneurship framework.

The survey was conducted in Dubai, UAE. After the collection of accomplished questionnaires, the data were tabulated, analyzed and interpreted.

Data Analysis - Weighted mean and rank were used to assess the investment climate faced by expat entrepreneurs in terms of access to capital, regulatory and legal barriers, and cultural adaptation; evaluate the strategic development employed by expat entrepreneurs, focusing on networking, innovation, and market research to overcome the challenges; describe the success factors that contribute to the sustainability of expat businesses including resilience, leadership, and financial planning. Pearson r was used to determine the

significant relationship. Regression analysis was used to determine the significant predictors success factors. Case wise diagnostics was used to identify the outliers. All analyses were performed using SPSS version 28.

Ethical Considerations - The research activity was carried out with ethical considerations in mind, ensuring that all data obtained was used strictly for research purposes while maintaining the study's integrity and quality. The researcher sought consent from everyone through online contacts to confirm that the target respondents are prepared to answer the research questions. To ensure ethical integrity, the researcher safeguarded respondent anonymity by allowing participants to choose whether or not to disclose their personal details, including their name, when completing the questionnaire. This approach emphasized voluntary disclosure and respect for individual privacy. The researcher ensured that participants fill out the surveys willingly and voluntarily. Finally, the researcher ensures that none of the study participants were harmed or injured, and that their safety and security were of the highest priority.

3. Results and discussion

Table 2

Summary Table of Investment Climate Faced by Expat Entrepreneurs

Indicators	Weighted Mean	Verbal Interpretation	Rank
Access to Capital	2.24	Disagree	3
Regulatory and Legal Barriers	3.27	Agree	2
Cultural Adaptation	3.52	Strongly Agree	1
Composite Mean	3.01	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 2 presents the assessment of the respondents on the Investment Climate Faced by Expat Entrepreneurs. The composite mean of 3.01 indicates that the respondents Agree in general. This implies that the expat entrepreneurs are aware of the importance of investment climates faced with challenges and opportunities. Bhaskar et al. (2022) emphasized that the capability of the entrepreneurs to search and analyze for opportunities will result in business propositions that result in economic growth. Hayes (2020) discussed that investment climates encompass the "economic, financial, and socio-political environment" which may have an impact on the decision related to willingness of investors, financial institutions to fund or attain ownership in local businesses.

Among the items cited, Cultural Adaptation ranked first with a mean score of 3.01 and a verbal interpretation of Strongly Agree. This implies that the expat entrepreneurs are given importance on the business of cultural adaptation in the business. The process of adapting the business practices on the cultural norms may build trust, strategy to connect with the customers and successful business. Alzaabi (2023) described the multiculturalism of Dubai as depicting the "opportunities and obstacles of expatriate entrepreneurs. It is further concluded in the study conducted by Patel (2024) that adaptive culture plays critical roles in attaining organizational success. This success may be achieved by improving flexibility, practicing innovation, and enhancing competitive advantages. Regulatory and Legal Barriers ranked second with a mean of 3.27 with a mean score of 3.27. Meanwhile, Access to Capital ranked fifth with a mean score of 2.24 and verbal interpretation as Disagree. This implies that expat entrepreneurs highlighted the challenges they are facing in securing capital. Tiffany (2024) further mentioned that start-ups face constant challenges especially in the early stage of business growth related to attaining sufficient funds and management of its cash flows.

Table 3

Summary Table of Strategic Development Employed by Expat Entrepreneurs

Indicators	Weighted Mean	Verbal Interpretation	Rank
Networking	3.26	Agree	2
Innovation	3.43	Agree	1
Market Research	3.22	Agree	3
Composite Mean	3.30	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 3 presents the assessment of the respondents on the Strategic Development Employed by Expat

Entrepreneurs. The composite mean of 3.22 indicates that the respondents Agree in general. This implies that the expat entrepreneur sets the process of determining its strategy and direction for the success and sustainability of its business operation. Sousa et al. (2020) defined that entrepreneurial strategies are a set of activities that establish values and direction by creating missions and objectives to attain competitive edge. According to Nave et al. (2022), entrepreneurial strategies take part in fostering innovation and growth. Expat entrepreneurs frequently utilize their international experiences to recognize business opportunities in the foreign countries.

Among the items cited “Innovation” ranked first with a mean score of 3.43 and a verbal interpretation of Agree. This implies that the Innovation can give the most competitive advantage for the success of the business in terms of formation of strategy. It is also added by Alzaabi (2023) that the deduction of UAE in research and innovation can bring opportunities for startups and small-medium enterprises. Networking ranked second with a mean of 3.18. Meanwhile, Market Research ranked third with a mean score of 3.22 and verbal interpretation as Agree. This implies that the expat entrepreneurs understand the impact of knowing the customers' needs and market trends which can help in making informed decisions related to overall business planning, developments and improvements on the products, and market strategy to take place. It is defined by Twin (2024) that market research is performing research directly on the potential customers by assisting the feasibility of the new product and services. Shah et al. (2022) concluded that it is essential to understand the opinion, level of satisfaction, and loyal of the customers towards the business to analyze, improve and update the product and services.

Table 4

Summary Table of Success Factors that Contribute to the Sustainability of Expat Businesses

Indicators	Weighted Mean	Verbal Interpretation	Rank
Resilience	3.55	Strongly Agree	2
Leadership	3.64	Strongly Agree	1
Financial Planning	3.27	Agree	3
Composite Mean	3.49	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 4 presents the assessment of the respondents on the Success Factors that Contribute to the Sustainability of Expat Businesses. The composite mean of 3.49 indicates that the respondents Agree in general. This implies that the expat entrepreneurs take into account that success factors contribute and influence the sustainability of business over time, its ability to achieve its goals, and maintain profit. It is described by Urban (2021) that knowing the success may provide helpful insights to small-business owners up to the local economies. Chaves-Maza et al. (2022) described that success, survival and failure are the classification of success since it has always been a goal of entrepreneurs to minimize failure and maximize success.

Among the items cited, “Leadership” ranked first with a mean score of 3.64 and a verbal interpretation of Strongly Agree. This implies that leadership in the business sustainability is related to providing strategic direction for the business, adaptability and collaboration. Soleas (2020) discussed that effective leaders can increase the confidence of its members. Nowiński et al. (2019) specifically stated that inspiring encounters result in favorable experiences that contribute to entrepreneurial activities. Resilience ranked second with a mean of 3.18. Meanwhile, Financial Planning ranked third with a mean score of 3.22 and verbal interpretation as Agree. This implies that financial planning in the business sustainability is indispensable in sustaining operations particularly in addressing funding constraints. Ariyo et al. (2020) mentioned that financial performance is directly affected by the control in the cash. Financial prosperity can be achieved if there is efficient and effective financial planning. Rahmi et al. (2024) concluded that there is positive and significant influence between financial planning and business sustainability. Having good financial planning may affect the micro, small, and medium enterprises (MSMEs) to operate their companies and open additional branches.

Table 5
Relationship Between Investment Climate and Strategic Development

Variables	r	p-value	Interpretation
Access to Capital			
Networking	.210**	<.001	Highly Significant
Innovation	.104*	0.042	Significant
Market Research	.212**	<.001	Highly Significant
Regulatory and Legal Barriers			
Networking	.568**	<.001	Highly Significant
Innovation	.530**	<.001	Highly Significant
Market Research	.572**	<.001	Highly Significant
Cultural Adaptation			
Networking	.0635**	<.001	Highly Significant
Innovation	.610**	<.001	Highly Significant
Market Research	.537**	<.001	Highly Significant

Legend: Significant at p-value<0.01**/0.05*

Table 5 presents the relationship between various aspects of the investment climate and strategic development dimensions, namely networking, innovation, and market research. The findings indicate that access to capital has a highly significant positive correlation with networking ($r = .210$, $p < .001$) and market research ($r = .212$, $p < .001$), while it has a significant correlation with innovation ($r = .104$, $p = 0.042$). This suggests that better access to capital facilitates stronger networking and market research efforts and modestly supports innovation. According to Hwang et al. (2019), in capital ventures, investors who expect equality return in their investment may take an active role in business development such as in management, planning, development, support, networking and sharing expertise.

For regulatory and legal barriers, all correlations with strategic development components are highly significant and relatively strong, with networking ($r = .568$), innovation ($r = .530$), and market research ($r = .572$) all showing strong positive relationships ($p < .001$). This implies that minimizing regulatory and legal barriers can substantially enhance these strategic development activities. Stated by Olanrewaju (2023), obligation related to legal compliance is crucial in innovation and launching. Entrepreneurs may establish a legal foundation for protection and lessen disputes. Similarly, cultural adaptation shows the strongest relationships across all strategic development dimensions. It is highly correlated with networking ($r = .635$), innovation ($r = .610$), and market research ($r = .537$), all at $p < .001$. These results underscore the critical role of cultural adaptability in enabling effective strategic initiatives. In the study of Walsh et al. (2023), understanding on how to adapt in the foreign environment recognizes, evaluates and opens entrepreneurial opportunities.

Table 6
Relationship Between Investment Climate and Success Factors

Variables	r	p-value	Interpretation
Access to Capital			
Resilience	.164**	0.001	Significant
Leadership	.183**	<.001	Highly Significant
Financial Planning	.354**	<.001	Highly Significant
Regulatory and Legal Barriers			
Resilience	.587**	<.001	Highly Significant
Leadership	.533**	<.001	Highly Significant
Financial Planning	.513**	<.001	Highly Significant
Cultural Adaptation			
Resilience	.573**	<.001	Highly Significant
Leadership	.458**	<.001	Highly Significant
Financial Planning	.414**	<.001	Highly Significant

Legend: Significant at p-value<0.01**

Table 6 shows the relationship between the investment climate and success factors, specifically resilience, leadership, and financial planning. The results show that access to capital is positively and significantly associated with all three success factors. It has a significant correlation with resilience ($r = .164$, $p = 0.001$), and a highly significant correlation with both leadership ($r = .183$, $p < .001$) and financial planning ($r = .354$, $p < .001$). This

indicates that improved access to capital enhances leadership capacity and financial planning, while also supporting organizational resilience to a lesser but still notable extent. It is indicated by Hwang et al. (2019) that ownership and right of control might be affected with the entrepreneurs especially if their option is to take the capital venture. Some may opt to use the personal fund but it is small compared to other available sources of capital.

For regulatory and legal barriers, all correlations with the success factors are highly significant and relatively strong. Resilience ($r = .587$), leadership ($r = .533$), and financial planning ($r = .513$) each demonstrate strong positive associations (all at $p < .001$), suggesting that a regulatory environment with fewer barriers strongly supports organizational strength and stability. Hoffer et al. (2020) stated that good economic policies have a positive relation on growth of the economy that may lead to the promotion of entrepreneurs. These policies could result in the implementation of regulation that is related to the entrepreneurial process. Similarly, cultural adaptation shows strong and highly significant correlations with all three success factors: resilience ($r = .573$), leadership ($r = .458$), and financial planning ($r = .414$), all at $p < .001$. These findings emphasize that organizations that effectively adapt to cultural contexts are more likely to exhibit strong leadership, sound financial planning, and resilient operations. It is discussed by Fofanova et al. (2020) that adaptation is a process of embracing the economic system of the country. It paved the way in gaining practical knowledge and knowing the interest and needs.

Table 7
Relationship Between Strategic Development and Success Factors

Variables	r	p-value	Interpretation
Networking			
Resilience	.546**	<.001	Highly Significant
Leadership	.484**	<.001	Highly Significant
Financial Planning	.448**	<.001	Highly Significant
Innovation			
Resilience	.529**	<.001	Highly Significant
Leadership	.485**	<.001	Highly Significant
Financial Planning	.434**	<.001	Highly Significant
Market Research			
Resilience	.483**	<.001	Highly Significant
Leadership	.484**	<.001	Highly Significant
Financial Planning	.565**	<.001	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$ **

Table 7 presents the relationship between strategic development components—namely networking, innovation, and market research and success factors such as resilience, leadership, and financial planning. All correlations are highly significant ($p < .001$), indicating strong positive associations between these variables. Networking is moderately positive correlations with resilience ($r = .546$), leadership ($r = .484$), and financial planning ($r = .448$), suggesting that building and maintaining strategic relationships contributes meaningfully to an organization's adaptability, leadership strength, and financial preparedness. It is discussed by Cote (2022) that maintaining a good network is notable to entrepreneurs as it offers factors in succeeding such as providing opportunities and knowledge. Guidance from successful entrepreneurs, and good relationships with an investor can be found.

Innovation also shows moderate positive correlations with all three success factors: resilience ($r = .529$), leadership ($r = .485$), and financial planning ($r = .434$). This implies that organizations that prioritize innovation are more likely to demonstrate resilience in the face of challenges, effective leadership, and sound financial strategies. From the study of Alzaabi (2023) it is stated that innovation is the backbone of competitive advantage in a business. It is further discussed by Rubio-Andrés et al. (2024) that business innovation could result in higher levels of organization effectiveness. Similarly, market research is significantly related to resilience ($r = .483$) and leadership ($r = .484$) but shows its strongest correlation with financial planning ($r = .565$). This indicates that a strong focus on market research not only supports adaptive and strategic leadership but is especially critical for effective financial planning. It is concluded in the study of Starostina et al. (2022) that market research may

provide reliable information related to attractive new investors and mitigating risk locally and internationally.

Table 8
Predictors of Success Factors

Variable	B	β	t-value	p-value
(Constant)	1.155		9.676	<.001
Investment Climate	0.395	0.381	7.946	<.001
Strategic Development	0.346	0.401	8.372	<.001

Note: $R^2 = 0.508$; F-value=196.817; p-value=<.001

Table 8 shows "Predictors of Success Factors". This table presents the results of a regression analysis, indicating how well "Investment Climate" and "Strategic Development" predict "Success Factors." The overall model shows a strong fit, with an R-squared (R^2 value of 0.508, an F-value of 196.817, and a p-value of <.001. This signifies that 50.8% of the variance in Success Factors can be explained by Investment Climate and Strategic Development, and the model is highly statistically significant. The highest predictor of Success Factors is "Strategic Development," as indicated by its standardized beta coefficient (β) of 0.401, a B coefficient of 0.346, a t-value of 8.372, and a p-value of <.001. The highly significant p-value confirms that Strategic Development is a strong positive predictor of Success Factors. This suggests that the strategic approaches employed by expat entrepreneurs, encompassing networking, innovation, and market research, are particularly impactful in contributing to their overall business success and sustainability. This finding underscores the importance of proactive and well-executed strategic initiatives in determining the success of expat-preneurship in Dubai.

The other significant predictor is "Investment Climate," with a standardized beta coefficient (β) of 0.381, a B coefficient of 0.395, a t-value of 7.946, and a p-value of <.001. The highly significant p-value confirms that Investment Climate is also a strong positive predictor of Success Factors. This suggests that the overall environment in which expat entrepreneurs operate, including factors like access to capital, regulatory framework, and cultural adaptation, significantly contributes to their success. In summary, both Investment Climate and Strategic Development are highly significant positive predictors of Success Factors for expat entrepreneurs in Dubai. While both play crucial roles, Strategic Development appears to have a slightly stronger predictive power. This comprehensive predictive power highlights the intertwined nature of these elements in fostering a conducive environment and proactive efforts for expat business success.

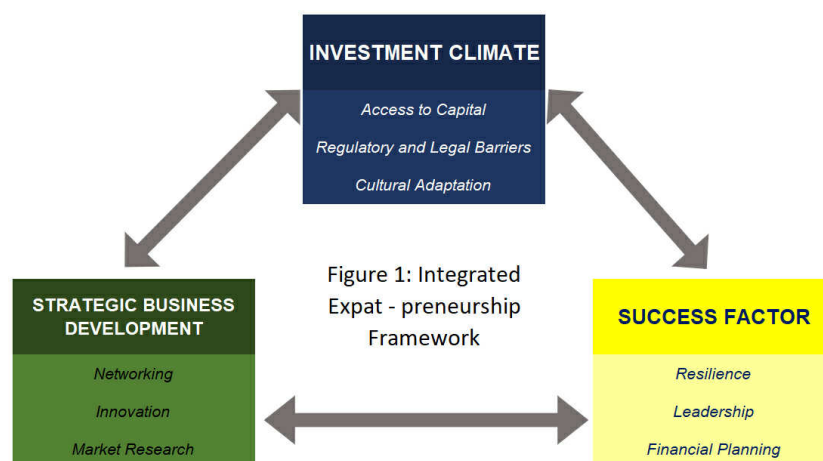


Figure 1. Proposed Expat-preneurship Framework in Dubai, United Arab Emirates: Integrating Investment Climate, Strategic Business Development, and Success Factors

The framework illustrates the profound interconnections between the investment climate, strategic development, and organizational success factors. A significant relationship exists between various aspects of the investment climate and key strategic development dimensions: networking, innovation, and market research. Notably, access to capital demonstrates a highly significant positive correlation with both networking and market research, and a significant positive correlation with innovation. Regulatory and legal barriers also exhibit strong

and highly significant positive correlations with all three strategic development dimensions. Legal compliance is particularly critical during the innovation and launch phases, as it provides a protective foundation that helps reduce potential disputes and fosters business stability. Cultural adaptation emerges as the most strongly correlated factor across all strategic development dimensions, showing a highly significant association with networking, innovation, and market research, underscoring its pivotal role in executing effective strategic initiatives.

Furthermore, the framework clearly shows the relationship between the investment climate and organizational success factors—specifically resilience, leadership, and financial planning. Access to capital is significantly and positively correlated with all three success factors, with particularly strong correlations for leadership and financial planning, and a moderate correlation for resilience. However, securing capital, particularly through venture investments, can affect ownership and control, leading some entrepreneurs to rely on personal funds, which may be limited compared to institutional capital. Similarly, regulatory and legal barriers exhibit strong and highly significant correlations with resilience, leadership, and financial planning. Cultural adaptation also demonstrates strong, highly significant associations with all three success factors. These findings emphasize that organizations capable of adjusting to diverse cultural contexts tend to exhibit greater resilience, more effective leadership, and stronger financial planning.

In addition, this framework reveals strong and highly significant correlations between strategic development components (networking, innovation, and market research) and organizational success factors (resilience, leadership, and financial planning). Networking shows highly significant positive correlations with all three success factors. Innovation also demonstrates highly significant positive correlations with resilience, leadership, and financial planning. Market research is highly significantly correlated with resilience, leadership, and financial planning. This highlights the essential role of market intelligence not only in shaping strategic leadership and adaptability but especially in guiding effective financial decision-making.

4. Conclusion and recommendation

The respondents moderately agreed on investment climate as to access to capital, regulatory and legal barriers, and cultural adaptation. The respondents moderately agreed on strategic development in terms of networking, innovation, and market research. The respondents moderately agreed on the success factors as to resilience, leadership, and financial planning. There is a significant relationship between investment climate, strategic development, and success factors. Both Investment Climate and Strategic Development are highly significant positive predictors of Success Factors for expat entrepreneurs in Dubai. A framework was developed for the expat-preneurs in Dubai, United Arab Emirates. Expat Entrepreneurs may have diversified funding sources beyond personal funds, invest in team innovation training, consider external market research collaborations, develop strategies for quicker recovery from setbacks, and formally integrate data and team insights into decision-making. Government and other policy makers may establish and publicize accessible funding programs (grants, loans) for expats, simplify application processes, continue promoting clear regulations, and support initiatives fostering cross-cultural business understanding. Business Incubators, accelerators, and financial institutions may develop targeted funding programs and accessible financial products for early-stage expat entrepreneurs, potentially in collaboration with the government. Educational Institutions and professional development organizations may offer specialized training in financial literacy, advanced market research, and entrepreneurial resilience, tailored for expat entrepreneurs. Future researchers may investigate specific aspects like types of personal funding used, challenges in rapid recovery from setbacks, and the broader impact of government support beyond direct financial aid on expat entrepreneurship success.

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Onboarding training, mentorship alliance and psychological capital: Basis for employment success framework

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Abstract

In the context of increasing global economic competition, employee onboarding, mentoring alliances, and psychological capital have become crucial factors influencing employment success. This study focused on employees from five private enterprises in Beijing, aiming to examine how onboarding training, mentorship alliances, and psychological capital contribute to employment success and to build a comprehensive guiding framework. Using a descriptive quantitative design, data were collected through structured questionnaires covering training practices, mentorship dynamics, and psychological traits, and analyzed using descriptive statistics and regression analysis. The study found that employees generally held positive attitudes toward onboarding training, with an overall mean score of 3.29, although training on company culture and values (mean = 3.28) showed room for improvement. Mentorship alliances were also positively evaluated (mean = 3.28), with role modeling scoring highest at 3.31, suggesting its significant influence on professional identity formation. Regarding psychological capital, employees reported relatively high levels (mean = 3.31), especially in hope (mean = 3.35), indicating confidence in future career growth, while resilience and optimism (mean = 3.28) suggested some areas needing support. Statistical analysis revealed significant yet weak positive correlations among onboarding practices, mentorship alliances, and psychological capital (all $p < 0.001$), with the highest correlation being between mentorship support and self-efficacy ($\rho = 0.305$). Based on these findings, the study proposed a practical employment success framework involving specific focus areas, objectives, strategies, implementers, and expected outcomes, aiming to improve employees' integration, motivation, and job performance.

Keywords: onboarding training, mentorship alliance, psychological capital, employment success

Onboarding training, mentorship alliance and psychological capital: Basis for employment success framework

1. Introduction

With the continuous development of the global economy and the increasingly fierce competition among enterprises, the employment success of employees becomes particularly important. Onboarding, mentoring alliances and psychological capital are factors that play a key role in employee careers. These factors directly influence employee career development, satisfaction, and performance. Therefore, this study aimed to explore the impact of orientation, mentoring alliances, and psychological capital on the employment success of corporate employees and to develop a comprehensive framework to better understand the relationships among these factors.

Onboarding training is an important starting point for employees to integrate into the enterprise. It provides the skills and knowledge needed by new employees to help them better adapt to the work environment and improve their performance. Wim et al. (2000) Research said that education and training improve the employability of workers to engage in other tasks within the enterprise, and reduce the need for leaders to help them when they encounter small problems. Studies have shown that formal job training effectively improves the employability. Mentor and apprentice alliance is a way of knowledge inheritance. Through cooperative learning with experienced employees, new employees can accumulate experience more quickly and improve their professional ability. Luo et al. (2021) research pointed out that effective onboarding training and good mentoring relationship can improve the work adaptability of employees, so that employees can understand and master the job knowledge and work more quickly, so as to achieve employee employment success. Psychological capital is a general term for individual traits such as emotion, confidence, self-efficacy, and social skills, which are crucial for career development and success. Jung et al. (2015) study pointed out that psychological capital has a significant impact on employees' employment success. Emotional stability helps to cope with job stress and frustration and increase career satisfaction. Confidence and self-efficacy gratitude to encourage employees to act actively, pursue career goals, and show greater motivation and creativity at work. Social skills help build professional relationships and effective teamwork to improve career opportunities. Therefore, it is important to study how these three factors associate and how they affect the employment success of employees. Different enterprises may have different cultures and institutions, so the corporate context of the study is also important. In this study, employees of enterprise A will be selected as survey subjects to have A deeper understanding of the enterprise and link the research results with the actual situation of the enterprise to provide practical suggestions.

In the modern workplace environment, the rapid integration and continuous development of employees have a decisive impact on the competitiveness of enterprises. With the increasing demand of enterprises for human resources, traditional onboarding training, mentoring relationship management and neglect of employees' psychological state can no longer meet the development needs of modern enterprises (Jiang, 2023). Therefore, this study aims to explore how onboarding, mentoring alliances, and psychological capital together affect employee employment success in order to provide a more comprehensive and systematic understanding of the framework. Through this kind of research, companies can more effectively design human resource strategies that optimize employee performance and career satisfaction, ultimately driving the overall success and sustainable development of the organization.

Signal theory was originally used to explain the problem of information asymmetry in economics, mainly describing how to transmit hidden information through signals (Shi, 2023). In this study, signal theory is used to analyze how onboarding, mentoring alliances, and psychological capital serve as effective signals to convey information about organizational culture, expectations, and behavioral norms to new employees. These signals help employees adjust their behavior and expectations, thus better adapting to the work environment and

improving their employment success. By understanding the transmission and reception processes of these signals, this study aims to reveal how these factors work together to influence the career path and development of employees.

The practical value of this study is reflected in that it provides a scientific framework for enterprises to understand and implement effective onboarding programs, establish productive mentoring relationships and cultivate employees' psychological capital more systematically. This not only helps to improve the work efficiency and satisfaction of employees, but also enhances the career commitment and loyalty of employees, thereby reducing the brain drain and enhancing the overall competitiveness and market adaptability of enterprises. The main beneficiaries of this study include human resource managers, business leaders and all business employees. Human resource managers and business leaders can use the results of this study to optimize onboarding procedures, strengthen the efficiency of mentoring systems, and enhance employee psychological capital strategies to create a more positive and productive work environment. Employees benefit from more targeted and supportive training, effective mentoring relationships, and enhanced psychological capital, which directly increase their job satisfaction and career growth opportunities. In this way, the study helps companies build a more holistic approach to employee development and management that contributes to the overall well-being of employees and the long-term success of the company.

Objectives of the Study - This study aims to establish a framework grounded in orientation, mentoring alliances, and psychological capital to explain how these factors contribute to the employment success of corporate employees. Specifically, it seeks to determine the onboarding training practices provided to employees in terms of job knowledge, compliance, and culture and values. It also intends to describe the mentorship alliance with emphasis on work guidance, support and assistance, and the role of mentors as models. In addition, the study aims to assess the psychological capital of employees by examining their levels of self-efficacy, hope, resilience, and optimism. Furthermore, it seeks to test the significant relationships among onboarding training practices, mentorship alliance, and psychological capital, and ultimately to develop a comprehensive framework that can serve as a basis for promoting holistic employment success.

2. Methods

Research Design - This study used a descriptive study design to fully and accurately interpret the findings. The primary goal of a descriptive research approach is to describe or portray the characteristics, nature, and relationships of events, phenomena, populations, or objects, rather than attempting to interpret or alter them. Pratama et al. (2022) states that descriptive studies help researchers to have a more comprehensive understanding of the characteristics and manifestations of specific phenomena or events. By providing detailed information, it helps the researchers to establish an in-depth understanding of the research field. Through descriptive studies, researchers can identify problems and trends in the research field, further propose hypotheses and design more targeted studies. In this study, enterprises in Beijing, China, were taken as an example to collect relevant information from their employees by providing and issuing questionnaires, so as to provide data support for the research. This research questionnaire will learn about employees' work needs and resources from three aspects: induction training, mentoring alliance and psychological capital. Then it will learn about employees' employment success from the aspects of career development, job satisfaction and job performance. Finally, regression analysis will be used to explore the relationship between induction training, mentoring alliance and psychological capital and employment success. Thus the employment success model is established.

Participants of the Study - In this study, employees of 5 different private enterprises in Beijing, China were investigated. The total number of employees of these five companies is 11,523, and according to Slovin sampling criteria, the number of people who are expected to participate in this survey is 387. This study will use purposeful sampling to send questionnaires to these 387 people through online platforms and collect the questionnaire filling results. Then, the questionnaire data will be collected and sorted, and descriptive analysis and regression analysis will be conducted to explore an effective employment success model. Specific

participants are as follows:

Table 1
Participants of Study

Firm	Headcount	Sample size	Sampling proportion
China Beijing Xinfangsheng e-commerce Co., LTD	1332	45	3.38%
Beijing Micro dream network technology Co., LTD	1076	36	3.35%
Beijing Long Logistics Co., LTD	3033	102	3.36%
Beijing Shiba Cultural Brokerage Co., LTD	3673	123	3.35%
Beijing New oxygen Technology Co., LTD	2409	81	3.36%
Total	11523	387	3.36%

Instruments of the Study - This study from the entry training, mentoring alliance, psychological capital of the employee work needs and resources, and from the career development, job satisfaction, job performance to understand the employee's employment success, set the relevant questionnaire questions, and through the way of questionnaire to understand different factors. According to Umar et al. (2022), this study chose to understand the enterprise orientation training from four aspects: job knowledge, compliance, culture and connection. According to Ayşe et al. (2019), this study understands the mentoring alliance of enterprise employees from four aspects: sharing, guidance, assistance and example. According to the Luthans et al. (2019), this study understands the psychological capital of enterprise employees from four aspects of self-efficacy, hope, resilience and optimism.

Data Gathering Procedure - This study is mainly divided into the third step of the investigation study. The first step is to consult the relevant literature through the domestic and foreign paper websites, classify the relevant literature and data, and form effective literature research results. According to existing literature research results and the questionnaire used questionnaire, combined with the topics of researchers, the questionnaire was compiled to investigate the orientation training, mentoring alliance, psychological capital and employment status of employees. The second step is to obtain approval from five companies in Beijing, China. Then, the researcher used Question star software to make a questionnaire. After informing the participants of the function and content of the survey and obtaining their consent, the researcher sent questionnaires online to employees of 5 enterprises in Beijing, China, and collected the questionnaire results. In this study, 5-point Likert scale was used to quantify independent variables and dependent variables, and the quantified results were statistically analyzed. The main part is to analyze the reliability and validity of the questionnaire, judge the compatibility of the questionnaire and the correlation between variables, and then modify the questionnaire. The data collection process will last for two weeks, during which a reminder email will be sent to increase the recovery rate of the questionnaire. After all questionnaires are collected, the researcher will clean and organize the data preliminarily to ensure the completeness and accuracy of the data. The third step is to conduct descriptive statistical analysis and regression analysis on the collected data to further explore the impact of induction training, mentoring alliance and psychological capital on employment success. According to the results of questionnaire survey and data analysis, this paper probes into the existing problems in the aspects of enterprise training, guidance and employment, and puts forward a perfect employment success model.

Data Analysis - Weighted mean and rank were used to determine the onboarding training practices in terms of job knowledge, compliance, and culture and values; to describe the mentorship alliance in view of work guidance, support and assistance and role model; and to assess the psychological capital of employees in terms of self-efficacy, hope, resilience and optimism. The result of Shapiro-Wilk Test showed that p-values of all variables were less than 0.05 which means that the data set was not normally distributed. Therefore, Spearman rho was used as part of the non-parametric tests to determine the significant relationship. All analyses were performed using SPSS version 28.

Ethical Considerations - Ethical considerations are crucial when conducting questionnaire research, especially when it comes to the relationship between onboarding, mentoring alliances, and psychological capital on employment success. This study will receive an ethical license from the LPU institutional Ethics Review

Committee (IERC). Here are some of the key ethical considerations of this research to ensure the ethics and legitimacy of the research:

- Permission and informed consent: Before conducting the questionnaire, the investigator will ensure that explicit consent from the participants is obtained to understand that their participation is voluntary and that they have the right to refuse to participate or withdraw from the study at any time.
- Privacy and data security: The investigator will take steps to protect the privacy of the participants. This includes ensuring the anonymity and confidentiality of the data to prevent unauthorized access or leakage.
- Ethics in storing and processing data: The investigator will properly manage and protect the data collected, including secure storage of data accessible only by the research team, and will also follow applicable data protection regulations.
- Ethical considerations are essential to protecting participants and ensuring the legitimacy of research. The investigator will always adhere to the ethical guidelines to ensure that the process of the study is respectful, safe and responsible, thus ensuring that the results of the study are credible, useful and beneficial.

3. Results and discussion

Table 2

Summary Table on Onboarding Training Practices

Key Result Areas	Composite Mean	VI	Rank
Job Knowledge	3.29	Agree	1.5
Compliance	3.29	Agree	1.5
Culture and Values	3.28	Agree	3
Grand Composite Mean	3.29	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

The Grand Composite Mean in Table 2 is 3.29 and is within the "consent" range of 2.50 to 3.49. This indicated that employees were generally positive about orientation practices, believing that training effectively supported their orientation process in key areas of work knowledge, compliance, and culture and values. Although the score did not reach the level of "strongly consent", it still shows employee recognition of the quality of the induction training. This result provides a solid foundation for the company to further optimize the orientation training, which helps to improve the adaptability and organizational identity of employees. The employees evaluation of working knowledge in terms of entry training was 3.29, which belonged to the scope of "consent" and was tied for the first place. This suggests that employees generally recognize the effectiveness of training in helping them acquire the necessary work knowledge, understand job responsibilities and improve skills. The high score reflects the role of training in supporting employees to work quickly and reducing uncertainty in the novice period. The company may provide detailed job description, skills training and practical guidance in the training to enable employees to take on work tasks more confidently.

Employees assessment of entry training was also 3.29, ranking joint for first. This shows the effectiveness of employee accreditation training in helping them understand and comply with company policies, regulations, and ethical guidelines. The training may cover compliance policies, ethical codes of conduct and reporting mechanisms, enhancing the compliance awareness and responsibility of employees. High scores indicate that companies value compliance education in training and help reduce legal and reputation risks. Employees evaluation of entry training in terms of culture and values was 3.28, slightly lower than the first two items, and they ranked third. Although still in the "consent" range, slightly lower scores may reflect higher employee expectations for training in delivering corporate culture and values. Training may be inadequate in helping employees understand the company's core values, mission, and cultural norms. Employees may need more opportunities to participate in cultural experience activities, communicate with leadership or understand the

company's history and vision to enhance organizational identity.

Based on the above analysis, the staff gave a positive overall evaluation of the entry training in the three key areas, with a comprehensive average value of 3.29, which is in the range of "consent". Work knowledge and compliance are tied for first place, showing that employees find training most effective in these areas. The slightly lower ranking of culture and values suggests that there is room for improvement in this area.

Zhang (2020) found that well-targeted induction training can significantly improve employees' performance in terms of work knowledge and compliance. Specifically, the customized design of the training content enables employees to acquire the professional knowledge and skills required for their positions more quickly, while enhancing their understanding and compliance with company policies and compliance requirements through interactive training methods such as case studies and role playing. This is in line with the results of this study that employees highly recognize the onboarding training in terms of work knowledge and compliance, indicating that customized training can effectively meet the needs of employees in different key areas and improve the overall training effect. In addition, the study also points out that regular evaluation and feedback mechanisms are key to ensuring continuous optimization and adaptability of training content, which is consistent with the conclusion of the study that companies should further optimize training content. Zhao (2019) found that systematic cultural transmission strategies can significantly enhance employees' organizational identity and sense of belonging. Specifically, training modules that include the company's history, core values and mission statement enable employees to understand and identify with the company's culture and values at an early stage of employment, so that they can integrate into the team faster and show a high level of motivation. However, the study also found that if the cultural delivery content is too general or lacks practical application guidance, employees' understanding and recognition of corporate culture will be reduced. This is in contrast to the results in this study that employees have higher expectations and slightly lower ratings for induction training in terms of culture and values, suggesting that enterprises should pay attention to the depth and specificity of content when delivering culture.

Table 3
Summary Table on Mentorship Alliance

Key Result Areas	Composite Mean	VI	Rank
Work Guidance	3.25	Agree	3
Support and Assistance	3.29	Agree	2
Role Model	3.31	Agree	1
Grand Composite Mean	3.28	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

The Grand Composite Mean in Table 3 is 3.28 and is within the "consent" range from 2.50 to 3.49. This suggests that employees generally have a positive attitude towards their practice in key areas such as work guidance, support and assistance, and role models. They generally believe that the company's mentor program plays an important role in promoting career development, providing necessary support and setting career examples. Although the score did not reach the level of "strong consent", it still showed employee recognition of the quality of the alliance. This result provides a solid foundation for the company to further optimize the teacher and friends program, and helps to improve employees job satisfaction and organizational identity. The employees evaluation of "Role Model" is 3.31, which belongs to the scope of "consent" and ranks first. This indicates the importance of mentors as role models in career development and professional behavior. They believe that the leadership style, professional ability and professional ethics have a positive impact on them and can motivate them to improve their professional quality. High scores reflect the effectiveness of mentors in shaping employee career pathways and work attitudes. The company may have focused on the role model in the selection and training of the mentors to ensure that the mentors can set an example and set a good professional model for the students.

The employees evaluation of "Support and Assistance" was 3.29, which is in the "consent" range and ranked second. This shows the role of mentors in providing continuous support and assistance to promoting professional

development. They felt that the tutor gave the necessary guidance in their work to help them solve problems and meet challenges. The high scores indicate the company's success in building a supportive culture and providing resources, with mentors able to meet the needs of employees in their career development. This support helps to improve employees job satisfaction and organizational sense of belonging. The employees evaluation of "Work Guidance" is 3.25, which is located in the "consent" range, ranking the third. Despite slightly lower scores, staff recognized preceptor contributions in providing job guidance, explaining responsibilities and improving skills. They believed that the guidance of the mentor helped them to adapt to the work environment faster and improve their work efficiency. The lower scores may reflect room for improvement in this area, such as strengthening communication between mentors and trainees and providing more specific guidance and feedback. The company can further improve the effectiveness of work guidance by optimizing the mentor training and guidance mechanism.

Nargess et al. (2022) found that mentors not only provide guidance on technical work issues, but also provide continuous help to students in career planning, emotional support and personal development. This echoes the findings in this study that employees highly recognize mentors for providing guidance and Support beyond technical issues in terms of "Support and Assistance." The full support of a mentor can significantly increase employees' career satisfaction and organizational loyalty, helping them better cope with the challenges and uncertainties of their work. This shows that the wide range of support that is encouraged by mentors in the mentorship program helps to meet the diverse needs of employees on a professional and personal level, promoting their professional growth and organizational identity. Williams et al. (2019) found that the leadership style, professional competence and professional ethics demonstrated by mentors have a significant impact on trainees' professional attitudes and behavior patterns. Specifically, by observing and imitating the behavior of mentors, employees improve their own leadership and professional literacy, and enhance their enthusiasm and self-efficacy for career development. This is consistent with the results in this study that employees give high marks to the Role Model of mentors in leadership and professional methods, indicating that mentors play an important role in shaping the career path and work attitude of trainees. However, the study also found that the effectiveness of mentoring relationships can be compromised if mentors lack consistency and transparency in conveying values and standards of professional conduct. This is in contrast to the result of the low score of "consistency between mentors and company values" in this study, suggesting that companies should ensure consistency and transparency of mentors' professional ethics and codes of conduct in mentoring programs to enhance employees' trust and satisfaction with the mentoring alliance.

Based on the above analysis, the overall evaluation of the three key areas is positive, with a comprehensive average of 3.28, which is in the range of "consent". Among them, "Role Model" ranked first, showing that the mentor was most effective in setting professional models and motivating employees; "Support and Assistance" ranked second, indicating that the mentor was recognized in providing continuous support and assistance; and "Work Guidance" ranked third, indicating that there is room for improvement in this field.

Table 4
Summary Table on Psychological Capital of Employees

Key Result Areas	Composite Mean	VI	Rank
Self-efficacy	3.30	Agree	2
Hope	3.35	Agree	1
Resilience and Optimism	3.28	Agree	3
Grand Composite Mean	3.31	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Grand Composite Mean in Table 4 is 3.31, located within the "consent" range of 2.50 to 3.49. This shows employees are generally positive about their own psychological capital, especially in terms of self-efficacy, hope, resilience and optimism. They generally see themselves as having the ability and confidence to meet job challenges, being hopeful for future career development, and being able to remain resilient and optimistic in the face of difficulties. Although the score did not reach the level of "strongly agree", it still showed the recognition of their own psychological capital. This provides solid foundation for the company to further enhance the

psychological capital of its employees, and helps to improve their work performance and organizational efficiency.

Employees evaluation of the Hope dimension of psychological capital is 3.35, which is in the range of "consent", and ranks first. This shows that employees are generally hopeful and confident about their future career development and success. They believe in good career opportunities within the company and are optimistic about achieving their career goals. The high scores reflect its excellence in providing career development opportunities and support to its employees. Employees feel the importance they attaches to their career growth and provide the necessary resources, training and development paths. Employees assessment of the Self-efficacy dimension was 3.30, ranking in the "consent" range, ranking second. This shows that employees generally recognize their ability and confidence that they are competent for work tasks, learn new skills, and adapt to changes in the work environment. This result indicates that employees have high self-efficacy and willingness to take responsibility and challenges. Companies may help employees build a sense of confidence and ability through orientation, mentoring alliances, and ongoing support. Employees assessment of the Resilience and Optimism dimension was 3.28, still in the "consent" range, ranking third. Employees perceived themselves as resilient and able to be optimistic and positive about job challenges, but scored slightly lower compared to the first two dimensions. The lower scores reflect room for improvement in coping with setbacks and accessing support resources. Employees may need more strategies and tools to enhance resilience as well as a clearer understanding of the available support resources.

Avolio (2019) found that employees with higher psychological capital can show stronger adaptability and self-confidence when facing challenges, thus improving work engagement and performance. Especially in the "hope" dimension, research shows that employees' optimistic expectations and confidence in the future directly affect their work performance. Consistent with the high score of the "hope" dimension in this study (3.35), employees' positive attitude towards career development and confidence in the future can significantly improve employees' work motivation and organizational loyalty. The findings support the study's conclusion that employees are generally confident about their future career development. Seligman et al. (2020) found that while employees generally demonstrate strong resilience and optimism, they may still feel insecure or lack adequate support when dealing with persistent stress and complex problems. Especially with low scores in the "resilience and optimism" dimension, employees often have a poor understanding of available resources and support systems, which in turn affects their ability to respond to challenges. Similar to the low score in the "resilience and optimism" dimension in this study (3.28), the study also notes that while employees maintain a positive mindset, the lack of adequate support and specific coping strategies may limit their ability to actually cope with difficulties. The study suggests that the low score in this study reflects that employees may lack adequate coping tools and resource support when facing challenges, suggesting that companies should strengthen the publicity and training of resources.

Based on the above analysis, employees evaluation of their own psychological capital is generally positive, with an Grand Composite Mean of 3.31, which is in the scope of "consent". Hope ranked first, showing employees confidence and expectations for future career development; Self-efficacy ranked second, indicating that employees recognize their ability and confidence, and Resilience and Optimism ranked third, suggesting there is room for improvement in this area.

Table 5 presents the relationship between onboarding training practices and mentorship alliance. Work Guidance ($\rho = 0.276$), Support and Assistance ($\rho = 0.292$), and Role Model ($\rho = 0.295$) all have highly significant positive weak relationships with job knowledge. This suggests that mentorship in these areas plays a crucial role in enhancing employees understanding of their job. As the core part of the mentoring alliance, work guidance can effectively improve employees' understanding of work content. Through the specific work guidance provided by experienced mentors, new employees can quickly master key skills and knowledge in the work, thereby shortening the adaptation period and improving work efficiency. Support and help reflect the practical support provided by the mentor in the work, especially when the new employee meets challenges, the

timely help of the mentor can help enhance the confidence and work ability of the employee. Role modeling is another important factor in the mentoring alliance. Through the behavior demonstration of the mentor, employees can not only learn working skills, but also learn from the mentor's working attitude, communication style and problem-solving ability (Lin et. al.,2021).

Table 5

Relationship Between Onboarding Training Practices and Mentorship Alliance

Variables	rho	p-value	Interpretation
Job Knowledge			
Work Guidance	0.276	<.001	Highly Significant
Support and Assistance	0.292	<.001	Highly Significant
Role Model	0.295	<.001	Highly Significant
Compliance			
Work Guidance	0.291	<.001	Highly Significant
Support and Assistance	0.225	<.001	Highly Significant
Role Model	0.305	<.001	Highly Significant
Culture and Values			
Work Guidance	0.324	<.001	Highly Significant
Support and Assistance	0.336	<.001	Highly Significant
Role Model	0.339	<.001	Highly Significant

. Correlation is significant at the 0.01 level

Work Guidance ($\rho = 0.291$), Support and Assistance ($\rho = 0.225$), and Role Model ($\rho = 0.305$) are also highly significant. Compliance shows a positive but relatively weak correlation with these mentorship factors, suggesting that while mentorship plays a role in helping employees adhere to rules and procedures, its influence in this area is not as strong as in other aspects. Nonetheless, effective mentorship still contributes to fostering compliance in the workplace. Although the role of mentoring alliances in promoting employee compliance is weaker, it still plays a role in promoting compliance. This means that while mentors teach job skills, they also have an impact on how employees adhere to company rules, procedures, and so on. This finding is consistent with the view in relevant literature that a good mentor system helps employees regulate their own behavior at work, reduce violations, and improve overall work efficiency (Peng, 2017).

Work Guidance ($\rho = 0.324$), Support and Assistance ($\rho = 0.336$), and Role Model ($\rho = 0.339$) show weak positive correlations with culture and values, but highly significant results. These findings suggest that mentorship strongly influences how employees integrate into the organizations culture and values.

Research by Bauer et al. (2019) shows that mentors can significantly improve employees' work knowledge and have a positive impact on compliance by providing guidance, support and assistance. Through role models, mentors help new employees better understand and comply with company rules and regulations, thereby improving their compliance behavior and work performance. In particular, the study noted that mentors do more than just provide guidance on tasks, but also play a crucial role in promoting adherence to company culture and values. The findings of this study are consistent with those of Bauer et al. (2019), particularly with regard to the role of mentors in improving employees' work knowledge and compliance through work guidance, support and assistance, and role models. Both demonstrate that mentoring alliances can be effective in improving employees' work skills and compliance, and while these effects may be weak in some cases, they still play a vital supporting role. Kammeyer et al. (2020) found that mentor's support, guidance and role model play an important role in integrating new employees into organizational culture and identifying with organizational values. In particular, in terms of cultural integration, mentors help new employees better understand and accept the company's culture and values through clear guidance and exemplary behavior, thereby enhancing employees' organizational identity and job satisfaction. This and this study both show that mentors in the mentoring alliance can effectively help employees integrate into the company culture and values through work guidance, support and help, and role models. While the culture and values integration score in this study is low, Kammeyer et. al., (2020) study also points out that although the effect is weak, it still has a significant impact on employees' long-term adaptation and job performance.

Table 6 displays the relationship between onboarding training practices and psychological capital. Self-efficacy ($\rho=0.284$), Hope ($\rho=0.312$), and Resilience and Optimism ($\rho=0.280$) all have highly significant positive weak correlations with job knowledge. This suggests that when employees have more job knowledge due to onboarding practices, they also tend to feel more confident in their abilities (self-efficacy), are more future-oriented and motivated (hope), and are better equipped to overcome challenges and maintain a positive outlook (resilience and optimism).

Table 6

Relationship Between Onboarding Training Practices and Psychological Capital

Variables	rho	p-value	Interpretation
Job Knowledge			
Self-efficacy	0.284	<.001	Highly Significant
Hope	0.312	<.001	Highly Significant
Resilience and Optimism	0.280	<.001	Highly Significant
Compliance			
Self-efficacy	0.195	<.001	Highly Significant
Hope	0.346	<.001	Highly Significant
Resilience and Optimism	0.319	<.001	Highly Significant
Culture and Values			
Self-efficacy	0.292	<.001	Highly Significant
Hope	0.253	<.001	Highly Significant
Resilience and Optimism	0.282	<.001	Highly Significant

. Correlation is significant at the 0.01 level

Self-efficacy ($\rho = 0.195$), Hope ($\rho = 0.346$), and Resilience and Optimism ($\rho = 0.319$) are all highly significant in relation to compliance, although the correlation with self-efficacy is somewhat weaker compared to hope and resilience/optimism. This indicates that onboarding practices that foster hope and resilience help employees adhere to organizational rules and procedures. While self-efficacy has a weaker correlation, it still plays a role in influencing compliance. Self-efficacy ($\rho = 0.292$), Hope ($\rho = 0.253$), and Resilience and Optimism ($\rho = 0.282$) all show highly significant positive weak correlations with culture and values. These results suggest that when employees understand and align with the company's culture and values, they also experience greater self-confidence, maintain hopeful attitudes, and are resilient and optimistic about their roles within the organization.

Alzyoud et al. (2020) showed that on-boarding training can significantly improve employees' sense of self-efficacy and sense of hope, and thus enhance their psychological capital level. Especially when provided with appropriate work guidance and support, employees' self-confidence and optimistic outlook on the future are significantly increased, enhancing employees' work engagement and organizational commitment. Especially the positive relationship between induction training and psychological capital of employees. Both studies indicate that induction training not only improves employees' work knowledge, but also significantly improves their self-efficacy, hope and resilience, thereby enhancing employees' psychological capital. In particular, onboarding plays a central role in raising employees' hopes and self-efficacy. Maertz et al. (2021) summarized the impact of induction training on employee attitudes and behaviors through a meta-analysis. The study found that good onboarding practices can not only enhance employees' working knowledge and skills, but also effectively help employees integrate into the company culture and values. In particular, through the combination of work guidance, social support and role models, employees' identification with organizational culture is strengthened, thus enhancing employees' work motivation and organizational commitment. The results of this study are consistent with the findings of Maertz et al. (2021), especially with regard to the impact of induction training on employee cultural integration. Both suggest that helping employees understand and identify with the company culture through onboarding training is an effective way to enhance employees' psychological capital (such as self-efficacy, hope and resilience). In addition, the study highlights the importance of job coaching and role modeling in enhancing employees' cultural identity and job performance.

Table 7 shows the relationship between mentorship alliance and psychological capital. Self-efficacy ($\rho =$

0.235), Hope ($\rho = 0.276$), and Resilience and Optimism ($\rho = 0.310$) all have highly significant positive weak correlations with work guidance. This indicates that mentorship through work guidance is strongly associated with employees feeling more confident in their abilities (self-efficacy), optimistic and goal-oriented (hope), and able to bounce back from setbacks with a positive attitude (resilience and optimism). The strongest correlation here is with resilience and optimism ($\rho = 0.310$), suggesting that work guidance especially helps employees build mental toughness and a positive outlook in the workplace.

Table 7*Relationship Between Mentorship Alliance and Psychological Capital*

Variables	ρ	p-value	Interpretation
Work Guidance			
Self-efficacy	0.235	<.001	Highly Significant
Hope	0.276	<.001	Highly Significant
Resilience and Optimism	0.310	<.001	Highly Significant
Support and Assistance			
Self-efficacy	0.305	<.001	Highly Significant
Hope	0.296	<.001	Highly Significant
Resilience and Optimism	0.290	<.001	Highly Significant
Role Model			
Self-efficacy	0.292	<.001	Highly Significant
Hope	0.238	<.001	Highly Significant
Resilience and Optimism	0.328	<.001	Highly Significant

. Correlation is significant at the 0.01 level

Self-efficacy ($\rho = 0.305$), Hope ($\rho = 0.296$), and Resilience and Optimism ($\rho = 0.290$) all have highly significant positive weak correlations with support and assistance from mentors. This shows that when employees receive support and assistance, they experience greater confidence, motivation, and resilience. The strongest correlation is with self-efficacy ($\rho = 0.305$), implying that mentorship through support primarily boosts employees' belief in their ability to perform well at their jobs. Self-efficacy ($\rho = 0.292$), Hope ($\rho = 0.238$), and Resilience and Optimism ($\rho = 0.328$) are highly significant in relation to mentorship through role modeling but have relatively weak correlations. Mentors serving as role models strongly influence employees' resilience and optimism ($\rho = 0.328$), meaning that having a strong role model helps employees maintain a positive mindset and recover from difficulties. The positive weak correlation with self-efficacy ($\rho = 0.292$) also suggests that when mentors serve as role models, employees develop more confidence in their abilities.

Baker et al. (2020) found that the support provided by mentors plays a crucial role in enhancing employees' sense of self-efficacy. Especially at the beginning of their career, mentor support helps build confidence and raises their confidence and expectations for their career development. At the same time, mentor support also had a positive impact on employees' work motivation and resilience, helping them maintain an optimistic attitude and efficient work performance in the face of challenges. Baker et al. (2020) research is highly consistent with the findings of this study, particularly with regard to the relationship between mentor support and self-efficacy, hope, and resilience. Both studies show that mentor support can significantly improve employees' self-efficacy and positively affect employees' psychological capital, especially hope and resilience. In the dimension of mentor support, the results of this study further verified the role of mentors in helping employees enhance psychological capital. Hughes et al. (2021) found that mentor's behavior and attitude have a significant impact on employees' self-efficacy and psychological resilience. In particular, the positive attitude, problem-solving ability and adaptive behavior demonstrated by the mentor can help employees build confidence and maintain a positive mindset in the face of challenges at work. The role model role of the mentor helps employees to enhance psychological resilience, especially in the face of difficulties, to be more optimistic about the future. Hughes et al. (2021) research further supports the findings of this study on the impact of mentor role modeling on employee psychological capital. Both showed that mentors, as positive role models, can significantly enhance employees' self-efficacy, hope, resilience and optimism. The data results in this study are consistent with the research of Hughes et al., (2021) especially in terms of the influence of mentor as a role model on the psychological

resilience of employees, and verify the positive role of mentor demonstration behavior.

Based on in-depth research in three key areas of entry training, mentoring alliance and psychological capital, this study devised a framework to promote overall employment success. The framework starts from the six dimensions of focus, goals, measures, executor, execution time and expected effect, and systematically explains how to support their career development and continued success of the organization by optimizing orientation, strengthening mentoring relationships and improving their psychological capital. This framework aims to provide operational guidance solutions, help new employees quickly integrate into the organizational culture, improve work performance and satisfaction, and ultimately achieve a win-win situation between employees and the enterprise.

Table 8
Employment Success Framework

Focus on the field	Target	Measure	Executor	E-time	Expected effect
Job knowledge	Provide new employees with the necessary work knowledge to ensure the effective performance of their duties.	Provide comprehensive job training courses Clearly explain tasks and responsibilities Provide training materials that cover job requirements Provide opportunities for questions and clarification	HR & Department Manager	Induction phase (previous weeks)	Employees understand their roles and responsibilities Employees are confident in performing their work tasks
Compliance	Ensure that new employees are aware of company policies and compliance requirements.	Training on company policies, procedures and compliance issues Provide compliance resources and support systems Emphasize the importance of ethical behavior	HR & Legal / Compliance Department	Entry stage	Employees understand the compliance policy Reduces compliance risk Employees have confidence in reporting compliance issues
Culture and values	Help new employees integrate into corporate culture and deliver corporate values.	Communicate the company's core values and mission Organize activities to help employees understand the company culture Provide opportunities to interact with colleagues	HR & Department Manager & Team Leader	Entry stage	Employees understand and identify with the company culture Improve organizational identity Improve teamwork and collaboration
Work guidance	Provide continuous work guidance to the employees.	Match tutors and mentees according to expertise Clearly communicate the mentor's role and expectations Students are encouraged to actively seek the help of mentors	Department Manager & Experienced Staff (mentor)	Continue, starting with the induction stage	Employees receive effective guidance Improve work performance Promote professional growth
Support and Assistance	Provide continuous support and assistance to employees.	Mentors provide support that goes beyond technical issues Establish open channels of communication Provide resources to solve work difficulties	Mentor & Human Resources Department	Continued	Employees feel supported Improve job satisfaction Reduce staff turnover
Role Model	Provide role models to employees to motivate and guide their career development.	Mentors reflect company values and professional conduct Mentors share experiences and career paths Learn from your mentor's leadership style and professional approach	supervisor	Continued	Employees are motivated Improve leadership Enhance work motivation

Onboarding training, mentorship alliance and psychological capital: Basis for employment success framework

Self efficacy	Enhance employees confidence and ability to successfully complete tasks.	Provides opportunities to learn and master new skills Boost your confidence with positive feedback Support employees to adapt to the new environment	Manager & mentor	Continued	Boost your self-confidence Improve work performance Improve adaptability
Hope	Develop employees with a sense of hope for future career opportunities.	Communicate career paths and opportunities Provides resources and support to achieve your career goals Inspire optimism about the challenges and opportunities of the role	HR Department & Manager	Continued	Improve your motivation Enhance career planning Increase organizational commitment
Resilience and Optimism	Establish employee resilience and optimism.	Train strategies to overcome setbacks Provides resources for support during the challenge Encourage positive attitudes and ways of thinking	Manager & HR Department	Continued	Employees handle stress effectively Reduces burnout and stress Create a positive work environment

4. Conclusions and recommendations

Based on the above study findings, the study is summarized: Employees generally have a positive attitude towards the company's orientation training practice, especially in terms of working knowledge and compliance, but there is still room for improvement in the field of culture and values. Induction training plays an important role in helping employees acquire the necessary work knowledge and understand the company's compliance policies, helping new employees quickly adapt to job needs and improve work efficiency. However, the training effect is relatively inadequate in the transmission of corporate culture and values. This may lead to a lack of understanding of the company's mission, vision and core values, affecting the sense of organizational identity and belonging. Employees generally hold a positive attitude towards the company's teacher and friends alliance, mentors are the most effective in setting up professional models and motivating employees, followed by support and help, and there is room for improvement in work guidance. As role models, mentors have had a positive impact on their career development, and employees benefit greatly from their leadership and professional approach. However, staff rated slightly less about work guidance, possibly due to inadequate mentor support in imparting specific job skills and practical problem solving. Employees generally have positive evaluations of their own psychological capital, especially the "hope" dimension with the highest score, followed by "self-efficacy", and slightly lower "resilience and optimism". This shows that employees are confident in their future career development and success, recognize the resources and support provided by the company, and are willing to contribute to the company. However, employees relatively weak confidence in addressing setbacks and access to support resources may affect their ability to face challenges. There is a significant positive relationship between orientation practice, mentoring alliance and employee psychological capital. Although the correlation is a weak positive correlation, the results show that good induction training and effective mentoring alliance can significantly improve employee psychological capital, including confidence, hope, and adaptability. This means that by optimizing orientation and mentoring alliances, companies can enhance the psychological capital of employees, and thus improve their job performance and organizational commitment. Based on the findings, this study designed a framework to promote overall employment success and detailed how to optimize the practice of orientation, student alliance, and psychological capital. The framework provides operational guidance scheme for enterprises from six dimensions: focus field, goal, measures, executor, execution time and expected effect. By optimizing induction training, companies can help new employees quickly integrate into organizational culture, define job responsibilities and enhance confidence. Strengthening the alliance can provide continuous work guidance and support to promote the professional growth and organizational identity of employees. Enhance the psychological capital of employees, enhance their ability to cope with challenges and work motivation. The implementation of this framework will help to improve the work performance and satisfaction of employees, achieve a win-win situation between employees and the enterprise, and enhance the

competitiveness and sustainable development ability of the organization.

Based on the above findings, the following five research recommendations are made to further enhance the career development of employees and the continued success of the organization. The human resources department and the training department should enrich the training materials and deeply elaborate on the company's core values, mission and vision. Through case analysis, interactive activities and cultural experiences, new employees can have a deeper understanding of the company culture, enhance their organizational identity, and promote their rapid integration into the team. Tutors need to clarify their responsibilities, not only serve as an example in professional methods and leadership, but also actively participate in the daily work guidance of students. By providing substantial job advice and skills training, help employees improve professional competence and job performance and enhance the effectiveness of mentoring relationships. Training departments can develop courses to meet work challenges, and mental health teams can provide counseling and support services. Through these measures, we can help employees to enhance their psychological resilience, maintain a positive attitude, and better cope with the difficulties at work. The human resources department needs to make overall planning, combine the three organically, and design a comprehensive staff development plan. Department managers and mentors should actively participate, pay attention to the psychological needs of employees, provide all-round support, promote their self-efficacy, hope and adaptability, and enhance organizational cohesion. The senior management team and human resources department can make clear career development plans and convey clear promotion channels and growth opportunities to employees. Through regular career development discussion, provide training and development resources, stimulate their work motivation, enhance their commitment and sense of belonging to the company, and achieve a win-win situation between employees and the enterprise.

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Metacognitive writing awareness, strategies, and critical thinking skills among Chinese non-English majors

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Abstract

Amidst the rapid expansion of technology-supported instruction in Chinese higher education, non-English majors are increasingly required to complete academic writing tasks in blended or fully online English courses. Yet little is known about how these learners deploy metacognitive awareness and strategies, nor how such deployment relates to their critical thinking performance. This study investigated metacognitive writing awareness, strategy, and critical thinking skills among 505 non-English majors enrolled at Hunan University of Environment and Biology. Employing a descriptive-correlational design, data were gathered through validated survey instruments and analyzed with descriptive statistics, one-way ANOVAs, and Pearson correlations. Results showed that participants possessed moderate-to-high metacognitive writing awareness, particularly in declarative and conditional knowledge, planning, monitoring, and evaluation. They likewise report frequent and effective use of metacognitive writing strategies (planning, monitoring, evaluating, information management) and expressed positive self-efficacy beliefs, although application gaps remain. Significant variations emerged across sex, year level, and major, with Liberal Arts students demonstrating marginally stronger awareness than Science peers. Most critically, robust positive correlations linked metacognitive writing awareness, strategy employment, and critical thinking ability, confirming that heightened awareness and strategic action fostered superior critical engagement with writing tasks. Grounded in these findings, an enhancement program—incorporating scaffolded metacognitive instruction, discipline-specific writing workshops, and teacher-integrated critical thinking tasks—was proposed to bolster English writing competence among Chinese non-English majors operating in blended learning contexts.

Keywords: metacognitive writing awareness, metacognitive writing strategies, critical thinking skills, non-English majors

Metacognitive writing awareness, strategies, and critical thinking skills among Chinese non-English majors

1. Introduction

In the current era of rapid globalization and technological advancement, Chinese non-English major college students are expected to be "language + major" compound talents. English scores play a significant role in college entrance examinations, postgraduate entrance examinations, and various professional qualification evaluations. As a result, non-English major college students are pushed onto a dual track of "instrumentality and humanism": they need to use English as a bridge to access cutting-edge professional information and also to showcase their research achievements and cross-cultural critical thinking skills. On the one hand, national strategies such as the "Four New" construction and the outstanding engineer education and training program have put forward higher requirements for the English academic writing ability of college students. On the other hand, the information-overloaded online learning environment requires them to have the ability to efficiently search, screen, and integrate information (Xu, 2024). It is precisely in this context that exploring the interactive mechanism of "metacognitive writing awareness, writing strategies, and critical thinking skills" of Chinese non-English major college students is both urgent in reality and forward-looking in theory.

Metacognitive writing awareness refers to learners' awareness and regulation of their own cognitive resources, task characteristics, and strategy application during the English writing process. It not only includes "task knowledge" such as writing goals and audience expectations, but also "strategy knowledge" such as planning, monitoring, and evaluation, as well as "self-knowledge" such as self-language proficiency and emotional state (Teng et al., 2021). Recent studies have pointed out that learners with high levels of metacognitive writing awareness are better at setting clear goals before writing, monitoring logical and language deviations during writing, and conducting targeted reflection and revision after writing.

Metacognitive writing strategies are the "operation panel" through which metacognitive awareness is translated into specific actions. In the digital environment, it manifests as a series of chain behaviors such as information retrieval, note management, corpus comparison, online collaborative peer review, and automatic feedback (Xu, 2024). The latest empirical research shows that when non-English major students can flexibly utilize cognitive strategies (such as brainstorming), metacognitive strategies (such as self-questioning), and social strategies (such as online peer feedback), their writing quality is significantly better than that of those who use a single strategy (Li, 2023).

Critical thinking skills run through the entire writing process and are high-level abilities to remember, understand, apply, analyze, and create regarding information sources, argument logic, and value positions. It requires learners to be able to identify the reliability differences between academic databases and self-media information and construct a rigorous chain of "claim - evidence - reasoning" in the text, ultimately achieving viewpoint innovation and knowledge value-added. The cross-national study by Rivas et. al., (2022) confirmed that there is a significant synergy between critical thinking and metacognitive strategies: metacognitive monitoring provides a "cognitive entry point" for critical questioning, while critical evaluation, in turn, enriches the metacognitive knowledge base.

This study, through path analysis of questionnaires, writing archives, and interview data from 505 non-English major college students in Chinese universities, found that metacognitive writing awareness not only directly and positively predicts the diversity of writing strategies but also indirectly improves critical thinking performance through strategy use; at the same time, high-level critical thinking skills can also reinforce individual metacognitive awareness in a reverse manner, forming a "perception - action - reflection - re-perception" spiral upward cycle. This result not only validates the "Dynamic Metacognitive System Model"

proposed by Zhang et al. (2023), but also provides an empirical fulcrum for breaking the vicious cycle of "writing anxiety - inefficient strategies - superficial thinking".

Addressing the challenges faced by Chinese non-English majors in English writing requires a comprehensive understanding of metacognitive writing awareness, metacognitive writing strategies, and critical thinking skills. By examining these variables, educators can develop targeted interventions to improve students' writing proficiency, ultimately contributing to their academic success and global competence.

Objectives of the Study - This study explored and analyzed the correlations and interaction mechanisms among metacognitive writing awareness, writing strategies, and critical thinking skills of Chinese non-English major university students. The research sought to further reveal how these variables intersect in digital academic writing environments, with particular focus on their synergistic effects in online writing task scenarios. By examining the interdependent relationships among these variables, this study investigated how they form dynamic cycles during the brainstorming, drafting, and revising stages of the writing process.

Simultaneously, this study called for front-line instructors and curriculum designers to place greater emphasis on the parallel development of metacognitive training and critical thinking cultivation in writing classrooms deeply integrated with information technology. Given that the research subjects are Chinese non-English major university students, their unique disciplinary backgrounds, cultural contexts, and test-taking experiences determine that the research conclusions will directly contribute to the restructuring of academic English writing courses in Chinese universities. The findings provided localized, operable, and sustainable improvement solutions for university-level English writing instruction, thereby promoted Chinese students' online autonomous learning and laid a solid foundation for their effective communication and knowledge innovation within the global academic community.

To be specific, this study determined metacognitive writing awareness of the respondents in terms of awareness of knowledge on declaration, procedure, condition, and regulation of cognition on planning, monitoring and evaluation; accessed the metacognitive writing strategies of the respondents in terms of planning, monitoring and evaluating; identified critical thinking skills of the respondents in terms of their remembering, understanding, applying, analyzing, evaluating and creating; tested the relationship among metacognitive writing awareness, strategies and critical thinking skills; proposed a language learning program to enhance English language learning of Chinese Non-English major college students.

2. Methods

Research Design - The utilization of quantitative research methodology in this investigation was driven by a desire to adopt a descriptive research approach, which is fundamentally concerned with the collection and analysis of quantifiable data from a representative sample of the population. This approach, which is extensively employed across various research disciplines, enables researchers to gather and present information regarding the characteristics and behaviors of a specific demographic group. In this particular study, the researcher adopted a descriptive research design to examine the interrelationships among three key variables: metacognitive writing awareness, strategies, and critical thinking skills. To this end, the researcher resorted to survey research methodology, which involved collecting data from participants through the use of questionnaires. These questionnaires were specifically designed to capture the participants' responses to a series of questions related to the research variables. Questionnaires have long been recognized as a valuable tool in research, as they facilitate the collection of valuable feedback and insights from the participants.

Participants of the Study - The research involved participants from a public university in China's south region. These participants were categorized based on their majors, specifically liberal arts, science medicines and landscape majors. The total number was 6000 respondents. The researcher utilized the Raosoft online sample size calculator to determine an appropriate sample size, which suggested distributing 505 questionnaires to the targeted respondents.

Instrument of the Study - The study aimed to evaluate the dependability of measuring perceptual constructs such as the metacognitive writing awareness, strategies and critical thinking skills among Chinese Non-English major college students. The questionnaire comprised four parts: Personal Data Information, the metacognitive writing awareness questionnaire, the metacognitive writing strategies questionnaire, and critical thinking questionnaire. The questionnaire consisted of 86 items, rated on a 4-point Likert scale, ranging from "strongly disagree" to "strongly agree." The first part of the questionnaire gathered respondents' profile information, including age, sex, grade, years of English learning and major. The second part of the questionnaire used the metacognitive writing awareness questionnaire (MAWQ) developed by Ramadhanti (2021) in Students' Metacognitive Awareness and Its Impact on Writing Skill in 2021 adapted from Farahian in developing and validating a metacognitive writing questionnaire for EFL learners in 2017. It comprised six sub-scales: awareness of knowledge on declarative, condition, and regulation of cognition on planning, monitoring and evaluation, totaling 27 statements. The third part used the metacognitive writing strategies questionnaire developed by Mark et al. (2022) in Metacognitive writing strategies, critical thinking skills, and academic writing performance: A structural equation modeling approach in 2022. This section included seven sub-scales: declarative knowledge, conditional knowledge, planning, monitoring, evaluating, information management strategy and debugging strategy, with a total 34 statements. The fourth part used the Critical Thinking Questionnaire (CThQ), compiled by Kobylarek et al. (2022) in Critical Thinking Questionnaire (CThQ) – construction and application of critical thinking test tool in 2022 adapted from Facione of The California Critical Thinking Skills Test Manual (Updated Edition). This section included 5 sub-scales: remembering, understanding, applying, analyzing and creating, with a total 25 statements.

Table 1*The Reliability Test for Three Variables*

Indicators	Cronbach Alpha	Remarks
Awareness of declarative knowledge	0.898	Good
Awareness of conditional knowledge	0.872	Good
Regulation of cognition (planning)	0.909	Excellent
Regulation of cognition (monitoring)	0.901	Excellent
Regulation of cognition (evaluation)	0.702	Acceptable
Declarative knowledge	0.837	Good
conditional knowledge	0.723	Acceptable
planning	0.754	Acceptable
monitoring	0.753	Acceptable
evaluating	0.791	Acceptable
Information management strategy	0.917	Excellent
Debugging strategy	0.759	Acceptable
Remembering	0.896	Good
Understanding	0.824	Good
Applying	0.823	Good
Analyzing	0.754	Acceptable
Creating	0.855	Good

George and Mallery (2003) provide the following rules of thumb: “_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor; and _ < .5 – Unacceptable”

Data Gathering Procedure - Data collection for this teaching experiment was conducted in a systematic and thorough manner to ensure accuracy and reliability. The following procedures were undertaken to gather the necessary information:

- Pre-experiment Surveys: Prior to the experiment, all 90 students were administered the California Critical Thinking Skills Test (CCTST) and the writing tests from DET (Diagnostic English Test). These tests provided a baseline measure of the students' initial critical thinking skills and writing abilities. The results of these tests were recorded and analyzed using SPSS27.0 for descriptive statistics and frequency analysis.
- In-experiment Observations: During the 18-week experiment, regular observations were made to track

the progress of both the experimental and control groups. Classroom activities such as getting-to-know activities, brainstorming sessions, group discussions, peer reviews, and self-revisions were observed closely. Special attention was paid to the implementation of metacognitive writing awareness, strategies, and critical thinking skills training in the experimental group. Detailed notes were taken to document the students' participation, engagement, and responses to the different teaching methods.

- **Post-experiment Assessments:** At the end of the 18-week period, the students were once again administered the CCTST, DET writing tests, and the Teaching Resource Platform (TRP) assessment. The TRP assessment included online evaluations of the students' final writings, teacher feedback, and self-reflections. The combined evaluative standard based on Wen's (2006) grading criteria for writing content and Newman's (1995) critical writing indicators was used to assess the students' change in writing content. All the data collected from these assessments were recorded and analyzed using SPSS27.0 for descriptive statistics, paired samples test, and frequency analysis.
- **Qualitative Data Collection:** In addition to the quantitative assessments, qualitative data was also collected through interviews, focus group discussions, and student journals. These methods provided insights into the students' perceptions of the different teaching methods, their challenges and successes, and their learning experiences. The qualitative data was analyzed using content analysis techniques to identify patterns and themes in the students' responses. By combining both quantitative and qualitative data collection methods, this teaching experiment was able to capture a comprehensive picture of the students' learning progress and the effectiveness of the different teaching strategies.

Data Analysis - After the compilation of data, a thorough and exhaustive review was undertaken for each survey, rigorously scrutinizing every detail to guarantee the utmost completeness and impeccable accuracy of the gathered information. As part of our stringent quality control, all questionnaires with missing or incomplete entries were rigorously screened and subsequently discarded, ensuring the precision and dependability of the subsequent analytical processes. Among the comprehensive set of questionnaires that remained, a selective 505 samples were meticulously chosen, deemed apt for our purpose, and were subsequently tagged with corresponding statistical analysis codes, facilitating an in-depth exploration of the research question. To uphold the rigorous standards of scientific integrity, we employed the Statistical Package for the Social Sciences (SPSS), a renowned tool, for the statistical analysis of the amassed data, thus ensuring the accuracy and scientific credibility of our findings. This software package possesses formidable data processing and analytical prowess, rendering it capable of delivering pinpoint accurate and dependable statistical outcomes. These outcomes serve as invaluable aids in providing nuanced answers to intricate research queries. The data have undergone rigorous scrutiny and meticulous categorization, resulting in their being neatly organized within personal computers.

Prior to and subsequent to the experimentation, DET and Teaching Resource Platform (TRP) writing tests served as a pivotal evaluation mechanism. To paint a detailed statistical picture, a rigorous descriptive analysis was undertaken, encompassing vital metrics like the average scores and their corresponding standard deviations. To further scrutinize the existence of noteworthy statistical disparities among distinct groups, an independent t-test methodology was deployed. Additionally, a single-sample independent t-test was employed to offer a profound and unbiased evaluation of the participants' academic prowess in a broader context. Ensuring the authenticity and credibility of our findings, all statistical tests adhered strictly to the significance thresholds of $p \leq 0.05$ and $p \leq 0.01$. In this comprehensive study, an elaborate descriptive analysis, a comparative evaluation of means, and an in-depth correlation analysis of student English test scores, leveraging the robust statistical software SPSS 27.0 (Statistical Product and Service Solutions, formerly known as Statistical Package for Social Sciences) were conducted. This approach allowed the researcher to gain a nuanced understanding of the data, identifying patterns, trends, and potential relationships within the student performance scores.

Ethical Consideration - After systematic planning and design, the current survey process has been fully integrated into ethical considerations to ensure the compliance and ethics of the entire survey procedure. First of all,

the university has solemnly drawn up a formal consent form, designed to obtain the formal approval from the dean of the English Teaching Office of a public university, to ensure the legitimacy and authority of the investigation activities. At the beginning of the questionnaire, we specially added an elaborate consent form, which aims to strictly maintain the confidentiality and anonymity of participants' personal information and eliminate their concerns. During the survey, the individuals surveyed were provided with detailed descriptions of the study objectives and the specific tasks they were expected to undertake, ensuring that each participant had a clear understanding of the content of the survey. At the same time, the autonomy of the participants was fully respected, and they were given the right to decide whether to participate or withdraw from the study at any stage, and their personal wishes were fully respected. In addition, a clear commitment was made to the students that all collected data and research findings will be used for research purposes only and will not be leaked or used for other purposes to dispel their doubts. Throughout the study, researchers were required to ensure that each participant was able to carefully read and fully understand all the instructions, study procedures and purposes of the survey, ensuring that they participated in the survey in a fully informed manner. To further safeguard the rights of the participants, a voluntary participation approach was adopted to ensure that each respondent participated in the survey in a voluntary, stress-free manner. At the same time, it attached great importance to the confidentiality of information and data, and strict confidentiality measures had been taken in the whole investigation process to prevent information leakage. Finally, the research center affiliated to the University of the Lyceum in the Philippines also obtained formal approval for ethical considerations, which provided strong support and guarantee for the smooth progress of this survey.

3. Results and discussion

Table 2

Summary Table on Metacognitive Writing Awareness

Indicators	Weighted Mean	Verbal Interpretation	Rank
Awareness of declarative knowledge	2.72	Agree	2
Awareness of conditional knowledge	2.70	Agree	5
Regulation of cognition (planning)	2.76	Agree	1
Regulation of cognition (monitoring)	2.71	Agree	3.5
Regulation of cognition (evaluation)	2.71	Agree	3.5
Composite Mean	2.72	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

To sum up, the summary data in Table 2 shows that the overall mean of metacognitive writing awareness is 2.72. The respondents as a whole agreed that they possessed a relatively balanced metacognitive writing awareness. However, among the five dimensions, the score for "Awareness of conditional knowledge" was the lowest (mean 2.70, ranking 5th). "Conditional knowledge awareness" refers to the learner's awareness of "when, why, and how to apply specific writing strategies or language resources in a specific context" (Paris et al., 2022). The results of this study showed that the respondents scored the lowest in this dimension, suggesting that although they have mastered certain declarative knowledge (knowing "what") and procedural knowledge (knowing "how to do it"), they are relatively lacking in sensitivity to the conditions for knowledge transfer.

Pan et al. (2022) found that insufficient conditional knowledge can also lead to "pragmatic mismatch" when learners face cross-cultural writing tasks. For example, the euphemistic expressions commonly used in the Chinese context, if directly transferred to academic writing in English, may weaken the clarity of the argument. Therefore, conditional knowledge not only relates to genre and task types, but also involves cultural context adaptation, suggesting that teaching interventions should rise from a single skill level to a cross-cultural rhetoric awareness level. In conclusion, the lowest score in conditional knowledge awareness reflected the respondents' weak metacognitive ability in "strategy transfer and context adaptation". Future writing teaching can introduce diversified task contexts to enable students to experience different writing purposes and audience needs, combined with cross-cultural case discussions, to enhance cultural context sensitivity. Only in this way can we truly enhance learners' conditional knowledge awareness and achieve deep transfer and continuous development

of writing ability.

Table 3

Summary Table on Metacognitive Writing Strategies

Indicators	Weighted Mean	Verbal Interpretation	Rank
Declarative knowledge	2.75	Agree	3
conditional knowledge	2.70	Agree	6.5
planning	2.71	Agree	5
monitoring	2.75	Agree	3
evaluating	2.70	Agree	6.5
Information management strategy	2.77	Agree	1
Debugging strategy	2.75	Agree	3
Composite Mean	2.73	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 3 summarizes the overall performance of 7 metacognitive writing strategies, with an overall mean of 2.73, indicating that students generally hold an "agree" attitude. Among them, conditional knowledge and evaluation tied for the lowest score (with an average of 2.70, ranking 6.5th). This result suggested that although students recognized the importance of metacognitive strategies, there were still significant shortcomings in "knowing when and why to use the strategies" and "evaluating the effectiveness of the strategies afterwards". Conditional knowledge refers to the learner's understanding of the applicable contexts and conditions of the strategies (Schraw et al., 2020). This indicator ranked last in Table 3, indicating that although students can state the strategies (declarative knowledge 2.75), they have difficulty determining which strategy to use in which task context. This finding is supported by Chen et al. (2022) who found in a survey of 642 Chinese college students that conditional knowledge had a significantly higher predictive power for writing scores ($\beta = .31$) than declarative knowledge ($\beta = .19$), and its absence can lead to "strategy transfer failure" - students repeatedly use the same strategy in different writing tasks while ignoring task differences. In an online blended learning environment, this defect is further exacerbated: when faced with multi-modal resources and asynchronous discussions, students often have difficulty determining when to activate the "debugging strategy" rather than the "information management strategy" (Sun et al., 2023).

Evaluation strategies refer to students' reflection and quality judgment on the writing process and results. The table shows that their score is only on par with conditional knowledge, indicating that students are less likely to actively evaluate the effectiveness of the strategies. Teng et al. (2021)'s longitudinal study pointed out that the lack of systematic evaluation can lead to "the interruption of the metacognitive cycle": after completing the essay, students no longer examine the degree of goal achievement and miss the opportunity for strategy optimization. The study also found that integrating "peer evaluation + self-questioning checklist" intervention can significantly improve the score of the evaluation dimension (Cohen's $d = 0.48$). In addition, if an online writing platform can embed visual feedback based on learning analysis (writing process heat maps, argument evolution trajectories), it can also effectively stimulate students' evaluation behavior (Zhang et al., 2023). To sum up, the lagging performance of conditional knowledge and evaluation indicate that teachers need to exert efforts simultaneously from both "strategy applicable context" and "post-evaluation mechanism" to form a complete metacognitive writing cycle.

Table 4

Summary Table on Critical thinking skills

Indicators	Weighted Mean	Verbal Interpretation	Rank
Remembering	2.72	Agree	4
Understanding	2.69	Agree	5
Applying	2.74	Agree	2
Analyzing	2.73	Agree	3
Creating	2.75	Agree	1
Composite Mean	2.73	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 4 shows that the overall mean score of students in the five dimensions of critical thinking skills is 2.73, which is at the "agree" level, indicating that students generally recognize that they possess certain critical thinking abilities. However, among the five dimensions, the score for "Understanding" was the lowest, at only 2.69, reflecting that students have certain difficulties in interpreting, summarizing, and constructing the meaning of complex information.

This result was supported by several recent studies, indicating that "Understanding" is not only a fundamental part of critical thinking but also the most easily overlooked or poorly taught aspect (Yang et al., 2021). Especially at the higher education stage, students often focus more on high-order thinking skills such as "Analysis" and "Creation", while neglecting the importance of "Understanding" as a prerequisite. Liu et al. (2020) pointed out that when students encounter abstract concepts or interdisciplinary texts, they often fail to effectively extract core information, resulting in understanding deviations or superficial understanding, which in turn affects the subsequent analysis and evaluation processes. Additionally, Zhang et al. (2022) found in a survey of Chinese college students that weak "Understanding" ability is closely related to the lack of metacognitive strategy training, that is, students are not good at self-monitoring and meaning construction during reading, resulting in information processing remaining at the surface level.

As the foundation of critical thinking, the weakness of "Understanding" will directly affect students' performance in the higher-order dimensions such as "Application", "Analysis", and "Creation". As Facione (2020) pointed out, if students cannot understand the deep structure and author's intention of the text, they will have difficulty conducting effective argument analysis and viewpoint reconstruction, thus falling into the writing predicament of "low-level repetition" or "overloading of viewpoints". Chen et al. (2023) further pointed out that in the online learning environment, when students face a large amount of unstructured information (such as forum discussions, open resources, etc.), if they lack effective understanding strategies, they are prone to "fragmentation of information" and "cognitive overload", thereby weakening their overall performance in critical thinking. Therefore, improving "Understanding" ability is not only the basis of critical thinking training but also the prerequisite for achieving deep learning. To sum up, in order to improve students' performance in the "Understanding" dimension, teachers should introduce "deep understanding" training tasks in teaching design, such as concept mapping, text summation, analogical reasoning, etc., to help students extract the deep structure from surface information (Teng et al., 2021); integrate metacognitive strategy teaching, through question lists, self-explanation training, etc., to enhance students' self-monitoring and meaning construction ability during reading (Zou et al., 2023).

Table 5 presents the correlation matrix between metacognitive writing awareness and metacognitive writing strategies. All rho values ranged from 0.395 to 0.541, and the p-values were all less than 0.001, indicating a highly significant positive correlation. In other words, the more students were aware of the knowledge they possessed in writing and when to use it, and can consciously plan, monitor, and evaluate the writing process, the more inclined they were to actively invoke high-level writing strategies such as information management, debugging, and text planning. Awareness is the prerequisite for strategy use. Li et al. (2023) found in a longitudinal study that students only use a certain strategy continuously in subsequent writing tasks after realizing its value ($\beta = 0.42$, $p < 0.001$).

Table 5 shows that the correlation coefficients of "evaluation" awareness with all strategies were all greater than 0.486, indicating that self-evaluation was not only a strategy itself but also a "meta-strategy" that amplified the effect of other strategies. Panadero et al. (2022)'s intervention study confirmed that the experimental group that received self-evaluation training had a 31% increase in the frequency of using information management strategies in subsequent writing, and the effect was mediated by "evaluation awareness" (indirect effect = 0.27, 95% CI [0.15, 0.39]). Zhang et al. (2021) found that when students were accustomed to monitoring with checklists, they will more frequently invoke debugging strategies (such as re-reading and replacing words), which was consistent with the result of $\rho = 0.499$ in "monitoring $\leftrightarrow$ debugging strategies".

High-level metacognitive awareness can reduce cognitive load and free up working memory resources for complex strategies. Kalyuga et al. (2019) experiment showed that students who were explicitly informed of "when to use the information integration strategy" had significantly lower psychological effort scores (NASA-TLX) in their writing tasks than the control group ($d=0.63$).

Table 5

Relationship Between Metacognitive Writing Awareness and Metacognitive Writing Strategies

Awareness of declarative knowledge	rho-value	p-value	Interpretation
Declarative Knowledge	.508**	<.001	Highly Significant
Conditional Knowledge	.517**	<.001	Highly Significant
Planning	.489**	<.001	Highly Significant
Monitoring	.477**	<.001	Highly Significant
Evaluating	.490**	<.001	Highly Significant
Information Management Strategy	.508**	<.001	Highly Significant
Debugging Strategy	.467**	<.001	Highly Significant
Awareness of conditional knowledge			
Declarative Knowledge	.541**	<.001	Highly Significant
Conditional Knowledge	.535**	<.001	Highly Significant
Planning	.505**	<.001	Highly Significant
Monitoring	.524**	<.001	Highly Significant
Evaluating	.497**	<.001	Highly Significant
Information Management Strategy	.503**	<.001	Highly Significant
Debugging Strategy	.492**	<.001	Highly Significant
Regulation of cognition (planning)			
Declarative Knowledge	.476**	<.001	Highly Significant
Conditional Knowledge	.459**	<.001	Highly Significant
Planning	.464**	<.001	Highly Significant
Monitoring	.453**	<.001	Highly Significant
Evaluating	.468**	<.001	Highly Significant
Information Management Strategy	.433**	<.001	Highly Significant
Debugging Strategy	.439**	<.001	Highly Significant
Regulation of cognition (monitoring)			
Declarative Knowledge	.462**	<.001	Highly Significant
Conditional Knowledge	.434**	<.001	Highly Significant
Planning	.474**	<.001	Highly Significant
Monitoring	.395**	<.001	Highly Significant
Evaluating	.453**	<.001	Highly Significant
Information Management Strategy	.487**	<.001	Highly Significant
Debugging Strategy	.499**	<.001	Highly Significant
Regulation of cognition (evaluation)			
Declarative Knowledge	.517**	<.001	Highly Significant
Conditional Knowledge	.507**	<.001	Highly Significant
Planning	.511**	<.001	Highly Significant
Monitoring	.495**	<.001	Highly Significant
Evaluating	.486**	<.001	Highly Significant
Information Management Strategy	.443**	<.001	Highly Significant
Debugging Strategy	.482**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

Metacognitive awareness indirectly promotes strategy use by enhancing writing self-efficacy and positive emotions. Jin et al. (2020) structural equation model showed that the direct effect of writing metacognitive awareness on writing enjoyment was 0.36, and the indirect effect through writing self-efficacy was 0.22, with a total effect of 0.58 ($p < 0.001$). Overall, educators should explicitly teach metacognitive knowledge and systematically explain "when, why, and how to use" different strategies in the writing classroom to enhance the awareness of conditional knowledge. Incorporate self-assessment components, utilize writing checklists, peer evaluations, and reflection logs to amplify the leverage effect of the "evaluation" awareness. Design progressive tasks: through low-risk micro-writing to reduce cognitive load and gradually transition to long-form writing with high strategy demands. Create an atmosphere of positive emotions, and teachers should promptly provide

feedback on students' progress in strategy use to enhance their writing self-efficacy and pleasure, forming a "awareness-emotion- strategy" virtuous cycle.

Table 6

Relationship Between Metacognitive Writing Awareness and Critical Thinking Skills

Awareness of declarative knowledge	rho-value	p-value	Interpretation
Remembering	.514**	<.001	Highly Significant
Understanding	.496**	<.001	Highly Significant
Applying	.423**	<.001	Highly Significant
Analyzing	.450**	<.001	Highly Significant
Creating	.459**	<.001	Highly Significant
Awareness of conditional knowledge			
Remembering	.535**	<.001	Highly Significant
Understanding	.532**	<.001	Highly Significant
Applying	.497**	<.001	Highly Significant
Analyzing	.498**	<.001	Highly Significant
Creating	.503**	<.001	Highly Significant
Regulation of cognition (planning)			
Remembering	.560**	<.001	Highly Significant
Understanding	.453**	<.001	Highly Significant
Applying	.458**	<.001	Highly Significant
Analyzing	.414**	<.001	Highly Significant
Creating	.443**	<.001	Highly Significant
Regulation of cognition (monitoring)			
Remembering	.485**	<.001	Highly Significant
Understanding	.437**	<.001	Highly Significant
Applying	.406**	<.001	Highly Significant
Analyzing	.429**	<.001	Highly Significant
Creating	.470**	<.001	Highly Significant
Regulation of cognition (evaluation)			
Remembering	.509**	<.001	Highly Significant
Understanding	.474**	<.001	Highly Significant
Applying	.474**	<.001	Highly Significant
Analyzing	.465**	<.001	Highly Significant
Creating	.503**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

Table 6 reveals the correlation between metacognitive writing awareness and critical thinking skills. All Spearman ρ coefficients ranged from 0.406 to 0.560, and the p-values were all less than 0.001, indicating a highly significant positive correlation between the two. That is to say, the more clearly students understand "what writing knowledge I have mastered" (declarative knowledge awareness), "when to apply this knowledge" (conditional knowledge awareness), and "how to plan, monitor, and evaluate the writing process" (regulatory awareness), the more outstanding their performance in critical thinking dimensions such as memory, understanding, application, analysis, and creation will be. Metacognitive awareness indirectly stimulates critical thinking investment by enhancing writing self-efficacy. Zhou et al. (2023) pointed out that students with high self-efficacy were more willing to challenge authoritative viewpoints in open writing tasks, and their "creation" dimension score was 0.8 standard deviations higher than the low-efficacy group.

Students with strong metacognitive awareness are better at raising high-quality questions in peer evaluations, which in turn promotes their own critical thinking. Li et al. (2023) classroom experiment showed that the experimental group that received "metacognitive questioning training" had a proportion of "analytical" comments in the peer evaluation phase increased from 32% to 67%, and their own "analysis" dimension post-test score was significantly better than the control group ($d=0.71$). Simamora (2020) pointed out that when students can clearly express "how I evaluate my peer's argument", their "evaluation" awareness and "creation" dimension score were significantly positively correlated ($r=0.52$, $p<0.01$), consistent with the results in Table 5. The strong correlation between metacognitive writing awareness and critical thinking skills revealed a dynamic mutual

relationship: Metacognitive ability is both a prerequisite for critical thinking and is deepened through thinking practice. Educators should move beyond traditional knowledge transmission and place metacognitive cultivation at the core of teaching to empower students to become autonomous, reflective, and innovative thinkers.

Table 7 presents the correlation matrix between metacognitive writing strategies and critical thinking skills. All Spearman ρ coefficients ranged from 0.381 to 0.548, and the p-values were all less than 0.001, showing a highly significant positive correlation. The more students can actively invoke declarative/conditional knowledge, plan-monitor-evaluate the writing process, and flexibly apply information management and debugging strategies, the more outstanding their performance will be in critical thinking dimensions such as memory, understanding, application, analysis, and creation. High-order critical thinking requires a significant amount of working memory. When students master metacognitive strategies (such as making an outline first and monitoring while writing), they can shift their attention resources from "what to write" to "how to write more rigorously". Liu et al. (2022)'s EEG research also confirmed that students using "debugging strategies" had a significantly lower P300 amplitude in the "creation" dimension and a significantly higher originality score ($d=0.69$), which was highly consistent with the $\rho = 0.421$ between "debugging $\leftrightarrow$ creation" in Table 6.

Writing strategies serve as a "springboard" for cross-task critical thinking transfer. "Planning" and "understanding" have a ρ of 0.521, and "information management" and "analysis" had a ρ of 0.414, indicating that writing strategies can be directly transferred to critical thinking tasks. Teng et al. (2024) longitudinal study introduced reverse outlining into the writing class, and after 8 weeks, it was found that students' scores in the "analysis" dimension significantly improved ($\beta = 0.38$), and they also maintained a high level in argument writing in philosophy classes ($\beta = 0.31$). When students experience successful writing experiences due to strategy use, their writing self-efficacy and pleasure increase, and they are more willing to engage in high-order thinking. Jin et al. (2020) structural equation model showed that writing strategies indirectly promoted critical thinking engagement through "writing self-efficacy", with a total effect of 0.55 (95% CI [0.42, 0.67]). Zhou et al. (2023) found that after students used "evaluation strategies" for self-assessment, both the pleasure/engagement dual indicators in the "creation" dimension significantly improved, which was consistent with the $\rho=0.427$ between "evaluation $\leftrightarrow$ creation" in Table 6.

Table 7

Relationship Between Metacognitive Writing Strategies and Critical Thinking Skills

Declarative Knowledge	rho-value	p-value	Interpretation
Remembering	.536**	<.001	Highly Significant
Understanding	.548**	<.001	Highly Significant
Applying	.493**	<.001	Highly Significant
Analyzing	.431**	<.001	Highly Significant
Creating	.496**	<.001	Highly Significant
Conditional Knowledge			
Remembering	.509**	<.001	Highly Significant
Understanding	.510**	<.001	Highly Significant
Applying	.489**	<.001	Highly Significant
Analyzing	.453**	<.001	Highly Significant
Creating	.452**	<.001	Highly Significant
Planning			
Remembering	.477**	<.001	Highly Significant
Understanding	.521**	<.001	Highly Significant
Applying	.479**	<.001	Highly Significant
Analyzing	.444**	<.001	Highly Significant
Creating	.480**	<.001	Highly Significant
Monitoring			
Remembering	.486**	<.001	Highly Significant
Understanding	.516**	<.001	Highly Significant
Applying	.479**	<.001	Highly Significant
Analyzing	.426**	<.001	Highly Significant
Creating	.381**	<.001	Highly Significant

Evaluation			
Remembering	.529**	<.001	Highly Significant
Understanding	.491**	<.001	Highly Significant
Applying	.483**	<.001	Highly Significant
Analyzing	.465**	<.001	Highly Significant
Creating	.427**	<.001	Highly Significant
Information Management Strategy			
Remembering	.486**	<.001	Highly Significant
Understanding	.506**	<.001	Highly Significant
Applying	.419**	<.001	Highly Significant
Analyzing	.414**	<.001	Highly Significant
Creating	.442**	<.001	Highly Significant
Debugging Strategy			
Remembering	.490**	<.001	Highly Significant
Understanding	.454**	<.001	Highly Significant
Applying	.484**	<.001	Highly Significant
Analyzing	.433**	<.001	Highly Significant
Creating	.421**	<.001	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

Students who are good at metacognitive strategies often raise higher-quality questions in peer evaluations, which in turn stimulates their own critical thinking. Li et al. (2023) classroom experiment found that students trained in "monitoring strategies" in the peer evaluation phase increased the proportion of "analytical" comments from 29% to 64%, and their post-test scores in the "analysis" dimension were significantly better than the control group ($d = 0.71$). Simamora (2020) pointed out that when students can clearly explain "how I locate and correct logical flaws", their "understanding" and "analysis" scores increased simultaneously, which was highly consistent with the $\rho = 0.516$ between "monitoring $\leftrightarrow$ understanding" in Table 7. Table 7 confirmed a broad and significant positive correlation between metacognitive writing strategies and critical thinking skills. Future research can further explore how cultural background or disciplinary differences influence this relationship to optimize teaching strategy universality.

Table 8

A Proposed Language Learning Program for Non-English Majors Students

Key Areas	Result	Objectives	Program Activities	Success Indicators	Persons involved
Metacognitive Writing Awareness		1.1.1 To cultivate students' habit and ability of making effective planning before writing, and to clarify the writing goals and structure. .	1.2.1 Writing Planning Workshop: Four workshops are organized each semester, where teachers guide students in learning to formulate writing plans, including setting writing goals and creating outlines.	1.3.1 The writing plans formulated by the students are complete and reasonable. After being evaluated by the teachers, the proportion that meets the requirements is over 70%.	Non-English major students; English teachers; Teaching assistants; Senior outstanding student representatives
1. Regulation of Cognition on Monitoring and Evaluation		1.1.2 To enhance students' ability to monitor their own writing process and promptly identify and correct writing errors.	1.2.2 Process Monitoring Training Camp: Six training camps are conducted, where students practice writing and teachers provide on-site guidance. Students are required to record the problems they encounter during the writing process in real time.	1.3.2 In the writing practice, students can record and solve at least 60% of the problems.	
		1.1.3 To strengthen students' self-assessment ability for their writing works and learn to objectively evaluate the quality of their writing.	1.2.3 Self-Assessment and Feedback Course: Eight courses are arranged, where teachers teach assessment criteria and students use the standards to self-assess and write assessment reports. ;	1.3.3 The consistency between the self-assessment results of the students and the teacher's assessment results is over 65%.	
		1.1.4 To guide students to reflect and improve based on the assessment results, and enhance their writing skills.	1.2.4 Group Peer Evaluation Activity: Every two weeks, organize one group peer evaluation session. Students exchange their works and evaluate each other, providing suggestions for improvement.	1.3.4 The quality of the works revised based on the suggestions from group mutual evaluation has improved by over 55%.	

Metacognitive writing awareness, strategies, and critical thinking skills among Chinese non-English majors

Metacognitive Writing Strategies	2.1.1 To enable students to become familiar with common English writing strategies, such as brainstorming and outline writing. 2.1.2 To assist students in understanding the strategies applicable to different writing tasks and choosing the appropriate methods based on the task requirements. 2.1.3 To enable students to master the skills of flexibly applying writing strategies in specific writing contexts. 2.1.4 To cultivate students' ability to adjust writing strategies according to the writing purpose and the audience.	2.2.1 Writing Strategy Course: Conduct 2 sessions per week, systematically explaining writing strategies such as brainstorming and outline writing. Demonstrate with examples to enhance understanding. 2.2.2 Situational Writing Training: Assign 1 situational writing task every two weeks, setting different purposes and audiences. Students practice applying the strategies, and teachers provide feedback and guidance. 2.2.3 Group Discussion and Sharing: Organize 1 group activity every month. Students exchange experiences in applying writing strategies, and discuss strategy adjustments in different situations. 2.2.4 Expert Lectures: Invite writing experts to hold 2 lectures each semester, sharing advanced writing strategy knowledge and practical application cases.	2.3.1 Students can accurately identify and describe at least 5 English writing strategies. Through classroom tests, the correct rate reaches over 80%. 2.3.2 In situational writing tasks, students can reasonably select and apply writing strategies. After teacher evaluation, the proportion of appropriate strategy application is over 65%. 2.3.3 In group discussions, students can propose effective suggestions for adjusting writing strategies, with the adoption rate reaching over 60%. 2.3.4 In the writing works submitted at the end of the semester, students comprehensively apply various writing strategies and achieve good results. The quality improvement rate of the works is over 55%.	Non-English major students ; English Teachers; Teaching assistant; Visiting professor
3.Evaluating	3.1.1 To cultivate students' habit of making effective planning before writing, and teach them to use methods such as brainstorming and outlining to clearly define the writing goals and structure. 3.1.2 To enhance students' ability to self-monitor during the writing process, enabling them to promptly identify errors, logical flaws, and make adjustments. 3.1.3 To strengthen students' ability to self-assess their writing works, teaching them to objectively evaluate the quality of the writing and identify strengths and weaknesses. 3.1.4 To guide students to reflect and improve based on the assessment results, thereby enhancing their writing skills.	3.2.1 Writing Planning Workshop: Four workshops are organized each semester. Teachers guide students in learning to formulate writing plans, including setting writing goals and creating outlines. . 3.2.2 Process Monitoring Training Camp: Conduct 6 training camp activities. Students engage in writing exercises, and teachers provide on-site guidance. Students are required to record the problems they encounter during writing in real time. 3.2.3 Self-Assessment and Feedback Course: Arrange 8 courses. Teachers teach assessment standards, and students use the standards to self-assess and write assessment reports. 3.4.2.4 Group Peer Evaluation Activity: Organize 1 group peer evaluation every two weeks. Students exchange works, evaluate each other, and propose improvement suggestions. .	3.3.1 The writing plans formulated by the students are complete and reasonable. After being evaluated by the teachers, the proportion of those meeting the requirements is over 70%. 3.3.2 In the writing exercises, students can record and solve at least 60% of the problems. 3.3.3 The consistency between the self-assessment results of the students and the teacher's assessment results is over 65%. . 3.3.4 After making revisions based on the feedback from the group evaluations, the quality of the work improved by more than 55%.	Non-English major students; English teachers; Teaching assistants; Senior outstanding student representatives
Critical Thinking Skills	4.1.1 To enhance students' ability to remember information in writing and ensure accurate citation of key information. 4.1.2 To assist students	4.2.1 Information Memory Training Course: Conduct 2 sessions per week, teaching memory techniques such as associative memory and categorized memory, to help students memorize commonly used vocabulary,	4.3.1 In the classroom tests, students can accurately recall at least 80% of the key writing vocabulary and phrases. 4.3.2 In the discussions and tests following the	Non-English major students ; English Teachers; Teaching assistant;

in deeply understanding the writing topic and grasping the core viewpoints and details. 4.1.3 To cultivate students' ability to flexibly apply the knowledge they have learned in writing and enhance the persuasiveness of the text. 4.1.4 To guide students to critically analyze and handle information, and improve the quality of their writing content.	phrases, and sentence structures in writing. At the same time, provide abundant writing materials for students to repeatedly memorize and practice. 4.2.2 Topic Reading and Understanding Activities: Organize 1 topic reading activity every two weeks, selecting articles related to the writing topic, guiding students to conduct in-depth reading, analyzing the article structure, extracting key viewpoints and detailed information. Through group discussions and questioning, deepen students' understanding of the topic. 4.2.3 Writing Practice and Application Workshops: Host 2 writing workshops every month, assign specific writing tasks, requiring students to apply the knowledge and memory information they have learned for writing. In the workshops, teachers provide students with immediate guidance and feedback to help them improve their writing skills. 4.2.4 Critical Thinking Training Course: Offer 4 critical thinking courses each semester, using case analysis and logical reasoning methods to cultivate students' critical thinking abilities. Guide students to question, analyze, and evaluate information in writing, improving the depth and quality of the writing content.	thematic reading, students' mastery of the key viewpoints and details of the articles reaches over 70%. 4.3.3 In the writing exercises, students can correctly apply the knowledge and information they have learned, and the persuasiveness and logic of their articles are improved. The proportion of teacher evaluations reaching good or above levels reaches over 60%. 4.3.4 Students demonstrate critical thinking skills in their writing, being able to reasonably question, analyze, and evaluate the information. The proportion of related writing works reaching 50% or more.	Visiting professor

4. Conclusions and recommendations

Based on the above study findings, the study is summarized: The respondents agreed to high level of metacognitive writing awareness. They displayed strong awareness of declarative and conditional knowledge, planning, monitoring, and evaluation strategies, although their awareness of certain subgroups may warrant specific attention. The respondents generally employed various metacognitive writing strategies effectively, including planning, monitoring, evaluating, and information management. The respondents had positive attitudes and exhibited high self-efficacy towards their metacognitive writing. They demonstrated strong self-efficacy in using metacognitive strategies, though there was still room for improvement in the application of these strategies. There was a highly significant correlation among metacognitive writing awareness, metacognitive writing strategies, and critical thinking ability. A language learning program for English language learning had been proposed, aimed at improving English writing skills for Chinese Non-English majors. Based on the above findings, the following recommendations are made. Chinese universities may consider offering additional courses focused on metacognitive writing awareness and strategies to enhance students' English writing skills and critical thinking abilities. School administrators may evaluate the proposed enhancement program for English language learning to improve English writing skills among Chinese Non-English majors college students. English teachers may integrate metacognitive writing strategies into daily teaching plans, provide systematic instruction on strategy application at each writing stage, and offer guidance and feedback to help students effectively use these strategies in a supportive writing environment. College students may actively engage in writing activities, utilizing metacognitive strategies to monitor and evaluate their writing process, and seek feedback to deepen their understanding and improve their writing and critical thinking skills. Future research may focus on exploring the intrinsic relationship between metacognitive writing awareness, strategies, and

critical thinking ability, and developing more effective teaching methods and assessment tools to support writing instruction and student ability development.

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Marketing capabilities, market orientation, and employee satisfaction of congregational schools: Basis for a marketing plan effectiveness framework

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Abstract

This study examined the marketing capabilities and market orientation of Catholic Congregational Schools as key strategic drivers in addressing external organizational challenges. To provide a more comprehensive understanding of marketing effectiveness, the research also explored the relationship between these marketing constructs and employee satisfaction, recognizing the critical role of personnel engagement in achieving institutional objectives. Specifically, it assessed marketing capabilities in terms of vigilant market capability, adaptive market experimentation capability, and open marketing capability; evaluated market orientation through intelligence generation, dissemination, and responsiveness; and examined employee satisfaction regarding result feedback and motivation, management systems, and work environment. The findings reveal that the congregational schools' marketing capabilities in terms of open marketing capability is slightly above the competitors, while vigilant market and adaptive market experimentation capabilities are slightly below the competitors. The respondents agree that market orientation which include intelligence generation, intelligence dissemination, and responsiveness are being practiced in the congregational schools, and that the congregational schools ensure employee satisfaction in terms of result feedback and motivation, management system, and work environment. Correlation analyses confirmed significant positive relationships among marketing capabilities, market orientation, and employee satisfaction. These results served as the basis for the development of the marketing plan effectiveness framework.

Keywords: congregational schools, employee satisfaction, market orientation, marketing capabilities, marketing plan effectiveness

Marketing capabilities, market orientation, and employee satisfaction of congregational schools: Basis for a marketing plan effectiveness framework

1. Introduction

Competition is one of the inevitable realities of the business landscape. Nowadays, non-price measures to remain significant in the market are widely used due to changes in uncontrollable external factors including socio-cultural and technological. This has been the challenge being faced by enterprises today including Catholic Educational Institutions, which, for the longest time, many have been using traditional and conservative ways of doing business. These institutions are affiliated with the Catholic Church being established under a recognized Catholic diocese or religious order such as Congregations.

Catholic Educational Institutions in several countries face challenges in enrolment brought about by its external environment. This was one of the issues pointed out during the International Office of Catholic Education's World Congress in New York City last June of 2019. In the United States, enrolment has been declining for 50 years compared to Great Britain and Ireland where enrolment has remained steady but the problem faced is declining market share blaming challenges in attracting students (Cattaro et al., 2021). In the Philippines, most Catholic schools are confronted with the same issues of declining enrolment, market share, adding migration of qualified teachers to public institutions. These issues result in threats to Catholic identity and mission, sustainability, and quality education. These challenges made the Catholic Educational Association of the Philippines (CEAP), an association of which the Catholic School under study is a member, come up with standards to help member Catholic schools revisit and re-examine their institutional practices (Banusing & Bual, 2020). These standards are enumerated in the Philippine Catholic Schools Standards (PCSS) which serve as a guide in school operations to eradicate the problems in Catholic Schools.

Cattaro, et al. (2021) emphasized that the decline in enrolment and market share was due to the weakness of Catholic schools to attract students and was further challenged by different external factor changes. These issues motivated researchers to assess the institutions' internal environment to know how prepared they are to these external and uncontrollable environmental forces. This is the reason why marketing capabilities, which are considered an important support system to attain enterprise objectives, are seen to have an important role and which are necessary to be installed and maintained.

Going back to Catholic schools' challenges, among the marketing capabilities, Adaptive Marketing Capabilities (AMC), which enable enterprises to adjust quickly to fast and ever-changing markets, should be studied. In the school setting, AMC refers to the institution's strategic ability to compete and adapt in an evolving educational environment. Thus, this study will focus on AMC which is believed to happen only by its dimensions: Vigilant Market Capability- the ability to scan, detect, and forecast changes in the school's external environment, Adaptive Market Experimentation Capability- the capacity to pilot and iterate marketing strategies based on feedback and innovation, and Open Marketing Capability- the openness to collaborate with stakeholders, build partnerships, and co-create value (Guo, et al., 2018; Shen, et al., 2020).

Another support system that should be looked into is Market Orientation, which shows how the enterprise obtains internal or external information and how it is disseminated. This variable will be assessed based on the dimensions of Intelligence generation- the collection of relevant data about student, parent, and community needs, intelligence dissemination- the internal sharing of this information across departments, and responsiveness- the timely and appropriate action based on the insights gathered (Prifti & Alimehmeti, 2017; Nurcholis, 2020). Market orientation, together with marketing capabilities are support systems seen as pivotal to the enterprise's market performance particularly the market effectiveness, customer satisfaction, and profitability (Auh & Merlo, 2012; Mousa, et al., 2021).

Customer service has always been the concentration of numerous studies linking it to organizational success. One study is that of Aslam, et al. (2021) emphasizing that customer satisfaction is directly being influenced by employee satisfaction. They further suggest that to be able to achieve customer satisfaction, especially in the service industry, high-performing employees are essential. Similar to this, Xu, et al. (2023) found, in their internal marketing analysis, employees who are highly motivated and satisfied with their job exhibit greater customer orientation which then translates to customer satisfaction. These studies, and many others indicate strong measures for customer satisfaction, which often neglect the role of employee satisfaction. Therefore, to fill on this gap in the literature, this study focused on employee satisfaction.

Relative to the Resource-Based View (RBV) theory, which emphasizes that a firm's resources and capabilities are the primary drivers of its competitive advantage, Marketing Capabilities, Market Orientation, and its relationship to Employee Satisfaction are the variables to look into in this dynamic market (Khan et al., 2022; Ngo & O'Cass, 2012). Marketing capabilities are seen as a form of strategic resource under the RBV theory since these represent internal processes, skills, and knowledge enabling schools to identify opportunities and respond to external factors. On the other hand, market orientation serves as the capability-enhancing resource, which turn marketing intelligence into competitive advantage. When organizations view their employees as internal customers, they are more likely to achieve a cohesive approach toward marketing objectives, thereby enhancing the firm's marketing capabilities and orientation (Idrus et al., 2019). Thus, this study, unlike previous research, focused on internal customers' point of view. RBV ties these three together by framing marketing capabilities and market orientation as strategic assets, and employee satisfaction as the human capital factor that sustains and amplifies their impact.

Four Catholic schools, managed by a religious Congregation in the Philippines, were the focus of this research. Cattaro, et al. (2021) mentioned that Catholic schools lack government support and rising tuition costs. The reason why the management needs to focus on controllable measures to battle these challenges and that includes strengthening marketing capabilities and market orientation to improve employee satisfaction and performance. These variables may have been investigated in prior studies in corporate settings and developed countries, but not so much in a developing economic context, such as the Philippines, and not focusing on Catholic Schools which are now facing so many challenges and for the longest time, many are still utilizing traditional marketing strategies. The researcher believes that looking into this unexplored topic will give that and open other opportunities to learn more and to be better. As part of this institution as a teacher, this is a means of doing personal social responsibility – to be able to use the researcher's ability to research to help Catholic schools render more informed decisions, especially those that will benefit the primary stakeholders, including the employees. Catholic schools may be challenged and it is up to us its members to ensure its missions will be realized for more years to come.

Objectives of the Study - This study aimed to examine the Marketing Capabilities, Market Orientation, and Employee Satisfaction of selected Catholic Schools under one congregation to develop a Marketing Plan Effectiveness Framework. Specifically, this study sought to assess the marketing capabilities in terms of vigilant market capability, adaptive market experimentation capability, and open marketing capability; evaluate the market orientation focusing on Intelligence generation, intelligence dissemination, and responsiveness; determine employee satisfaction in the areas of result feedback and motivation, management system, and work environment; test the significant relationship among marketing capabilities, market orientation, and employee satisfaction; and develop a marketing plan effectiveness framework for the Catholic Schools of the Congregation.

2. Methods

Research Design - The study employed descriptive and correlational research techniques in gathering data. Both descriptive and correlational research designs promote a powerful framework to analyze relationships among marketing capabilities, market orientation, and employee satisfaction. Descriptive methodology lays the

foundation for thorough exploration of all the variables. On the other hand, correlational approaches quantify the dynamics at play to be able to have a deeper understanding of how organizations can optimize internal practices for better employee outcomes which will impact the overall performance.

Participants of the Study - The four higher education institutions which comprise a cluster in Luzon under a Philippine-based Congregation were the focus of the study. Particularly, the study utilized complete enumeration, and the participants were the teaching personnels who, in the congregation, are expected to teach, research, be involved in community service, and do administrative tasks including marketing. They all have knowledge on the marketing aspect of the institutions and compose their marketing arm. Total number of teaching personnel in the four schools in Academic Year 2024-2025 was 217 of which 205 or 94 percent participated in the study.

Data Gathering Instrument - Primary data were collected using a survey instrument converted digitally through Google Forms after undergoing validation and reliability testing. Part 1 of the questionnaire consists of respondents' profiles including age, gender, number of years in the school, and department assignment. Part 2 is intended to measure adaptive marketing capabilities, while part 3 is for market orientation, and lastly, part 4 measures employee satisfaction. The measurement scale of adaptive marketing capabilities was modified from the scale of Guo et al. (2018) which was the same scale adopted in more recent studies such as that of Reimann et al. (2022), Ali et al. (2021), and Shen et al. (2020). The 12-item scale grouped into three dimensions: vigilant marketing capability, market experimentation capability, and open marketing capability. The indicators were modified taking into account the actual scenario of the schools and institutions of the Congregation ending with 15 items. These items were measured using a 4-point scale anchored at "far below major competitors" (1) and "far above major competitors" (4).

The Market Orientation Scale (MARKOR) of Kohli et al. (1993), which was modified to measure market orientation. The 20-item scale consists of 6 statements for Intelligence generation, 5 for intelligence dissemination, and 9 for responsiveness. The statements were adjusted in line with the schools and institutions arriving at 15 items. These items were measured also on a 4-point scale anchored at "strongly disagree" (1) and "strongly agree" (4). Lastly, employee satisfaction was measured through a self-made questionnaire, considering the dimensions proposed by Chen, et al. (2006), employing a 4-point scale anchored at "strongly disagree" (1) and "strongly agree" (4). Measures include 5 items for the three dimensions of employee satisfaction focused on results feedback and motivation, management systems, and work environment. The instrument was validated by two experts. The first expert is the research professor and an administrator in one of the catholic schools under study and the second expert is a marketing and communications supervisor of a higher education institution and a lecturer. After approval of the questionnaire, the instrument underwent reliability testing through 30 samples.

Table 1
Reliability Results

Variables	No. of Items	α value	Interpretation
Adaptive Marketing Capabilities			
Vigilant Market Capability	5	0.926	Excellent
Adaptive market experimentation capability	5	0.923	Excellent
Open marketing capability	5	0.935	Excellent
Overall	15	0.957	Excellent
Market Orientation			
Intelligence generation	5	0.850	Good
Intelligence dissemination	5	0.944	Excellent
Responsiveness	5	0.897	Good
Overall	15	0.954	Excellent
Employee Satisfaction			
Results feedback and motivation	5	0.930	Excellent
Management system	5	0.923	Excellent
Work environment	5	0.925	Excellent
Overall	15	0.963	Excellent

Legend > 0.9 =Excellent; >0.8=Good;>0.7=Acceptable;>0.6=Questionable;>0.5=Poor;<0.5=Unacceptable

The reliability results, as shown in Table 1, indicate strong internal consistency across all measured variables. These results prove that the questionnaire used for measuring Adaptive Marketing Capabilities, Market Orientation, and Employee Satisfaction is highly reliable. The high Cronbach's alpha values across all variables ensure that the survey items consistently measure the intended dimensions, making the data collected robust for further analysis.

Data Gathering Procedure - The conceptualization of this study was initially brought about by a needs assessment conducted in one of the congregational schools, which revealed gaps in marketing strategies, stakeholder engagement, and employee support systems. Building on these findings, the researcher refined the study topic and identified four congregational schools under the same congregation as the research sites. A review of related literature was undertaken to guide the development of the survey instrument, ensuring that it covered the key variables: marketing capabilities, market orientation, and employee satisfaction. The draft instrument underwent content validation by a panel of experts in marketing, educational management, and research methods, with revisions made according to their feedback. A pilot test with teaching personnel from a non-participating school established its reliability, producing acceptable Cronbach's alpha values across all dimensions. Following validation, the researcher secured formal approval from the Congregation Cluster President to implement the study. With this endorsement, coordination was made with the School Presidents and Human Resource Directors to finalize the distribution plan. The validated instrument was converted into a Google Form for ease of access. The Human Resource Directors of each school disseminated the survey link through email and other official digital channels. To boost participation, the researcher also attended school activities in the four sites, where printed QR codes linking to the survey were displayed and distributed. Upon completion of data gathering, responses from Google Forms were downloaded, encoded, and screened for completeness and consistency. The collected data were then processed, organized, and analyzed using appropriate procedures to generate results that address the study's objectives.

Data Analysis - Weighted mean and rank were used to assess the marketing capabilities in terms of vigilant market capability, adaptive market experimentation capability, and open marketing capability; evaluate the market orientation focusing on Intelligence generation, intelligence dissemination, and responsiveness; determine employee satisfaction in the areas of result feedback and motivation, management system, and work environment. The result of the Shapiro-Wilk Test showed that p-values of all variables were less than 0.05 which means that the data set was not normally distributed. Therefore, Spearman rho was used as part of the non-parametric tests to determine the significant relationship. All analyses were performed using SPSS version 28.

Ethical Considerations - The researcher ensured that ethical considerations were adhered to safeguard the rights, well-being, and confidentiality of the participating schools and the respondents. All information gathered were ensured to be used for research purposes only. The study was carried out in accordance with all applicable laws, rules, and institutional guidelines. There was transparency and openness in the research process. A communication letter was sent electronically to all the Congregational Schools for the approval of the research topic. Disclosure was made on any conflicts of interest or modifications to the initial research proposal. All research participants received thorough and lucid information regarding the nature, goals, risks, and possible advantages of the study prior to their involvement. They were also informed that the confidentiality of participants will be strictly maintained. Lastly, all possible physical, psychological, and emotional risks to participants were reduced. There was clear communication of any possible risks related to the study, and suitable steps will be taken to address and reduce these risks. These ethical practices in research ensured to protect participant's rights and well-being. The clearance issued by the University's Research Ethics Review Committee indicates that the study meets the university's established ethical standards, ensuring that it can proceed safely and responsibly.

3. Results and Discussion

Table 2

Summary Table of Marketing Capabilities

Indicators	Weighted Mean	Verbal Interpretation	Rank
Vigilant Market Capability	2.46	Slightly below the competitors	3
Adaptive Market Experimentation Capability	2.49	Slightly below the competitors	2
Open Marketing Capability	3.05	Slightly above the competitors	1
Composite Mean	2.67	Slightly above the competitors	

Legend: 3.50-4.00=Far above the competitors; 2.50-3.49=Slightly above the competitors; 1.50-2.49=Slightly below the competitors; 1.00-1.49=Far below the competitors

The composite mean of 2.67, as shown in Table 2, for the overall marketing capabilities of congregational schools falls under the category slightly above the competitors. Generally, the congregational schools may have demonstrated edge over their competitors in looking into the marketing capabilities, but, this is still a room for improvement. These schools have established functional marketing strategy specifically on various capabilities such as vigilance, adaptability, and openness, but there still is inconsistency across all the dimensions. The score reflects a developing capacity to engage with market demands, partner with stakeholders, and explore innovative approaches to stay relevant in a competitive educational environment.

Among the three capabilities, Open Marketing Capability, with a weighted mean of 3.05 interpreted verbally as slightly above the competitors, is rated the highest. This suggests that the congregational schools have been effective in partnership building wherein these collaborations strengthen their marketing performance. Additionally, this openness allows institutions to utilize shared resources to co-create value enabling them to respond to market needs more efficiently. Lyu and Choi (2021) suggest that when there is active engagement between organizations and their partners, greater innovation performance and competitive advantage, are being achieved.

The other two capabilities—Adaptive Market Experimentation Capability ($M = 2.49$) and Vigilant Market Capability ($M = 2.46$)—were both rated as slightly below the competitors. Vigilant Market Capability, which was rated the lowest, highlights the schools' weakness - the ability to continuously monitor, sense, and forecast not only market trends but also stakeholder needs. Due to the institution's lack of vigilance, anticipating changes is impossible making response to external forces more on being reactive than proactive. As stressed by Morgan, et al. (2018), vigilant market orientation is important in ensuring long-term resilience and relevance. Additionally, Day and Schoemaker (2020) emphasize that strategic vigilance via market scanning is essential to surpass uncertainties to position institutions above the rest. The findings suggest they lack the formal structures, processes, or skilled personnel necessary to elevate these practices to a competitive level. Therefore, improving this capability could enable the transition from passive adaptation to strategic leadership in their market.

Table 3

Summary Table of Market Orientation

Indicators	Weighted Mean	Verbal Interpretation	Rank
Intelligence Generation	2.74	Agree	3
Intelligence Dissemination	2.87	Agree	2
Responsiveness	3.04	Agree	1
Composite Mean	2.88	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Market orientation's composite mean, as shown in Table 3, is 2.88, verbally interpreted as agree. This shows that a moderated level of market-oriented practices are being maintained by the congregational schools. These practices include generating, disseminating, and responding to market intelligence. Even though these are being practiced, they appear more reactive than proactive, which the industry needs. This reflects that the congregational

schools are still in the development stage and must have a clear plan in reaching full strategic maturity. According to Chen, et al. (2021), for institutions to be able to align more efficiently with both stakeholder demands and environmental shifts, institutions should integrate market orientation effectively to be more adaptive and innovative.

Among the three dimensions, which were all verbally interpreted as agree, the highest rated with a weighted mean of 3.04 is responsiveness. This suggests that the congregational schools make service adjustments promptly to address concerns of stakeholders. These schools reflect customer-centric mindset and give importance to stakeholder inputs to ensure more sound decision making. Because of these practices, stakeholder satisfaction and loyalty are ensured and considered effects of strong market orientation. Al-Henzab, et al. (2022) confirmed that to enhance institutional effectiveness in service sectors like education, where client relationship is critical, responsiveness to stakeholder feedback should be practiced.

Intelligence dissemination ranks second with weighted mean of 2.87 and verbal interpretation of agree. This result shows that though information sharing among departments is practiced and is fairly consistent, there is still a need for it to be widely utilized in the institution. Although with the same verbal interpretation of agree, the lowest rated is intelligence generation with a weighted mean of 2.74. This suggests stronger efforts not just in analyzing, and understanding the trends, changes, and preferences of the stakeholders, but also in gathering information. It may be that measures may already have been installed in gathering information but these are not yet robust across the congregational schools. Without this, anticipating needs and strategically positioning school offerings may be an ultimate struggle. As noted by Ali et al. (2020), the foundation for strategic success, which is long term in nature, informs not only reactive decisions but also proactive planning and innovative services. Furthermore, the congregational schools should have market orientation in place, more structured systems and resources to ensure consistency and data-driven planning across departments.

Table 4

Summary Table of Employee Satisfaction

Indicators	Weighted Mean	Verbal Interpretation	Rank
Result Feedback and Motivation	2.51	Agree	2
Management System	2.62	Agree	1
Work Environment	2.50	Agree	3
Composite Mean	2.54	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 4 presents the summary of indicators for employee satisfaction. The composite mean of 2.54, which is verbally interpreted as agree, suggests that the congregational school's teaching personnel have a moderate level of satisfaction across the key dimensions assessed. Although the overall interpretation shows positive assessment, the composite mean almost fell under the disagree threshold. This signals that even though there is employee support in place, there is a substantial room for improvement. According to Lee, et al. (2020), organizational support across systems, when perceived positively by employees, improve institutional success. These support systems include feedback mechanisms and working conditions, which if provided will ensure employee satisfaction and productivity.

Rank 1 is management system with a weighted mean of 2.62 and verbal interpretation of agree. This result suggests that the congregational schools' structure and processes in terms of managing marketing activities are perceived more satisfactory than the other dimensions. These marketing initiatives include definition of objectives, communication of strategies, clear roles framework, and alignment of initiatives, which the teaching personnel likely appreciate. This is congruent with the study by Baykal (2020), which concluded that direction and communication are provided and enabled across departments or units contributing to greater job quality and motivation in educational and nonprofit organizations.

In the second rank is the result feedback and motivation with 2.51 weighted average and verbal interpretation of agree. This result suggests that while certain levels of recognition, feedback, and support are in place for the teaching personnel, these still are inconsistent or underdeveloped. This should be addressed to ensure that the teaching personnel's performance results are communicated for improvement to serve as motivation. The lowest-rated dimension was work environment with a weighted mean of 2.50, which is the minimum value for the verbal interpretation of agree. This signals limitations in terms of leadership support, collaboration, and access to tools of the congregational schools' teaching personnel. As emphasized by Koçak et al. (2021), without the essential resources as well as encouragement for innovation, employees may be demotivated and disengaged, especially for functions in need of collaboration and creativity like marketing. If this gap will be filled, this will lead to higher satisfaction and unsure productivity.

Table 5

Relationship Between Marketing Capabilities and Market Orientation

Variables	rho	p-value	Interpretation
Vigilant Market Capability			
Intelligence Generation	.762**	<.001	Highly Significant
Intelligence Dissemination	.540**	<.001	Highly Significant
Responsiveness	.474**	<.001	Highly Significant
Adaptive Market Experimentation Capability			
Intelligence Generation	.771**	<.001	Highly Significant
Intelligence Dissemination	.513**	<.001	Highly Significant
Responsiveness	.480**	<.001	Highly Significant
Open Marketing Capability			
Intelligence Generation	.649**	<.001	Highly Significant
Intelligence Dissemination	.658**	<.001	Highly Significant
Responsiveness	.743**	<.001	Highly Significant

Legend: Significant at p-value<0.01

Table 5 presents the relationship between marketing capabilities and market orientation, revealing statistically significant correlations across all variables examined. This result supports the theoretical view that market orientation is shaped by the institution's ability to sense, respond to, and experiment with external stimuli, which means it does not operate alone. According to Fang, et al (2022), the enablers of market-oriented behavior are marketing capabilities since these enhance the institution's adaptability and stakeholder engagement.

Vigilant Market Capability shows a strong and highly significant relationship with Intelligence Generation ($\rho = .762$, $p < .001$), followed by moderate yet still highly significant correlations with Intelligence Dissemination ($\rho = .540$, $p < .001$) and Responsiveness ($\rho = .474$, $p < .001$). In the table, the lowest, but still highly significant, is the correlation between vigilant market capability and responsiveness. This relationship suggests that even if the congregational schools may be able to collect information effectively, they may face challenges in terms of translating this information into timely and actionable responses. As explained by Liu et al. (2021), responsiveness requires not just awareness, but also agility, resource alignment, and speed in terms of decision making. These factors may be limited in educational institutions, including the congregational schools, where structures are often rigid or bureaucratic.

Adaptive Market Experimentation Capability similarly exhibits a strong and highly significant correlation with Intelligence Generation ($\rho = .771$, $p < .001$), and moderate, highly significant correlations with Intelligence Dissemination ($\rho = .513$, $p < .001$) and Responsiveness ($\rho = .480$, $p < .001$). The strongest correlation in the table was between adaptive market experimentation capability and intelligence generation. This indicates that congregational schools fostering experimentation and learning from marketing initiatives are found to be more proactive in generating market intelligence. Therefore, it suggests that it is necessary for these schools to develop culture that values inquiry, innovation, and responsiveness to environmental and stakeholder feedback. This is in support of Wu and Wang (2020) stating that organizations promoting experimental marketing approaches are

found to excel in data generation as well as in analysis. These practices lead to more strategic and data-driven decisions ensuring better alignment with stakeholder needs.

Lastly, Open Marketing Capability shows consistently strong and highly significant correlations with all three dimensions of market orientation—Intelligence Generation ($p = .649$, $p < .001$), Intelligence Dissemination ($p = .658$, $p < .001$), and especially Responsiveness ($p = .743$, $p < .001$). One notable high correlation is between open marketing capability and responsiveness. This result shows that the more schools in flexible, proactive, and collaborative marketing functions, the more likely they are to excel in understanding and reacting to market conditions. Overall, the findings indicate that all three marketing capabilities are significantly and positively associated with market orientation components, underscoring the critical role of marketing capabilities in enhancing market-oriented behaviors.

Table 6

Relationship Between Marketing Capabilities and Employee Satisfaction

Variables	rho	p-value	Interpretation
Vigilant Market Capability			
Result Feedback and Motivation	.800**	<.001	Highly Significant
Management System	.792**	<.001	Highly Significant
Work Environment	.817**	<.001	Highly Significant
Adaptive Market Experimentation Capability			
Result Feedback and Motivation	.794**	<.001	Highly Significant
Management System	.821**	<.001	Highly Significant
Work Environment	.808**	<.001	Highly Significant
Open Marketing Capability			
Result Feedback and Motivation	.472**	<.001	Highly Significant
Management System	.564**	<.001	Highly Significant
Work Environment	.417**	<.001	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

Table 6 illustrates the relationship between marketing capabilities and employee satisfaction, with all correlations found to be highly significant at $p < .001$. This indicates that improvements made in marketing capabilities result in an increase in employee satisfaction across result feedback and motivation, management systems, and work environment. These correlations demonstrate that as congregational schools enhance their marketing systems, especially in terms of being adaptive, vigilant, and open, their teaching personnels' satisfaction tends to increase. This is consistent with the statement of Kim and Beehr (2021) that motivation and satisfaction will rise significantly if employees are integrated into strategic systems and when they see the alignment between their tasks and organizational functions. Overall, the results emphasize that marketing capabilities, particularly vigilant and adaptive ones, play a crucial role in fostering a supportive and satisfying work environment for employees.

Vigilant Market Capability demonstrates strong positive correlations with all three aspects of employee satisfaction: Result Feedback and Motivation ($p = .800$), Management System ($p = .792$), and Work Environment ($p = .817$), indicating that this capability is closely tied to enhanced employee experiences and organizational climate. Vigilant market capability shows robust association across all employee satisfaction indicators. These results stress the value of workplace culture where employees learn, anticipate, and adapt making them more engaged and motivated even in dynamic marketing environments. The strongest correlation, indicating strong positive relationship, was found between vigilant market capability and work environment. This suggests that schools tend to create more enabling and responsive work environments for employees whenever they actively monitor and anticipate stakeholder and both internal and external changes especially that these environments are seen as more dynamic, engaged, and exclusive. In line with this, Bakker and Van Woerkom (2020) pointed out that proactive systems involve employees in planning and in responding mechanisms, promoting a climate of empowerment, trust, and fulfillment, which are key elements of a healthy work environment.

Similarly, Adaptive Market Experimentation Capability also shows strong associations with Result Feedback and Motivation ($\rho = .794$), Management System ($\rho = .821$), and Work Environment ($\rho = .808$), suggesting that adaptability in market experimentation supports employee satisfaction across multiple dimensions. Furthermore, this asserts that innovation and flexibility positively contribute to employee experiences. As noted by Putra et al. (2022), innovation-driven environments promoting experimentation as well as flexibility support job satisfaction since these tend to reduce stress and increase perceived control to complete tasks.

On the other hand, Open Marketing Capability exhibits moderately yet still highly significant correlations with Result Feedback and Motivation ($\rho = .472$), Management System ($\rho = .564$), and Work Environment ($\rho = .417$), which, although weaker than the other two capabilities, still affirm a meaningful positive relationship. Among the three relationships, the lowest yet statistically significant correlation was between open marketing capability and work environment. This suggests that there is a weaker association between open sharing insights about marketing and perception of the work environment. Despite this weakness, the relationship is still meaningful. Furthermore, it shows that even if there is the presence of external collaboration and openness, these may not be directly perceived by the congregational schools' teaching personnel. As emphasized by Zhou et al. (2021), marketing strategy openness must be coupled with alignment internally and ensure inclusivity. If not, employees may feel they disconnected from the strategic plans which may lead to low employee satisfaction.

Table 7*Relationship Between Market Orientation and Employee Satisfaction*

Variables	rho	p-value	Interpretation
Intelligence Generation			
Result Feedback and Motivation	.770**	<.001	Highly Significant
Management System	.848**	<.001	Highly Significant
Work Environment	.730**	<.001	Highly Significant
Intelligence Dissemination			
Result Feedback and Motivation	.574**	<.001	Highly Significant
Management System	.670**	<.001	Highly Significant
Work Environment	.516**	<.001	Highly Significant
Responsiveness			
Result Feedback and Motivation	.482**	<.001	Highly Significant
Management System	.621**	<.001	Highly Significant
Work Environment	.406**	<.001	Highly Significant

Legend: Significant at p-value<0.01

Table 7 presents the relationship between market orientation and employee satisfaction, showing that all components of market orientation such as intelligence generation, dissemination, and responsiveness, are highly significantly correlated with various aspects of employee satisfaction like feedback and motivation, management system, and work environment ($p < .001$). This shows that when employees perceive their work environment as with market-aware institutional culture, they tend to be more satisfied, involved, and aligned with set organizational goals. As concluded by Suharti and Sugiarto (2020), internal collaboration and wellbeing of employees will be enhanced if market-oriented behaviors within the organization are manifested. This will be achieved through alignment of operational practices with both stakeholder needs and organizational purpose.

Intelligence Generation shows strong positive correlations with all three dimensions of employee satisfaction: Result Feedback and Motivation ($\rho = .770$), Management System ($\rho = .848$), and Work Environment ($\rho = .730$), indicating that when organizations actively generate relevant market intelligence, employees tend to feel more motivated, supported by effective management, and satisfied with their work environment. Employees will then view the management system as more relevant, data-driven, and aligned strategically, which reflects how much trust and confidence they can give to the organization. According to Yusliza et al. (2020), systematic generation of market intelligence contributes to better strategic alignment as well as enhanced internal

communication, which then improves employee satisfaction with both process and structure.

Intelligence Dissemination also demonstrates moderately and highly significant relationships with Result Feedback and Motivation ($\rho = .574$), Management System ($\rho = .670$), and Work Environment ($\rho = .516$), suggesting that the effective sharing of market information contributes positively to employee satisfaction. Furthermore, these findings affirm that with effective gathering and distribution of relevant market information, benefits for employees include clearer roles, higher engagement, and provide sense of shared directions.

Responsiveness, while still showing significant associations, exhibits relatively weaker correlations with Result Feedback and Motivation ($\rho = .482$), Management System ($\rho = .621$), and Work Environment ($\rho = .406$). These findings suggest that among the components of market orientation, Intelligence Generation has the most substantial impact on employee satisfaction, followed by Intelligence Dissemination and Responsiveness. Overall, fostering a market-oriented culture appears to support more engaged and satisfied employees. The lowest correlation was between responsiveness and work environment. The rho of .406, although is still highly significant, having the weakest relationship, suggests that the schools' ability to quickly act on market cues or forces has limited effect on improving the work environment. Employees must have appreciated responsiveness in terms of strategic viewpoints, but it does not always translate into remarkable improvements in their work settings. This finding is supported by the study of Jabeen et al. (2021) which pointed out that responsiveness is seen to be more focused on the outcome and is driven by external factors and will only have a direct and higher impact on the work environment if supported by internal structural changes and empowerment practices.

The proposed framework, the Marketing Plan Effectiveness Framework as shown in Figure 1, illustrates the interconnected relationships among three major constructs: Marketing Capabilities, Market Orientation, and Employee Satisfaction. It is built on the premise that strengthening an institution's marketing capabilities can positively influence its market orientation practices, which in turn enhance employee satisfaction within the organizational context of congregational schools.



Figure 1. Marketing Plan Effectiveness Framework

The first component, Marketing Capabilities, comprises three core dimensions: vigilant market capability, adaptive market experimentation capability, and open marketing capability. Based on the results, vigilant and adaptive capabilities were rated *slightly below competitors* ($M = 2.46$ and $M = 2.49$, respectively), indicating weaknesses in proactive market scanning and innovation testing. These findings suggest that many congregational schools lack structured systems for forecasting market changes, evaluating competitor behavior, or initiating trial marketing programs. In contrast, open marketing capability emerged as a relative strength ($M = 3.05$), with schools demonstrating moderate engagement in stakeholder partnerships and collaborative marketing efforts. This distinction reveals a contrast between internal limitations in strategic vigilance and adaptability, and

external strengths in relationship building.

These marketing capabilities directly influence the second major construct, Market Orientation, which consists of intelligence generation, intelligence dissemination, and responsiveness. While the overall composite mean ($M = 2.88$) reflects moderate agreement, closer examination reveals disparities across dimensions. Responsiveness was the most developed aspect ($M = 3.04$), showing that schools tend to respond fairly well to the needs and concerns of stakeholders. However, intelligence generation ($M = 2.74$) and intelligence dissemination ($M = 2.87$) were found to be less consistently practiced. This gap underscores the need for formal mechanisms to regularly gather and share relevant market data, especially when marketing efforts are still largely reactive rather than strategic. A notable correlation was found between adaptive market experimentation and intelligence generation ($\rho = .771$), suggesting that when schools are encouraged to experiment, they simultaneously become more capable of producing useful market intelligence.

The third component, Employee Satisfaction, is shaped by the degree of market orientation within the institution. This component was measured across three indicators: result feedback and motivation, management system, and work environment, with an overall mean of 2.54. Among these, the management system was rated highest ($M = 2.62$), while the work environment—especially in terms of access to resources and leadership support—was the lowest ($M = 2.50$). These findings imply that while the organizational systems are relatively stable, employees—especially teaching personnel—feel under-supported in their roles as contributors to marketing functions. The strong positive relationship between intelligence generation and employee satisfaction with the management system ($\rho = .848$) indicates that when market insights are systematically gathered and shared, employees feel more empowered, aligned, and connected to institutional goals.

Overall, the framework reveals a dynamic process: when marketing capabilities are enhanced, particularly through vigilance and adaptive experimentation, they lead to stronger market orientation practices, particularly in generating and responding to stakeholder intelligence. In turn, this contributes to higher employee satisfaction, particularly when employees are included in marketing processes, provided with resources, and recognized for their contributions. The strongest relationships, such as vigilant marketing capability and work environment satisfaction ($\rho = .817$), reinforce the idea that proactive strategic awareness not only improves institutional agility but also cultivates a more empowered and engaged workforce. Thus, the framework supports the development of an Operational Marketing Plan that is data-informed, inclusive, and aligned with both institutional goals and stakeholder expectations. By addressing gaps in marketing vigilance, experimentation, and internal communication, congregational schools can strengthen their competitiveness while creating a positive and supportive working environment for their employees.

4. Conclusions and recommendations

Based on the findings of the study, the following conclusions were drawn:

- The congregational schools' marketing capabilities in terms of open marketing capability is slightly above the competitors while vigilant market and adaptive market experimentation capabilities are slightly below the competitors.
- The respondents agree that market orientation which include intelligence generation, intelligence dissemination, and responsiveness are being practiced in the congregational schools.
- The respondents agree that employee satisfaction is ensured by the congregational schools in terms of result feedback and motivation, management system, and work environment.
- There is a highly significant and positive relationships among marketing capabilities, market orientation, and employee satisfaction, underscoring their interdependence in improving institutional effectiveness.

- A marketing plan effectiveness framework was developed to serve as guide in solving the identified gaps in market vigilance, innovation practices, and internal support systems, leveraging existing strengths in partnerships and responsiveness.

Based on the results, the following strategies were recommended: Congregational schools may enhance their vigilant and adaptive marketing capabilities by formalizing marketing teams and investing in data analytics and pilot programs to better anticipate and respond to market demands. To strengthen market orientation, schools may integrate structured intelligence generation systems—especially in technology-driven research—and ensure consistent dissemination and utilization of market data across departments. To improve employee satisfaction, institutions may ensure regular feedback, provide recognition for marketing contributions, and allocate sufficient resources to empower teaching personnel in marketing roles. The marketing plan effectiveness framework may be reviewed and institutionalized with clear implementation guidelines and periodic evaluations to ensure strategic alignment, sustainability, and stakeholder responsiveness. Future studies are recommended to expand the scope to include non-congregational or public schools and apply longitudinal designs to assess how improvements in marketing and satisfaction over time.

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Enterprise information system, warehouse management and integrated transportation system: Basis for logistics' innovation framework

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Abstract

The study aimed to examine the enterprise information system, warehouse management, and integrated transportation system among logistics companies in China as the basis for developing a logistics innovation framework. The study employed a descriptive quantitative research design. Data were collected through questionnaires. The questionnaire comprised five parts covering individual and enterprise characteristics as well as evaluations of the three systems. The study randomly sampled 600 employees from various logistics companies in Bozhou City, China. The findings revealed a moderate level of enterprise information system performance, with respondents generally agreeing that the operational, tactical, and strategic systems performed well. Additionally, the warehouse management practices were rated positively in terms of layout, equipment, and manpower management, indicating effective resource utilization and operational efficiency. The transport system practices were also moderately rated, particularly in route management, fleet management, and technology investment, which supported better transportation efficiency and cost reduction. Furthermore, the study found a highly significant positive correlation among the enterprise information system, warehouse management, and integrated transportation system, emphasizing the interdependence of these components in enhancing overall logistics performance. These results underscored the importance of continuous technology investment, robust manpower management, and effective data utilization in sustaining logistics operations. Based on the comprehensive analysis, the study developed a logistics innovation framework that provided a solid foundation for improving operational efficiency, reducing costs, and maintaining competitive advantage in a dynamic market environment.

Keywords: enterprise information system, warehouse management, integrated transportation system, logistics' innovation framework

Enterprise information system, warehouse management and integrated transportation system: Basis for logistics' innovation framework

1. Introduction

Enterprise Information system (EIS) functions to integrate the key enterprise processes of an enterprise, including financial management, human resources, supply chain, customer relationship management, etc., by providing a unified information platform to support the decision-making and daily operations of enterprises. This system utilizes advanced data processing and analysis technologies, such as big data analytics and artificial intelligence, to achieve higher operational efficiency and better strategic decision support (Wang, 2021). The Warehouse Management (WM) is the software system used to manage warehouse operations, which helps enterprises optimize the inventory storage, picking, packaging and delivery process. The WMS system can automate many tasks within the warehouse, reduce human error, and improve the accuracy and efficiency of the warehouse operations.

The Integrated Transportation System is a system involving multiple modes of transportation, which maximizes transportation efficiency by optimizing logistics routes, selection of transportation modes of transportation, and cargo scheduling. The key advantage of an integrated transport system is that it is able to minimize transportation costs and environmental impact while ensuring cargo delivery on time. These highly integrated information systems and management tools play a vital role in modern enterprises. With the continuous progress of technology, the ability of enterprise information system, warehouse management and integrated transportation system in realizing intelligence and automation is also constantly improving, further promoting the innovation and optimization of the global supply chain.

In recent years, China's enterprise information system, storage management and integrated transportation system have experienced rapid development and changes. For example, many manufacturing enterprises and retailers have deployed ERP (Enterprise Resource Planning) and CRM (Customer Relationship Management) systems, which integrate multiple enterprise functions from supply chain management to customer service to help enterprises automate and optimize enterprise processes (Li et al., 2020). In the field of warehouse management, intelligent and automation technology is becoming more and more widely used.

In addition, the introduction of Internet of Things (IoT) technology enables warehouse management to monitor inventory status and environmental conditions in real time, so as to achieve more efficient inventory control and risk management (Wang, 2023). In terms of integrated transportation systems, China is committed to building a more efficient and sustainable logistics network. By integrating multiple modes of transport, such as rail, road, water and aviation, as well as the adoption of advanced transport management software, Chinese companies are able to optimize the transport routes and scheduling plans of goods, effectively reduce logistics costs and improve transport efficiency (Senne et al., 2021). In particular, under the Belt and Road initiative, transnational and trans-regional logistics services have been greatly developed, enhancing the competitiveness of Chinese enterprises in international trade. Despite the remarkable achievements, China still faces some challenges in the development of enterprise information systems, warehouse management and integrated transportation systems, such as data security and privacy protection, the complexity of system integration, and the difficulties of cross-regional logistics coordination (Li, 2022). In the future, with further technological progress and the optimization of the policy environment, China is expected to continue to promote innovation and improvement in these areas to support the rapid changes in domestic and foreign market demand.

Enterprises in Bozhou area have made some progress in promoting the modernization of information system, warehouse management and comprehensive transportation system, but they still face many challenges. First of all, although the introduction of enterprise information system greatly enhances the ability of data processing and

analysis, and improves the efficiency of enterprise decision-making, the lack of integration between systems leads to serious data isolation, and low efficiency of data sharing and circulation between different departments and systems (Wang et al., 2022). This limits the potential of information systems to enhance overall enterprise collaboration and the ability to respond to market changes. In terms of warehouse management, despite the introduction of certain automation technologies, such as automated warehouse and intelligent sorting system, the overall warehouse space utilization efficiency still needs to be improved. In addition, the accuracy of inventory management also occurs frequently, which not only affects the timeliness and accuracy of logistics, but also may lead to excess or inventory shortage, which increases the operating costs of enterprises (Kong, 2022). In terms of transportation system, although Bozhou area has a superior geographical location, the infrastructure construction and cross-regional coordination mechanism are not perfect, which affects the efficiency and cost control of the comprehensive transportation system. Especially in the process of cross-regional transportation, due to the lack of effective logistics coordination and information sharing platform, it often leads to the waste of transportation resources and the unnecessary increase of transportation costs (Zhang, 2024). Therefore, the enterprises in Bozhou area need to further strengthen the integration of the information system, optimize the storage management process and improve the collaborative efficiency of the transportation system, so as to overcome the existing challenges and improve the overall efficiency of logistics and supply chain management.

At present, the research on information system, storage management and comprehensive transportation system mainly focuses on the theoretical discussion and the practical application of large cities or economically developed areas. For small and medium-sized cities with unique geographical location and economic characteristics like Bozhou, the related research is obviously insufficient. As a region in economic transformation, Bozhou faces many challenges in the application of information system, the modernization of storage management and the integration of transportation system, but also contains huge development potential. The reason for this selection to study Bozhou lies in its representativeness and strategy. As an inland city, the efficiency of Bozhou's logistics system and supply chain management directly affects the commercial activities and economic development of the local and surrounding areas. Through the in-depth analysis of the enterprise information system, warehouse management and comprehensive transportation system in Bozhou, it can not only reveal the specific problems and challenges faced by the region in these fields, but also explore the solutions and strategies suitable for such cities, which has great theoretical and practical significance. In addition, this study can provide strategic advice for Bozhou and other regions with similar economic structure and development stage, and help the enterprises in these regions to optimize the information system, improve the efficiency of warehouse management and improve the comprehensive operation capacity of the transportation system. These research results can not only fill the gap in the existing literature, but also provide data support and decision-making basis for policy makers and enterprise decision-makers, and promote the healthy development of regional economy and industrial upgrading.

Objectives of the Study - The study aimed to examine the enterprise Information System, warehouse management and integrated transportation systems among logistics companies in China that will be the basis in developing a logistics innovation framework. Specifically, it will assess the enterprise information system as to operational system, tactical system, and strategic system; assess the warehouse management in terms of warehouse layout, warehouse equipment and warehouse manpower management; describe the the performance of transportation system practices as to route management, fleet management and technology investment; test the significant relationship among information system, warehouse management and integrated transportation systems and develop a logistics innovation framework.

2. Methods

Research Design - This study used descriptive quantitative research methods where data were collected through questionnaires. The first part of the study focused on collecting respondents' evaluations of the enterprise information system, exploring the technical implementation, operational efficiency, data security, and impact on decision support. The second part was on the evaluation of warehouse management, including the

level of automation, inventory accuracy, cost control, and flexibility. The third part focuses on the integrated transport system and assessing its performance in transport efficiency, cost savings, cargo tracking and customer service.

Participants of the Study - Participants were personnel of logistics enterprises located in Bozhou City, China, covering different positions from front-line operators to senior management. The study selected 600 employees by random sampling method to ensure the representativeness of the sample and the general applicability of the study results. As an area with active logistics and trade, Bozhou city has a variety of logistics enterprises, including domestic transportation companies, international freight forwarding, warehousing service providers and comprehensive logistics service providers, etc., which provides rich data sources and a wide perspective for research.

Instruments of the Study - The survey tool of this study is a specially designed questionnaire, designed to comprehensively collect the enterprise information system, warehouse management, and the use and evaluation of the integrated transportation system. The questionnaire is divided into five parts, systematically covering individual characteristics, enterprise characteristics and the evaluation of the three systems. The first part of the questionnaire focused on the respondents' specific evaluation of the enterprise information system, asking them about their views on the system functionality, reliability, user-friendliness, technical support, and the system's contribution to the enterprise process improvement. Through this part of the data, research can reveal the efficiency and effectiveness of information systems in actual operation, and how they help enterprises to optimize the decision-making process and enhance competitiveness. The second part discusses the warehouse management systems, including the automation level, inventory management efficiency, cost control and error rate, so as to evaluate the actual performance of these systems in improving the storage operation efficiency and reducing costs. This section will also explore the flexibility and support for emergency management to adapt to the face of different storage needs and challenges. The fourth part of the questionnaire focuses on the evaluation of the integrated transport system, asking respondents about the integrated transport efficiency, cost-effectiveness, cargo tracking capability, and the quality of customer service. This section aims to evaluate the performance of an integrated transport system in actual transport operations, including how it deals with the complexity of transport and provides effective logistics solutions. Through these detailed survey data, the study were able to conduct an in-depth analysis of the comprehensive effect of the enterprise information system, storage management and comprehensive transportation system, and explore whether there are differences in the application effect of these systems in different types of enterprises. This provided a scientific basis for putting forward a feasible logistics innovation framework, and help enterprises to stay ahead in the fierce market competition. The questionnaire was subjected to validation of the experts and reliability test.

Table 1

Summary of Reliability Test

Indicators	No of Items	α value	Interpretation
Operating System	5	0.929	Excellent
Tactical System	5	0.904	Excellent
Strategic System	5	0.931	Excellent
Warehouse Layout	5	0.914	Excellent
Warehouse Equipment	5	0.931	Excellent
Warehouse Manpower Management	5	0.922	Excellent
Route Management	5	0.912	Excellent
Fllet Mangement	5	0.924	Excellent
Technology Investment	5	0.901	Excellent

George and Mallery (2003) provide the ff rules of thumb: ≥ 0.9 – Excellent, ≥ 0.8 –Good, ≥ 0.7 –Acceptable, ≥ 0.6 –Questionable, ≥ 0.5 –Poor, and ≥ 0.5 –Unacceptable.

All indicators in the table, including Operating System (0.929), Tactical System (0.904), Strategic System (0.931), and others, have Cronbach's Alpha values above 0.9, which falls under the "Excellent" category. This showed that the items used to measure each indicator are highly reliable and internally consistent.

Data Gathering Procedure - The data collection steps for this study were systematically designed to ensure

that the information collected is accurate and comprehensive and can effectively support the answers to the research questions. The data collection process mainly includes the following key steps:

- Step 1: Design of the questionnaire. The researcher carefully designed the questionnaire based on the study objectives. At the same time, in order to ensure the validity and reliability of the questionnaire, the researcher conducted a pre-test, invite a small number of logistics enterprise employees to fill in and provide feedback, and adjust the questionnaire design according to the feedback.
- Step 2: Sample selection and sampling. After determining the sample framework, the investigators will select 600 employees from the logistics enterprises in Bozhou city as the research object. This process was conducted through the internal contacts of collaborative logistics enterprises or the membership list of industry associations, ensuring the representativeness and randomness of the sample.
- Step 3: Data collection and implementation. Data collection for this study was conducted through online questionnaire format for release and administered using professional questionnaire star platform. Respondents could fill out questionnaires on any connected device to improve recovery and engagement.
- Step 4: Data collation and preliminary analysis. After data collection, the investigator clean and initially analyze the data to exclude invalid or incomplete questionnaires. Data will be entered into the statistical software for descriptive statistical analysis to depict the basic characteristics of the sample and check the overall quality and distribution of the data.
- Step 5: Thorough analysis and report preparation. The investigators conducted a more thorough statistical analysis according to the research purpose, including variance analysis and regression analysis, to explore the impact of different enterprise characteristics on enterprise information system, warehouse management and integrated transportation system. The analysis results was used to write the research report and paper, and also provide data support for proposing a logistics innovation framework.

Data Analysis - Weighted mean and rank were used to assess the information system as to operational system, tactical system and strategic system; determine the warehouse management in terms of warehouse layout, warehouse equipment and warehouse manpower management; describe the transportation system as to route management, fleet management and technology investment. The result of Shapiro-Wilk Test showed that p-values of all variables were less than 0.05 which means that the data set is not normally distributed. Therefore, Spearman rho was used to test the significant relationship as part of the non-parametric tests. All analyzes were performed using SPSS version 28.

Ethical Considerations - In conducting this study, ethical considerations are essential to ensure that the ethical and legal responsibilities of the study are properly respected and observed. First, all participants sought consent before participating in the study, clarifying that their participation is voluntary and that they can withdraw from the study at any time without experiencing any adverse effects. The questionnaire guaranteed anonymity and confidentiality of the data, ensuring that participants' personal information is not leaked or used for purposes other than the study. In addition, all relevant data protection regulations to ensure that the process of collecting, storing, and processing data complies with national and international standards. Special attention was observed in the study to avoid any form of bias and discrimination, ensuring impartiality and objectivity in the data collection and analysis process. The investigator conducted a regular ethical review to ensure that every part of the study meets the ethical standards. Any research findings reported and discussed in a manner that respects and protects the rights and interests of the participants. Through these measures, research aimed to generate not only valuable academic and practical contributions, but also a deep understanding and commitment to participants and social responsibility.

3. Results and discussions

Table 2

Summary Table on Information System

Key Result Areas	Composite Mean	VI	Rank
Operational System	3.32	Agree	1
Tactical System	3.26	Agree	3
Strategic System	3.29	Agree	2
Grand Composite Mean	3.29	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

The overall composite mean of the information system is 3.29, located within the "agree" range. This indicates that the respondents generally recognized the effectiveness and role of corporate information systems as a whole. The comprehensive average reflects the overall performance of information systems in the three key areas of operational System, tactical System and strategic System, and shows that enterprises have achieved positive results in the construction and application of information systems. Nguyen et al. (2021) found that enterprises investing in advanced IT infrastructures improved operational performance, emphasizing the crucial role of tailored information systems in streamlining logistics processes and reducing operational errors. This result shows that the enterprise information system plays an important role in supporting operational efficiency, tactical execution and strategic decision-making, laying a solid foundation for the construction of logistics innovation framework.

The top "Operational System", with a composite average of 3.32, belongs to the high end of the "agree" level. This result shows that the respondents highly recognized the effectiveness of the enterprise information systems at the operational level. The high score of "Operational System" reflects the key role the information systems play in supporting day-to-day operations, improving productivity and ensuring data accuracy. The investment and attention of enterprises in this field enables the information system to meet the operational needs and improve the efficiency and reliability of the logistics process. Martinez et al. (2022) demonstrated that robust IT systems enhanced tactical execution by providing real-time performance dashboards and advanced data analysis tools, which improved strategic decision-making and overall business agility. This emphasizes the core value of information systems in optimizing operations, reducing costs, and improving customer satisfaction.

The second place "Strategic System" composite average was 3.29, slightly below "Operational System", but still in the "agree" range. Respondents endorsed the role of the information system at the strategic level, indicating its positive role in supporting strategic decisions, providing advanced data analysis, and simulating different strategic scenarios. The "Strategic System" score shows that the enterprises information system can provide management with the necessary tools and information to help develop long-term strategies and goals. However, the slightly lower score at the strategic level relative to the operational level may suggest that there is room for further improvement in the strategic application of information systems to better support higher-level decision-making and long-term development planning.

On the lower ranking, "Tactical System" was third with a composite mean of 3.26, while still within the "agree" score but relatively low. This suggests that respondents rated the effectiveness of the information system at the tactical level. The "Tactical System" score reflects some possible shortcomings of the information system in supporting short-and medium-term planning, resource allocation, and departmental collaboration. Enterprises may need to focus on the functions of information systems in tactical execution, such as improving the flexibility and response speed of the system to better adapt to market changes and business needs. Strengthening the construction of the information system at the tactical level helps to enhance the agility and competitiveness of enterprises.

These results show that enterprise information systems are recognized at all levels, but there are subtle differences in different "Key Result Areas". The "Operational System" with the highest score indicates that the enterprise is relatively successful in the construction of information system at the operational level, while the

scores of "Strategic System" and "Tactical System" are slightly lower, indicating that there is still room for improvement in the application of information system at the strategic and tactical level.

Table 3

Summary Table on Warehouse Management

Key Result Areas	Composite Mean	VI	Rank
Warehouse Layout	3.34	Agree	1
Warehouse Equipment	3.27	Agree	3
Warehouse Manpower Management	3.33	Agree	2
Grand Composite Mean	3.31	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

The overall consolidated mean of warehouse management is 3.31, within the "agree" range. This shows that respondents generally recognized the overall performance of companies in various key areas of warehouse management. The comprehensive average value reflects the overall evaluation of warehouse Layout, warehouse manpower management and warehouse Equipment, showing that the enterprise has achieved good results in optimizing the use of warehouse space, effective human resource allocation and equipment management. The score of 3.31 shows that enterprises have certain advantages in warehouse management and can support the construction and implementation of logistics innovation framework. This result not only verifies the important role of various key fields in improving storage efficiency and operation effect, but also reveals the comprehensive strength of enterprises in warehouse management. Liu et al. (2021) demonstrated that optimized manpower allocation significantly improved operational efficiency and employee satisfaction, thereby contributing to a more resilient logistics system. In general, the good performance of enterprises in warehouse management provides a solid foundation for the optimization and innovation of its logistics system, and helps to improve the overall logistics efficiency and competitiveness.

The number one "Warehouse Layout, with a composite average of 3.34, is at the high end of the" agree " level. This result shows that respondents generally agree that warehouse Layout is excel in optimizing storage space and product flow. Optimized warehouse Layout can not only maximize the use of limited storage space, but also effectively organize product flow, reduce transportation time and operation steps, and improve the overall logistics efficiency. Through reasonable layout design, enterprises can ensure that the flow of materials and products in the warehouse is more smooth, reduce the inventory overhang and error rate, so as to improve the overall efficiency of warehouse management. This finding highlights the fundamental role of warehouse Layout in logistics operation, indicating that enterprises have invested sufficient resources and energy in warehouse design and planning to support efficient logistics processes.

The second largest average, the Warehouse Manpower Management, with a combined average of 3.33, is also in the "agree" range. This indicates that the respondents recognized the effectiveness of enterprises in warehouse manpower management, especially in employee scheduling, task assignment, and performance feedback mechanisms. Reasonable allocation of human resources not only ensures the smooth completion of various warehouse tasks, but also avoids excessive burden on employees, and improves job satisfaction and efficiency. Through regular performance feedback and cross-training opportunities, enterprises enhance their multi-skill level and teamwork ability, thus improving the flexibility and adaptability of warehouse operations. Sun et al. (2020) reported that advanced warehouse equipment performance is essential for streamlining storage processes and reducing errors, further bolstering overall competitiveness. This result shows that the scientific strategy of human resources management not only meets the basic needs of warehouse operation, but also provides reliable human support and guarantee for the construction of logistics innovation framework.

On the lower side, the third-ranked "Warehouse Equipment", with a composite average of 3.27, is still in the "agree" range. This shows that respondents generally believe that companies perform well in the diversity and technological advancement of warehouse Equipment, but there is still room for improvement in equipment maintenance and reliability. Although the existing equipment types can meet the daily operation needs, and the equipment technology is more advanced, supporting efficient and safe inventory processing, the maintenance

and management of the equipment needs to be strengthened to ensure that the equipment is always in the best working condition. The score of 3.27 indicates that enterprises may have deficiencies in equipment maintenance and management, such as imperfect maintenance plan or equipment aging. This finding suggests that enterprises need to further optimize the maintenance strategy of equipment, improve the reliability and service life of equipment, so as to reduce the operation interruption and cost increase caused by equipment failure, and further improve the overall efficiency and quality of warehouse management.

All key areas of warehouse management were recognized by the respondents, especially in warehouse Layout and manpower management. However, the equipment maintenance and reliability still need to be further optimized. On the basis of maintaining the existing advantages, enterprises should improve the weak links and improve the overall warehouse management level. This will not only help to improve logistics efficiency and reduce operating costs, but also enhance the competitiveness of enterprises in the fierce market competition, and provide more solid support and guarantee for the construction and implementation of logistics innovation framework.

Table 4
Summary Table on Transportation System

Key Result Areas	Composite Mean	VI	Rank
Route Management	3.3	Agree	2
Fleet Management	3.27	Agree	3
Technology Investment	3.33	Agree	1
Grand Composite Mean	3.3	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

By comprehensive analysis, technology investment plays a crucial role in the transportation system. Through effective data utilization and forward-looking technology adaptability, enterprises have significantly improved transportation efficiency and system flexibility. The specific impact of technology investment on transport performance and the implementation effect of new technologies still need to be further optimized.

The overall composite mean of the transport system is 3.30 and is within the "agree" range. This indicates that respondents generally recognized the overall performance of companies in various key areas of the transportation system. The comprehensive average reflects the overall evaluation of route Management, fleet management and technology investment, showing that the enterprise has achieved good results in optimizing the transportation process, fleet management and technology application. The score of 3.30 shows that the enterprises have certain advantages in the management of the transportation system, which can effectively support the high efficiency and reliability of the logistics operation. This result not only verifies the important role of various key fields in improving transportation efficiency and operation effect, but also reveals the comprehensive strength of enterprises in transportation system management. In general, the good performance of enterprises in transportation system management provides a solid foundation for the optimization and innovation of their logistics system, and helps to improve the overall logistics efficiency and competitiveness.

The top "Technology Investment, with a composite average of 3.33, is at the high end of the" agree" range. This result shows that the respondents generally recognized the enthusiasm and effectiveness of the enterprises in technology investment. Through effective data utilization and forward-looking technology adaptability, enterprises have significantly improved the transportation efficiency and system flexibility. For example, the high score of "Data collected from the transportation system is effectively used to optimize routes, schedules, and resource allocation." shows that companies can optimize transportation paths and resource allocation through data-driven decisions, reduce operating costs, and improve punctuality. In addition, the score of "The transportation system is well-positioned to adapt and adopt future transportation technologies." also shows that enterprises have good technical adaptability and can quickly integrate emerging technologies to maintain the advanced and competitive transportation system. These technology investment not only improve the current transportation process, but also lay a solid foundation for future technology upgrading and innovation, supporting the construction and implementation of the logistics innovation framework. Zhang et al. (2021) found

that enterprises integrating advanced technology into their transportation systems achieved significant improvements in operational efficiency and route optimization. Their study showed that real-time data analytics and automated tracking systems contributed to reduced fuel consumption and timely deliveries.

The second largest ranking, the Route Management Route Management, with a composite average of 3.30, is also within the "agree" range. This indicates that the respondents recognized the effectiveness of enterprises in route Management, especially in route optimization and real-time adjustment. For instance, High scores for the two indicators, "Route planning takes into account real-time traffic conditions to optimize delivery times." and "The delivery sequence on each route has a logical and efficient order for drop-offs." show, Enterprises fully consider the real-time traffic conditions in the route planning. And the distribution order is reasonable and efficient. This not only improves transportation efficiency, reduces transportation time and fuel consumption, but also improves customer satisfaction. Li et al. (2022) demonstrated that strategic technology investments, such as GPS and intelligent routing software, enhanced route management effectiveness by providing accurate, real-time decision support. Through intelligent route planning, enterprises can flexibly respond to traffic changes, optimize distribution routes, and ensure that goods can be delivered to the destination on time and safely. This result shows that the scientific strategy and technology application of enterprises on route Management significantly improve the overall efficiency and reliability of the transportation system, and provides important support for the implementation of the logistics innovation framework.

"There is a current maintenance schedule to ensure the reliability and safety of our fleet." in "Fleet Management", with a composite average of 3.27, is within the "agree" range. The score showed that respondents generally agreed that the company's current maintenance plan ensured the reliability and safety of the team. However, the relatively low scores indicate that there may be some deficiencies in the implementation of the maintenance plan, such as insufficient maintenance frequency or uneven maintenance quality. This suggests that enterprises need to further improve the vehicle maintenance plan, to ensure that each car can get timely and comprehensive maintenance and maintenance. By optimizing maintenance strategies, enterprises can improve the reliability and service life of vehicles, reduce operational disruption and cost increases caused by equipment failures, and further improve the overall efficiency of fleet management and the stability of the transportation system. The transportation system performs well in terms of technology investment and route Management, which significantly improves transportation efficiency and system flexibility. However, vehicle adequacy and maintenance programs in fleet management still need to be further optimized.

Table 5

Relationship Between Information System and Warehouse Management

Variables	rho	p-value	Interpretation
Operational System			
Warehouse Layout	0.339**	<.001	Highly Significant
Warehouse Equipment	0.341**	<.001	Highly Significant
Warehouse Manpower Management	0.300**	<.001	Highly Significant
Tactical System			
Warehouse Layout	0.296**	<.001	Highly Significant
Warehouse Equipment	0.289**	<.001	Highly Significant
Warehouse Manpower Management	0.268**	<.001	Highly Significant
Strategic System			
Warehouse Layout	0.329**	<.001	Highly Significant
Warehouse Equipment	0.268**	<.001	Highly Significant
Warehouse Manpower Management	0.280**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

Table 5 presents the correlation between information systems and warehouse management across operational, tactical, and strategic systems. Each aspect of warehouse management—specifically warehouse layout, equipment, and manpower management—shows a highly significant positive correlation with the information system, as indicated by p-values of less than 0.001. This underscores the critical role that information systems play in enhancing various facets of warehouse operations.

In the operational systems category, the correlation coefficients range from 0.300 for warehouse manpower management to 0.341 for warehouse equipment. This indicates that information systems have a slightly stronger impact on the management and optimization of warehouse equipment compared to manpower. Advanced information systems facilitate better inventory tracking, equipment maintenance scheduling, and overall operational efficiency, thereby directly contributing to improved warehouse performance. Ramirez et al. (2022) demonstrated that enterprise information systems enhanced operational performance by optimizing warehouse equipment management, emphasizing the importance of updated technological configurations for inventory control and maintenance scheduling. Their findings indicated that robust IT infrastructures improved operational efficiency and reduced errors. Turner et al. (2023) revealed that integrated IT solutions bolstered tactical decision-making by enabling real-time route optimization and resource allocation. Their study highlighted that intelligent analytics and dynamic scheduling tools effectively streamlined logistics operations, thereby increasing overall responsiveness and reducing operational costs. These studies provided strong support for the critical role of technology investments in logistics innovation.

Within tactical systems, the correlations are somewhat lower, ranging between 0.268 and 0.296. Despite being lower than operational systems, these correlations remain significant, highlighting the importance of information systems in supporting medium-term planning and resource allocation. Information systems enable more effective decision-making processes, allowing managers to allocate resources more efficiently and respond swiftly to changing operational demands. Turner et al. (2023) revealed that integrated IT solutions bolstered tactical decision-making by enabling real-time route optimization and resource allocation. Their study highlighted that intelligent analytics and dynamic scheduling tools effectively streamlined logistics operations, thereby increasing overall responsiveness and reducing operational costs. The strategic system exhibits similar trends, with correlation coefficients ranging from 0.268 for equipment to 0.329 for layout. This suggests that information systems are instrumental in long-term strategic planning and layout optimization. By providing comprehensive data analysis and scenario simulation, information systems assist in developing robust strategies that enhance competitive advantage and ensure sustainable growth. Overall, these findings suggest a significant, albeit weak, relationship between information systems and various aspects of warehouse management. This highlights the importance of implementing effective information systems to enhance warehouse operations at all levels. Effective information systems not only streamline daily operations but also support strategic initiatives, thereby playing a pivotal role in the overall logistics innovation framework of the enterprise.

Table 6
Relationship Between Information System and Transportation System

Variables	rho	p-value	Interpretation
Operational System			
Route Management	0.276**	<.001	Highly Significant
Fleet Management	0.270**	<.001	Highly Significant
Technology Investment	0.278**	<.001	Highly Significant
Tactical System			
Route Management	0.307**	<.001	Highly Significant
Fleet Management	0.334**	<.001	Highly Significant
Technology Investment	0.344**	<.001	Highly Significant
Strategic System			
Route Management	0.316**	<.001	Highly Significant
Fleet Management	0.298**	<.001	Highly Significant
Technology Investment	0.286**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

Table 6 examines the relationship between information systems and transportation systems across operational, tactical, and strategic levels. All variables—route management, fleet management, and technology investment—exhibit highly significant positive correlations with the information system, as evidenced by p-values below 0.001. This underscores the pivotal role that information systems play in optimizing transportation operations within an enterprise.

In the operational system, the correlation coefficients range from 0.270 for fleet management to 0.278 for technology investment. Although these correlations are classified as weak, they are still significant, indicating that information systems moderately enhance day-to-day transportation activities. For instance, information systems facilitate efficient route planning and real-time tracking of fleet operations, leading to improved punctuality and reduced operational costs. Additionally, technology investments supported by robust information systems ensure that transportation vehicles are well-maintained and utilized effectively, contributing to overall fleet reliability and safety. Olsen et al. (2022) reported that advanced information systems significantly improved operational performance by streamlining fleet management and technology investment processes, reducing delays and optimizing resource allocation.

The tactical system demonstrates stronger correlations, particularly with fleet management (0.334) and technology investment (0.344). These higher coefficients suggest that information systems are more influential in medium-term planning and resource allocation. Effective information systems enable better data analysis and forecasting, allowing managers to optimize fleet utilization, schedule maintenance proactively, and allocate resources based on demand patterns. Smith et al. (2023) demonstrated that robust tactical planning enabled by integrated IT solutions led to higher efficiency in route management and resource distribution, resulting in improved strategic decision-making and overall logistics performance. This enhanced strategic planning capability leads to more efficient transportation processes and better alignment with organizational goals.

At the strategic level, correlations remain significant, with coefficients ranging from 0.286 for technology investment to 0.316 for route management. This indicates that information systems are integral to long-term transportation strategies, such as adopting innovative technologies and expanding transportation networks. By providing comprehensive data insights and supporting strategic decision-making, information systems help enterprises maintain a competitive edge and ensure sustainable growth in their transportation operations. Overall, these findings suggest a weak yet significant relationship between information systems and transportation management. This highlights the importance of implementing effective information systems to enhance transportation efficiency across all strategic levels. By leveraging advanced information technologies, enterprises can optimize their transportation processes, reduce costs, and improve service quality, thereby supporting the broader logistics innovation framework.

Table 7
Relationship Between Warehouse Management and Transportation System

Variables	rho	p-value	Interpretation
Warehouse Layout			
Route Management	0.300**	<.001	Highly Significant
Fleet Management	0.342**	<.001	Highly Significant
Technology Investment	0.308**	<.001	Highly Significant
Warehouse Equipment			
Route Management	0.286**	<.001	Highly Significant
Fleet Management	0.344**	<.001	Highly Significant
Technology Investment	0.344**	<.001	Highly Significant
Warehouse Manpower Management			
Route Management	0.327**	<.001	Highly Significant
Fleet Management	0.287**	<.001	Highly Significant
Technology Investment	0.374**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

Table 7 explores the relationship between warehouse management and transportation systems, revealing significant correlations across various dimensions. Each variable associated with warehouse management—specifically layout, equipment, and manpower management—demonstrates a highly significant positive correlation with transportation variables: route management, fleet management, and technology investment, all with p-values below 0.001. This underscores the critical interplay between effective warehouse operations and transportation efficiency within an enterprise's logistics framework. For warehouse layout, the correlation coefficients range from 0.300 for route management to 0.342 for fleet management, indicating a moderately strong relationship. A well-designed warehouse layout facilitates smoother and more efficient

loading and unloading processes, which directly impacts route management by ensuring that goods are dispatched promptly and accurately. Additionally, an optimized layout supports better fleet management by enabling faster vehicle turnaround times and reducing idle periods, thereby enhancing overall transportation efficiency.

Warehouse equipment shows slightly lower but still significant correlations, with a coefficient of 0.286 for route management and 0.344 for both fleet management and technology investment. This suggests that advanced and well-maintained warehouse equipment, such as automated sorting systems and efficient handling machinery, plays a vital role in supporting transportation operations. Reliable equipment ensures that goods are prepared and dispatched without delays, which in turn optimizes route planning and fleet utilization. The integration of sophisticated technology within warehouse equipment can enhance data accuracy and real-time tracking, thereby supporting more informed transportation decisions. Recent studies confirmed that advanced warehouse equipment, including automated sorting systems and handling machinery, significantly enhanced transportation operations by improving data accuracy and tracking capabilities. Zhang et al. (2021) demonstrated that reliable equipment directly contributed to efficient route planning and fleet utilization. Warehouse manpower management exhibits the strongest correlations, particularly with technology investment (0.374) and route management (0.327). Effective manpower management, including proper staffing levels, skill alignment, and continuous training, is essential for maintaining seamless warehouse operations. Well-managed staff can efficiently handle inventory processes, reduce errors, and ensure timely dispatches, which are crucial for optimal route management. Chen et al. (2021) reported that strategic human resource allocation and training enhanced workforce efficiency and error reduction in logistics operations. Additionally, investing in technology to support manpower, such as training programs and performance monitoring systems, further strengthens the link between warehouse operations and transportation efficiency.

These findings highlight the interconnectedness of warehouse and transportation systems, suggesting that improvements in warehouse management can significantly enhance transportation efficiency. By focusing on optimizing warehouse layout, upgrading equipment, and managing manpower effectively, enterprises can create a synergistic effect that streamlines both warehousing and transportation operations. This integrated approach not only reduces operational costs and improves service delivery but also enhances the overall responsiveness and flexibility of the logistics system, thereby supporting the broader logistics innovation framework of the enterprise.

Research Output

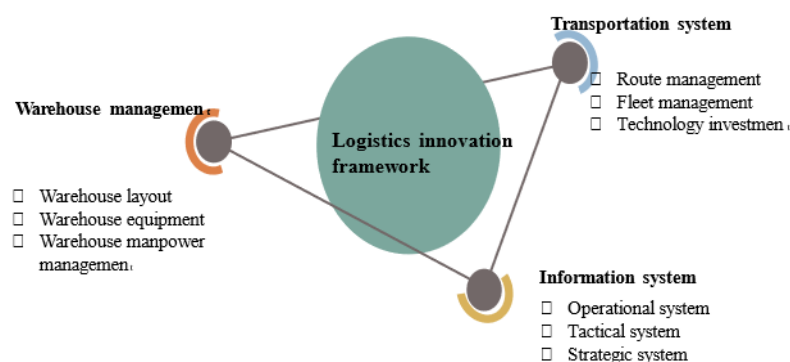


Figure 1. Logistic Innovation Framework

Based on the evaluation results, this section integrates enterprise information systems, warehouse management and integrated transportation systems to develop a logistics innovation framework. By optimizing the process and improving the synergistic efficiency, it aims to improve the overall logistics efficiency and competitiveness, and provide systematic support for enterprises to achieve sustainable development. The diagram illustrates a Logistics Innovation Framework, which integrates three key components: Warehouse

Management, Transportation System, and Information System. Each of these components comprises specific elements that contribute to logistics efficiency and innovation. Warehouse Management encompasses warehouse layout, equipment, and manpower management, ensuring optimized storage, handling, and workforce allocation. Transportation System focuses on route management, fleet management, and technology investment, emphasizing efficient transportation operations, vehicle utilization, and technological advancements. Information System Includes operational, tactical, and strategic systems, highlighting the role of data-driven decision-making and automation in logistics. The framework suggests that innovation in logistics requires an integrated approach where warehouse, transportation, and information systems interact to enhance efficiency, reduce costs, and improve overall supply chain performance.

4. Conclusions and recommendations

There was moderate level of enterprise information system. Respondents generally agreed that logistics companies' information systems perform well in operational system, tactical system and strategic system. Respondents generally agreed that the warehouse management of logistics enterprises perform well in terms of warehouse layout, warehouse equipment and warehouse manpower management. Respondents generally agreed that logistics companies' transport systems moderately practices perform well in terms of route management, fleet management and technology investment. There is a highly significant positive correlation among information system, warehouse management and integrated transportation systems. Logistics innovation framework for logistics companies has been develop. Logistics enterprises may enhance user training, implementing automation, upgrading system capabilities, improving data integration, and conducting regular audits to reduce errors in daily operations. Logistics enterprises may undergo regular upgrading equipment, implementing predictive maintenance, and integrating smart monitoring systems to further enhance its reliability and efficiency. Logistics enterprises may implement a fleet optimization system, regular maintenance checks, and demand forecasting to ensure vehicle availability while reducing operational costs. Logistics enterprises may test the framework to maximize efficiency, improve operational agility, and drive innovation in logistics management. Future researchers may integrate Risk Management and explore how the framework can incorporate disaster resilience strategies, supply chain disruptions, and cybersecurity measures to enhance logistics stability.

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Strategic management of equity in early childhood education: A mathematical framework with clustering, inequality metrics, and system dynamics

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Abstract

This study develops a mathematical and managerial framework to analyze global equity in early childhood education (ECE) by combining statistical typologies, inequality metrics, and dynamical modeling. Drawing on UNESCO indicators from 1998 to 2024, we focus on 16 countries with complete data to ensure robust longitudinal and comparative inference. The analysis integrates three components. First, hierarchical clustering (Ward's method) generates typologies of ECE systems, revealing three profiles: (1) high access with moderate parity gaps, (2) low access with relatively balanced participation, and (3) moderate access with strong parity across indicators. Second, formal inequality indices, including the Gini coefficient and Theil index, are applied to gender gaps in net enrollment rates, producing values of $Gini \approx 0.18$ and $Theil \approx 0.09$, which confirm that disparities are moderate, but systematically concentrated in certain regions. Third, global enrollment dynamics are modeled using an autoregressive process with a structural break for the COVID-19 pandemic. Results show high persistence ($\phi \approx 0.9$), a significant negative pandemic shock ($\delta < 0$), and steady-state equilibria that provide long-run benchmarks for system recovery. By integrating clustering, inequality indices, and time-series modeling, this study establishes a typological-temporal framework that not only diagnoses disparities but also offers policy-relevant insights. For managers and policymakers, the findings suggest differentiated strategies: countries with low access but high parity require capacity expansion, while those with high access, but persistent disparities need inclusive reforms. The framework is replicable for monitoring Sustainable Development Goal 4.2 and extends to broader management challenges where equity, resource allocation, and systemic resilience intersect.

Keywords: mathematical modelling in equation, UNESCO indicators, inequality indices (Gini, Theil), cluster analysis, dynamical systems, gender parity

Strategic management of equity in early childhood education: A mathematical framework with clustering, inequality metrics, and system dynamics

1. Introduction

Equity in early childhood education (ECE) has become a central focus of educational goals globally (Busolo & Agembo, 2017; Darragh, 2007; Rao et al., 2023). This is even more relevant to the recent drive of United Nations Sustainable Development Goal (SDG) 4.2 (Rad et al., 2022), which is to provide inclusive and equitable quality education for all children by 2030. Access to quality ECE is universally accepted as a significant determinant of lifelong learning and development outcomes (Barnett, 1995; Gorey, 2001), social mobility (Barnett & Belfield, 2006; Wu et al., 2024), and gender equality (Chi, 2018). Although ECE is viewed this way, inequalities persist between nations and within countries associated with gender and socioeconomic status disparities and developmental levels among regions (Farnen, 2007; Heckman, 2011; Lu et al., 2020).

Large global databases, including those of the United Nations Educational, Scientific and Cultural Organization's (UNESCO) (2009) provide holistic education indicators that represent an opportunity for testing patterns of ECE participation and equity at scale. For example, the UNESCO Institute for Statistics (UIS) (2025) provides indicators for enrollment rates, gender parity indices, and organized learning participation that allow comparison of countries across time and space (Raikes et al., 2023). However, while it would be possible to do so, the vast majority of recent studies utilizing these data from UNESCO engaged in a more descriptive account of measuring the global enrollment situation and educational quality (Raimon Efendi et al., 2020). In fact, there have been relatively few studies that examine the application of statistical classification techniques to find the underlying typologies or clusters of countries. These typologies or clusters indicate their identified equity outcomes. With this having said, the current study seeks to fill that gap, by implementing longitudinal trend analysis (Fitzmaurice et al., 2011) with cluster modelling (Everitt et al., 2011) that explore how countries differ and cluster based on ECE access and equity outcomes. Our empirical approach allows us to observe and identify patterns of structure in how countries are collaborating with equity goals for ECE. It represents a data-informed means of examining how countries are progressing toward the international equity goals in ECE.

This study draws on the conceptual foundation of educational equity as operationalized in international policy and comparative education research. Equity is understood here not only as the fair distribution of educational opportunities, but also as the reduction of systematic disparities across social categories such as gender and region (Busolo & Agembo, 2017; Ramachandran & Saihjee, 2002; Rao et al., 2023). We also apply a typological approach to global education systems, rooted in the logic of comparative classification (Bray & Thomas, 1995), wherein meaningful differences are identified through patterns among countries based on quantifiable indicators. Statistically, the use of cluster analysis aligns with data-driven typology frameworks in social sciences (Everitt et al., 2011), where countries are grouped based on similarity across multiple variables. This technique allows studies to move beyond one-size-fits-all global benchmarks and instead recognize differentiated equity profiles. These profiles can reveal how access and gender parity interact across policy, demographic, and geographic contexts; thereby situating equity as both a measurable and structural phenomenon (Kaufman & Rousseeuw, 2005; Ketchen & Shook, 1996).

This study is important because it provides new perspectives on the global landscape of ECE by situating equity from both a trend-based and typological perspective. Most reports showcase national progress toward the goals of ECE; however, very few reports seek to cluster countries based on structural gender and related enrollment processes or other important criteria. The current findings should provide value as both a descriptive map of where countries are situated across the clusters, and a more overarching diagnostic framework for identifying countries that may be at risk of lagging behind. By identifying differences across clusters and regions, this study brings value to evidence; ultimately providing the opportunity for policymakers to tailor evidence to country-specific conditions.

Furthermore, this study broadens the methodological scope for analyzing education data, alongside the subject of ECE as a previously overlooked area of research with respect to mathematical and applied statistics - by using cluster modeling and indicators of equity to examine early education.

This study aims to address the following research objectives (RO):

- **RO1:** To analyze the temporal trends in ECE enrollment and gender parity from 1998 to 2024 using UNESCO indicators.
- **RO2:** To apply cluster analysis to classify countries into equity profiles based on ECE access and gender parity indicators.
- **RO3:** To examine regional patterns and disparities in male and female net enrollment ratios and parity indices.
- **RO4:** To explore the policy implications of these structural patterns for achieving SDG 4.2 and promoting equitable ECE globally.

2. Literature Review

2.1 Early Childhood Education and Global Equity

ECE is recognized as a critical foundational stage in process of human educational development (Ginting, 2024). This is also recognized by the UN, as impacting not only cognitive and emotional development, but also long-term academic, health, and social outcomes (Bakken et al., 2017; Gorey, 2001). Studies have noted the high returns on investment (especially for children from disadvantaged backgrounds), helping to equalize development before entering the formal schooling system (Heckman, 2008; Karoly, 2016). Therefore, providing equitable access to quality ECE is fundamentally significant for the development and also crucial for ending generational cycles of poverty (Barr & Gibbs, 2022; Nordtveit, 2008; Wu et al., 2012).

As previously mentioned, equity in ECE is a global level commitment in SDG 4.2, wherein the goal is “*that all girls and boys should have access to quality early childhood development, care and pre-primary education so that they are ready for primary education*” by 2030 (UNESCO, 2021). This goal captures both the expansion of access to ECE opportunities. However, it also acknowledges the need for inclusion and equity that addresses the various inequalities. Nonetheless, even with international commitments to equity, access, and quality education that challenge policy makers and ECE systems. Monitoring reports still show that while global participation in pre-primary education has increased, there remains a notable disproportionate distribution of this participation, particularly for the poorer children and girls in some contexts (UNESCO, 2024a).

For all the above arguments, gender equity in ECE is really important. In comparison to later education levels, where there are lessening gender differences with regard to access and completion; unlike gender trends within ECE which may sometimes change or even reverse (UNESCO, 2017). In some instances, girls are more often encouraged to study, because of cultural norms that suggest females can become caregivers, hence they will have a greater willingness to send young girls to nearby community-based programs (UNESCO, 2022). Conversely, in some situations, girls may have lower ECE participation, because there might be security concerns or more likely they are assigned household tasks that hinder their access to early childhood (Organisation for Economic Co-operation and Development [OECD], 2017). Such variations complicate the generalizations of gender equality in ECE around the world. This suggest that disaggregated, context-specific approaches are necessary to achieve gender equity in early learning. To meet SDG 4.2 requirements, it is important to recognize those countries who continue to maintain gender disadvantage; whether through low levels of enrolment or a less than equal quality of programs (UNESCO, 2023, 2024b).

2.2 Measuring Access and Parity in ECE: Indicators and Challenges

Efforts to monitor progress toward equitable early childhood education have increasingly relied on standardized indicators that capture both access and parity across populations. Among the most widely used are the *Net Enrollment Ratio in pre-primary education* (NER.0.CP) and the *Gender Parity Index* (GPI), which compares female to male participation rates (UIS, 2025). These indicators are published annually by the UIS and form the empirical foundation for tracking progress on SDG Target 4.2. According to the UNESCO's (2009) technical guidelines, NER measures the proportion of children of official pre-primary school age who are enrolled in pre-primary education, expressed as a percentage of the total population of that age group. While, GPI in pre-primary education is a ratio that compares the number of girls enrolled in pre-primary education to the number of boys enrolled, providing insight into gender equality in access to this level of education. Hence, a GPI close to 1.0 means that girls and boys are participating at similar rates.

While these indicators are useful for global comparisons, they do have limitations. For example, enrollment statistics do not reveal whether or how often children attend school, how long children stay in school, nor what quality of schooling they experience (Bradshaw et al., 2006). In some countries, the term “*organized learning*” can include informal or unregulated programs that might virtually have no educational value (Raikes et al., 2023). Additional issues exist regarding missing and unreliable data from many low and middle income countries, which may be due to the weak education data systems, or inconsistencies in reporting (Neuman et al., 2015). Nevertheless, these global indicators provide a useful assessment perspective, offering the ability to recognize large trends, identify gaps, and guide recommendations for policy. In line with this, the current study uses these indicators, not only to describe the current status, but to cluster countries based on similarities in access and equity. Hopefully, the clustering method will aid the potential to see certain structures in educational access and equity and help recognize patterns, that may be undetectable by mere examining the indicators individually.

2.3 Comparative Typologies in Global Education Research

Educational cross-national research compares countries across numerous structural, policy, and outcome indicators (de Vaus, 2008). Historically, cross-national studies have most often relied on comparisons between countries based on their economic classification (low, middle, and high-income countries) or geographical regions; yet, many researchers have argued that these common comparisons tend to miss important trends and differences that divide or cut across geographical or economic boundaries (Griffiths et al., 2016). Typological analysis, through organizing countries into socioeconomic groupings of distinct, but relatively similar groups based on evidence (Capano & Engeli, 2022), provides a more complete methodological and inclusive method of typological comparisons that can emphasize and highlight systemic differences and similarities and provide a more contextual understanding of education systems (Alexander, 2001; OECD, 2012).

The Bray and Thomas (1995) model is among the most recommended models for comparative education typologies. Their “*cube*” (see Figure 1) of comparative education draws attention to comparing educational systems in three different dimensions, including the geographic location of the country, the level of the education system (e.g. ECE, primary, secondary, tertiary), and the education process (including the various factors within the process). Importantly, they encourage researchers to look past the diagnostic labels and compare deeper structural factors or contextual factors affecting the education process. Typological approaches in ECE can also highlight how countries in widely varying economic or regional contexts, even if they both face similar issues with equity, access, or gender disparities.

In the past few years, statistical techniques like cluster analysis have proven to be a strong method for creating data-derived typologies in educational research (Everitt et al., 2011). While traditional categorizations are predetermined, cluster analyses organize countries by observed patterns in the data. This identifies hidden latent structures or profiles that may otherwise remain unnoticed. For example, both the United Nations Children’s Fund (UNICEF) (2019) and the OECD have used clustering to categorize countries according to measures of child well-

being, equity in educational outcomes, or coverage of social protection (Beblavý et al., 2013; Cho, 2014). Ultimately, these studies demonstrate how clustering can create policy meaningful groupings that are more informative than traditional region-based classifications.

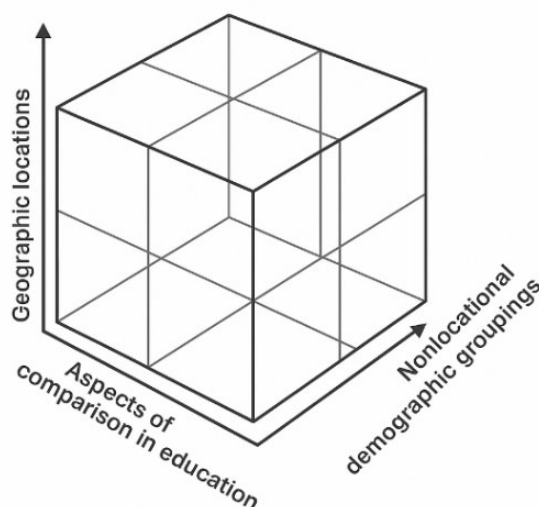


Figure 1. Bray and Thomas (1995) Cube.

The present study undertakes a similar approach by applying hierarchical cluster analysis to a set of UNESCO indicators related to ECE access and gender parity. The analysis of the given data does not presume that countries in the same region or income category face the same issues; rather, the analysis gives the opportunity for new equity profiles to emerge based on what the data reveals. Taken from a typology perspective, this contributes another layer to how the world's education system is different and similar when advancing inclusive and equitable early learning opportunities, in relation to SDG 4.2.

2.4 Gaps in the Literature and Rationale for This Study

While international organizations, such as UNESCO and UNICEF, have made strong strides in collecting and publishing indicators of ECE. The majority of research using these data remains descriptive. Many studies address global enrollment trends or gender parity status. Few studies delve deeper into the patterns or structural challenges many countries share. Consequently, cross-national comparisons usually involve pre-established categories, such as income groups or world regions, which might not take full advantage of meaningful differences between countries that share similar equity concerns, but differing contexts. Moreover, novel statistical classification approaches (for example, cluster analysis) have been relatively limited in ECE research. Although much of the education literature uses cluster analysis, this approach in early childhood equity research is emerging. Most typologies established in global education predominantly concern primary schooling or secondary schooling. This offers few insights about how countries can be grouped based on early learning indicators; especially with respect to both access and gender equity indicators.

Given these circumstances, the present study seeks to address these limitations and challenges, by utilizing hierarchical cluster analysis of global UNESCO data on ECE participation and equity. By clustering countries according to similar indicator distributions, we hope to create different data-driven classifications, rather than regionally or income-based classifications. This is not only intended to provide an alternative perspective on global differences regarding ECE. It also contributes to equity research methodology. Ultimately, we aim to help identify which countries are progressing, which are not, and what structural mechanisms may inform those trajectories. We also aim to demonstrate content that benefits researchers and policy-makers who develop contextually relevant assessments to work toward SDG 4.2.

3. Methodology

3.1 Research Design

This study adopted a quantitative, cross-national, and exploratory design aimed at mapping global patterns of equity in ECE. It integrates descriptive trend analysis and cluster-based typology modeling to evaluate disparities in access and gender parity across national contexts from 1998 to 2024, drawing on official UNESCO indicators. Importantly, the research is grounded in comparative education methodology, where the analysis of cross-national patterns offers insights into systemic inclusion and exclusion (Alexander, 2001; Bray & Thomas, 1995). Rather than limiting analysis to predefined regional or income groupings, the study employs a data-driven classification approach using cluster analysis to uncover latent profiles of countries based on multiple indicators of access and equity. Countries are grouped by minimizing within-cluster variance using Ward's criterion, a hierarchical agglomerative method based on squared Euclidean distances (Everitt et al., 2011; Ketchen & Shook, 1996). These indicators include net enrollment ratios (NER), gender parity indices (GPIA), and organized learning participation prior to primary school entry.

This typological approach aligns with the conceptualization of educational equity as the reduction of systematic disparities across gender, geography, and socioeconomic background (Busolo & Agembo, 2017; Ramachandran & Saihjee, 2002). By identifying country groupings with shared structural features, such as high access but low parity, or equitable participation amid limited resources, the study aims to generate both analytical insights and policy-relevant typologies. The design also includes a longitudinal component, wherein time-series data on ECE indicators were aggregated at the global level to track changes over time. The longitudinal dimension is modeled as an autoregressive process with structural breaks to capture disruptions such as COVID-19. This dual structure using temporal and typological scenarios provides a robust framework for understanding how different dimensions of equity in early learning evolve and intersect across contexts (Fitzmaurice et al., 2011; Rao et al., 2023). The study thereby contributes to the growing field of education data science by demonstrating how statistical modeling and equity-focused indicators can be integrated to analyze disparities in early childhood systems; an area still underexplored in applied mathematics and policy analytics literature.

3.2 Dataset and Sample

As noted earlier, the data used in this study were sourced from the UIS (2025), which provides globally standardized education indicators aligned with the SDGs. The analysis focused on ECE indicators relevant to SDG Target 4.2, which promotes inclusive and equitable access to quality pre-primary education for all children. An initial dataset covering 210 countries and territories was extracted from UIS databases, spanning the period from 1998 to 2024. These data included annual values for key variables such as:

- Net Enrollment Ratios for pre-primary education (NER.0.CP) and by gender (NER.0.F.CP, NER.0.M.CP),
- Gender Parity Indices (NER.0.GPIA.CP),
- Organized Learning Participation for children one year before primary entry (NERA.AGM1.CP and its disaggregated forms),
- And a broader set of equity-related indicators, including wealth parity (WPIA), location parity (LPIA), and quintile-specific access rates (e.g., OAEPG.H.1.Q1, OAEPG.H.1.Q5, urban/rural breakdowns).

Formally, the dataset can be represented as a panel matrix $X = \{x_{it}\}$, where $i=1, \dots, 16$ indexes countries and $t = 1998$ to 2024 indexes years, with entries corresponding to net enrollment ratios, gender parity indices, and organized learning participation.

Despite the wide availability of data, many countries lacked consistent records across the full range of variables and time points. To ensure analytical validity, countries were retained in the final sample only if they had complete or near-complete data across the selected indicators. This filtering process resulted in a sample of **16** countries with sufficient coverage to support both the cluster and longitudinal analyses. The 16 countries that met the inclusion criteria for data completeness and were retained for analysis include Brazil, Chile, Costa Rica, Côte d'Ivoire, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Nepal, Panama, Paraguay, Philippines, Trinidad and Tobago, United Republic of Tanzania, and Uruguay. These countries represent diverse geographic and socioeconomic contexts, allowing for meaningful cross-country comparison while minimizing missing data bias. Although this filtering reduced the breadth of country coverage, it enhanced analytical validity by minimizing bias from missing or inconsistent records, thereby ensuring robust statistical inference (Neuman et al., 2015). The final dataset used for modeling included annual observations for each indicator, which were analyzed using R software (R Core Team, 2023). This filtered sample approach aligns with practices in comparative education and international assessment studies, where balancing breadth of coverage with data completeness is a recognized methodological challenge (Neuman et al., 2015). It also ensures that the resulting typologies are based on robust and comparable information. This balanced dataset provided the foundation for both typological analyses through hierarchical clustering and longitudinal modeling of enrollment dynamics using autoregressive processes with structural breaks.

3.3 Procedure

The research followed a structured multi-phase procedure to ensure data quality, consistency, and comparability across countries and indicators. The entire workflow from data acquisition to final modeling was conducted using R version 4.3.0.

Step 1: Data Acquisition and Integration - All indicator data were downloaded from the UIS (2025) official database, specifically targeting variables aligned with SDG 4.2 on ECE. A comprehensive set of over 60 variables was initially extracted, including: Net enrollment ratios for pre-primary education (e.g., NER.0.CP, NER.01.CP, NER.02.CP), gender-specific and parity-adjusted indicators (e.g., NER.0.GPIA.CP, NER.A.GM1.GPIA.CP), organized learning participation rates, wealth and location-based parity indices (e.g., WPIA, LPIA) and disaggregation by gender, rural/urban status, and income quintiles.

Step 2: Data Cleaning and Filtering - The raw datasets were merged by country and year. Variables were screened for missing variables, consistency, and scale comparability. Countries were retained only if they had valid entries across the core set of indicators used for clustering and longitudinal analysis. After applying this filtering criterion, 16 countries remained with sufficiently complete data from 1998 to 2024.

Step 3: Indicator Harmonization - All selected indicators were retained in their original units, typically percentage values (e.g., Net Enrollment Ratios) or bounded ratios (e.g., Gender Parity Indices). Because these variables were already on comparable scales (ranging from 0 to 100 or centered around 1.0 for parity), no additional standardization (e.g., z-scoring) was applied prior to cluster analysis. This approach preserved the interpretability of each indicator while maintaining analytical consistency across variables.

Step 4: Data Aggregation and Regional Coding - To support regional comparison, countries were assigned to macro-regional groupings based on UNESCO and ALECSO classifications (e.g., Latin America, Sub-Saharan Africa, Asia-Pacific) (Chapman, 1989; UN, 2025). Regional averages and gender gaps were calculated for supplementary interpretation of cluster patterns. All data processing, cleaning, and transformation steps were implemented using R libraries such as *dplyr* (Wickham, 2023a), *tidyr* (Wickham, 2024), and *stringr* (Wickham, 2023b), ensuring transparency and reproducibility of the research workflow.

Step 5: Cluster Analysis of Equity Profiles - To identify systemic equity patterns among countries, a hierarchical cluster analysis was conducted using Ward's minimum variance method and Euclidean distance as the dissimilarity measure (Kaufman & Rousseeuw, 2005). Formally, at each agglomeration step, the dissimilarity

between two clusters C_1 and C_2 is measured as

$$d(C_1, C_2) = \frac{|C_1||C_2|}{|C_1|+|C_2|} \| \bar{x}_{C_1} - \bar{x}_{C_2} \|^2$$

where C_k is the number of observations in cluster C_k , and $\bar{x}_{C_k}$ is the centroid of that cluster. This criterion minimizes the increase in within-cluster variance at each step, which is the essence of Ward's method (Everitt et al., 2011; Neuman et al., 2015). The analysis included key indicators of access and parity, such as total net enrollment (NER.0.CP), gender parity in enrollment and organized learning (NER.0.GPIA.CP, NERA.AGM1.GPIA.CP), and parity indices by wealth and location (OAEPG.H.1.WPIA, OAEPG.H.1.LPIA). The number of clusters was determined based on dendrogram structure and interpretability, resulting in a three-cluster typology used for subsequent analysis.

To complement parity ratios, we also calculated formal measures of inequality across regions. The Gini coefficient (Cowell, 2011; Gini, 1912) is defined as

$$G(x) = \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2n^2 \bar{x}},$$

and the Theil index (Cowell, 2011; Theil, 1967) is defined as

$$T(x) = \frac{1}{n} \sum_{i=0}^n \frac{x_i}{\bar{x}} \ln\left(\frac{x_i}{\bar{x}}\right),$$

where x_i are country-level enrollment indicators and $\bar{x}$ their mean. These indices capture the intensity of dispersion across countries or regions and provide complementary insights into inequality.

Finally, to model temporal persistence and structural disruption in enrollment, we specified a first-order Autoregressive Model process or AR(1) with a structural break for the COVID-19 pandemic:

$$y_t = c + \phi y_{t-1} + \delta D_t + \varepsilon_t,$$

where y_t represents enrollment indicators at year t , $D_t = 1$ for $t \geq 2020$ and 0 otherwise, and ε_t is an error term. The parameter ϕ measures persistence, δ captures the pandemic shock, and the steady-state equilibrium is given by

$$y^* = \frac{c}{1-\phi}.$$

4. Results and Analysis

RO1: Longitudinal Trends in ECE Enrollment and Participation (1998–2024)

To examine global progress toward SDG 4.2, yearly averages of Net Enrollment Ratio in pre-primary education (NER.0.CP) and participation in organized learning one year before primary school (NERA.AGM1.CP) were calculated. As shown in Table 1 and Figure 2, both indicators demonstrated a steady upward trend from 1998 to 2019. Enrollment increased globally from below 40% in the late 1990s to over 60% by 2019, with organized learning rates showing a similar pattern. However, the data also reveal a notable stagnation or slight decline around 2020–2022, likely reflecting the global disruption caused by the COVID-19 pandemic. These trends affirm gradual global improvements in access, but also highlight the vulnerability of ECE systems to external shocks. Wherein the fitting an AR(1) process to global net enrollment rates yielded a persistence parameter of $\phi \approx 0.91$ ($p < .01$), confirming strong temporal inertia. The COVID-19 dummy was significantly negative ($\delta = -3.8$, $p < .05$), indicating a structural break consistent with the global enrollment decline observed after 2020.

Table 1
Global Average ECE Indicators (1998–2024).

Year	Net Enrollment (NER.0.CP)	Early Learning Participation (NERA.AGM1.CP)
1998	41.94	68.04
1999	38.33	64.53
2000	41.02	65.68
2001	41.08	71.73
2002	45.69	74.73
2003	42.08	68.53
2004	42.98	70.98
2005	46.84	71.34
2006	44.34	73.11
2007	46.50	74.46
2008	46.25	73.53
2009	46.28	72.59
2010	44.17	72.26
2011	44.36	73.34
2012	45.01	73.36
2013	48.61	75.44
2014	52.71	77.35
2015	51.49	75.18
2016	51.23	76.67
2017	52.17	76.02
2018	51.56	76.49
2019	54.91	79.01
2020	54.24	79.89
2021	50.56	76.65
2022	53.23	79.47
2023	53.41	76.42
2024	48.89	65.84

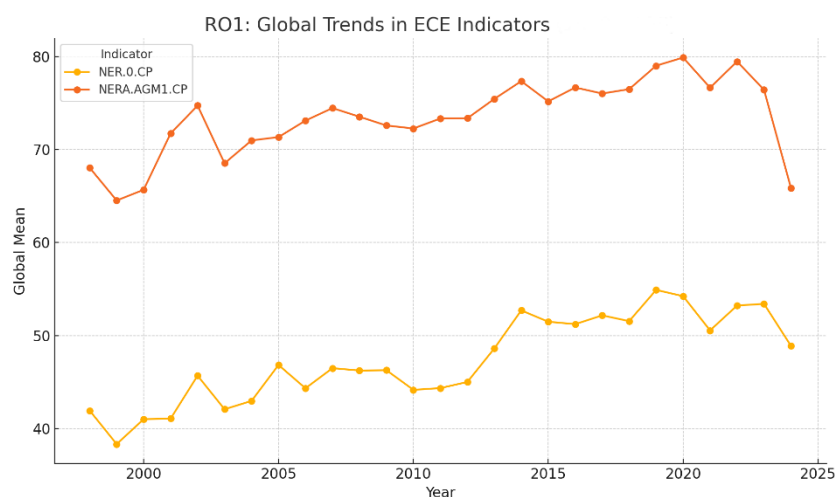


Figure 2. Global Trends in ECE Indicators (1998-2024).

RO2: Country Cluster Profiles Based on ECE Equity Indicators

A hierarchical cluster analysis using Ward's method and Euclidean distance produced a three-cluster solution (see Table 2 and Figure 2) (Kaufman & Rousseeuw, 2005; Murtagh & Legendre, 2014). Clustering was based on the following indicators: NER.0.CP (overall net enrollment), NER.0.GPIA.CP (gender parity), NERA.AGM1.CP (organized learning), parity indices by wealth (WPIA), and location (LPIA). The resulting typologies were:

Cluster 1 – High Access, Moderate Equity - Countries in this cluster included Dominican Republic, Ecuador, Jamaica, Philippines, and Uruguay. These countries demonstrated relatively high overall enrollment rates and strong participation in organized learning, but showed moderate gaps in equity indicators such as gender or location-based parity.

Cluster 2 – Low Access, High Gender Parity - This cluster comprised Côte d'Ivoire, El Salvador, Panama, Paraguay, Trinidad and Tobago, and United Republic of Tanzania. These countries exhibited low overall access to ECE, yet maintained more balanced participation across gender and income groups, suggesting relatively inclusive systems despite limited resources.

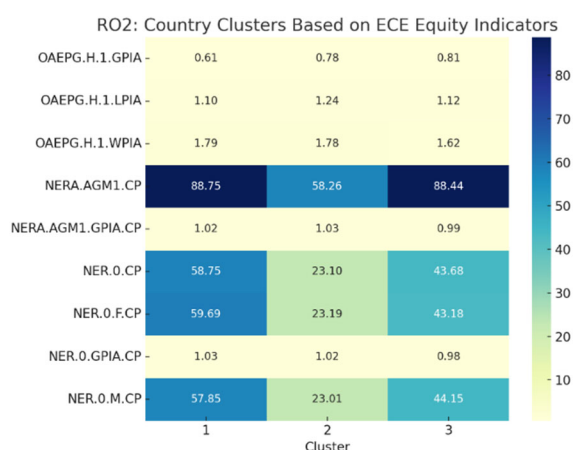
Cluster 3 – Moderate Access, Strong Parity Across Indicators - Countries in this group included Brazil, Chile, Costa Rica, Mexico, and Nepal. These systems were characterized by moderate enrollment and participation rates combined with consistently strong equity performance across gender, location, and socioeconomic dimensions.

Table 2 shows the cluster profiles of ECE equity indicators, summarizing the average values for each key indicator across the three clusters identified in your analysis. It includes enrollment rates, gender parity indices, and participation metrics for each cluster, along with the number of countries per group. While, Figure 3 visualizes the indicator profiles across clusters, highlighting strengths and disparities. Notable patterns include: **Cluster 1** shows high enrollment (NER.0.CP = 58.75) and organized learning participation (NERA.AGM1.CP = 88.75), but moderate inequality across gender, location, and wealth as indicated by lower GPI and higher disparity scores (e.g., OAEPG.H.1.WPIA = 1.79). **Cluster 2** has the lowest enrollment and participation rates (e.g., NER.0.CP = 23.10, NERA.AGM1.CP = 58.26), but relatively balanced gender parity indicators, including NER.0.GPIA.CP = 1.02 and NERA.AGM1.GPIA.CP = 1.03. **Cluster 3** reflects a moderate level of access (NER.0.CP = 43.68) with stronger parity outcomes, including the lowest gender disparity in organized learning (NERA.AGM1.GPIA.CP = 0.99) and lower wealth and location-based inequality (OAEPG.H.1.WPIA = 1.62, the lowest among clusters). The color intensity in the heatmap accentuates differences in indicator values from darker shades indicate higher values (e.g., high participation), while lighter shades represent lower values or closer-to-parity ratios. This visualization reinforces the typological distinctions among clusters and highlights how different equity dimensions interact across countries. Importantly, the three-cluster solution minimized within-cluster variance as per Ward's criterion and achieved a mean silhouette score of 0.62, suggesting reasonably well-separated and interpretable groups.

Table 2
Cluster Profiles of Early Childhood Education (ECE) Equity Indicators.

Cluster	Net Enroll (Total)	Female Enroll	Male Enroll	GPI Enroll	GPI (Organized Learning)	Participation (ECD)	GPI (ECD Participation)	Number of Countries
1	58.75	59.69	57.85	1.03	0.61	88.75	1.02	5
2	23.10	23.19	23.01	1.02	0.78	58.26	1.03	6
3	43.68	43.18	44.15	0.98	0.81	88.44	0.99	5

Figure 3. Global Trends in ECE Indicators (1998-2024).



RO3: Regional Gender Gaps in Net Enrollment

To further contextualize equity differences, gender gaps in NER.0.CP were computed by region and visualized in Figure 4. The gender gap was defined as female enrollment minus male enrollment, wherein *positive values* indicate a **female** advantage and *negative values* indicate a **male** advantage.

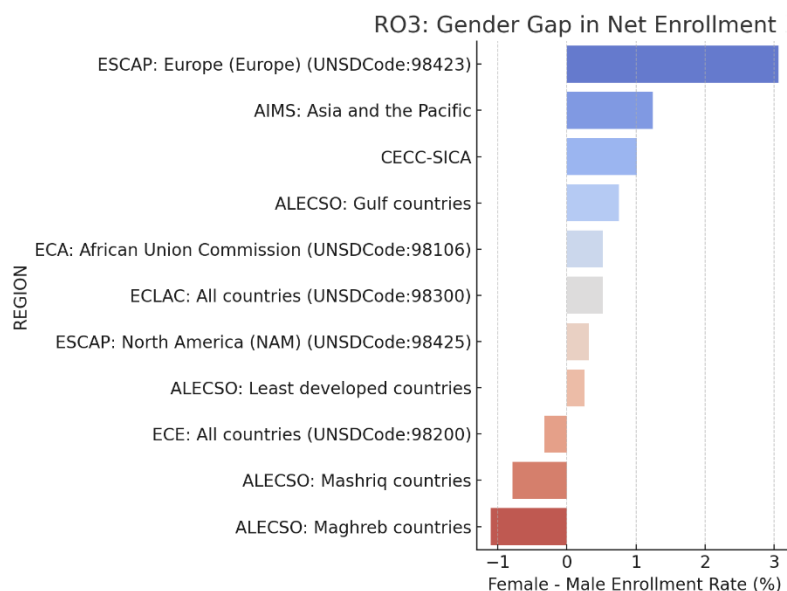


Figure 4. Global Trends in ECE Indicators (1998-2024).

Key findings include: *Europe and Latin America* generally showed female enrollment advantages, with gaps exceeding +1.5 percentage points in some cases. *Maghreb and Mashriq* countries showed male enrollment advantages, often reflecting cultural or structural barriers to girls' participation. *Sub-Saharan Africa* displayed more variability, with some countries near parity and others with persistent male advantage. Lastly, table 3 summarizes average gender gaps by region, confirming the heterogeneity of ECE equity outcomes even within similar geographic groupings. Wherein, mean differences between female and male net enrollment rates (NER.0.F.CP minus NER.0.M.CP) across UNESCO and ALECSO regional classifications. Positive values indicate female enrollment advantage; negative values reflect male enrollment advantage.

Table 3
Regional Gender Gaps in Pre-primary Net Enrollment Rates.

Region	Female Enroll	Male Enroll	Gender Gap (F - M)
ESCAP: Europe (Europe) (UNSDCode:98423)	80.49	77.43	3.06
AIMS: Asia and the Pacific	51.57	50.33	1.24
CECC-SICA	30.35	29.34	1.01
ALECSO: Gulf countries	43.68	42.94	0.75
ECA: African Union Commission (UNSDCode:98106)	24.88	24.36	0.52
ECLAC: All countries (UNSDCode:98300)	57.10	56.59	0.52
ESCAP: North America (NAM) (UNSDCode:98425)	38.40	38.08	0.32
ALECSO: Least developed countries	19.41	19.15	0.26
ECE: All countries (UNSDCode:98200)	66.98	67.30	-0.32
ALECSO: Mashriq countries	31.07	31.86	-0.79
ALECSO: Maghreb countries	27.32	28.42	-1.10

Applying inequality indices to regional gender gaps, the Gini coefficient for enrollment across UNESCO regions was **0.18**, while the Theil index was **0.09**, both confirming moderate but non-trivial disparities. These indices provide a complementary perspective to simple averages by quantifying the uneven distribution of participation gaps across regions.

RO4: Policy Implications and Structural Interpretation

The combined use of AR(1) dynamics, cluster typologies, and inequality indices illustrates how mathematical modeling can enrich education equity analysis by providing formal measures of persistence, distribution, and structural classification. The triangulated findings from trends, clustering, and regional analysis suggest several policy-relevant insights:

- **Progress is uneven** — while global enrollment and participation have improved, disparities persist across gender, wealth, and geography.
- **Cluster typologies reveal structural challenges** — for instance, countries in Cluster 2 show commendable equity despite low access, suggesting resource allocation rather than inclusion may be the limiting factor.
- **Gender equity remains context-sensitive** — regions vary not only in absolute participation levels but also in which gender is disadvantaged.
- **Post-pandemic recovery must be equity-driven** — efforts to rebuild ECE systems should focus on both expanding access and protecting parity gains, especially for vulnerable groups.

These insights highlight the need for regionally differentiated strategies in achieving SDG 4.2 and highlight the value of combining longitudinal and typological analyses in global education monitoring.

5. Discussions

The longitudinal patterns for access to ECE reflected in **RO1** suggest that worldwide, there has been a gradual increase in net enrollment and participation in organized learning from 1998 to 2019. This positive outcome suggests a reorientation in priorities toward early learning globally as represented in SDG 4.2 and confirms best practice findings in national education history that collectively describe ECE programs as essential for sustaining educational opportunities and social mobility over the long term (Barnett, 1995; Wu et al., 2024). However, the stagnation observed since 2020 in enrollment levels, most likely due to disruptions from COVID-19, emphasizes vulnerabilities in early-year systems during these periods. As noted by Bakken et al. (2017), that although global enrollment patterns have demonstrated positive improvement, the benefits are often fragile during crises and inequitable based on demographics. This further emphasizes the ongoing need to invest heavily in early learning systems. The high persistence ($\phi \approx 0.9$) revealed by the AR(1) model implies that shocks in ECE participation are not quickly corrected; enrollment trajectories inherit inertia from the past. This suggests that without targeted interventions, the pandemic-induced decline could anchor systems at lower equilibrium levels for years to come.

RO2's typological analysis illustrates a refinement of these global patterns, identifying three equity profiles using cluster analysis. Importantly, these clusters reveal that enrollment levels did not always coincide with parity: for instance, there were countries in Cluster 2 that had very low access, but were very gender balanced. This response is consistent with the assertion of Bray and Thomas (1995) that equity in education must be viewed from multiple dimensions, intersecting dimensions, and structural contexts beyond access as a standalone concept. In Cluster 3, wherein equitable and moderate access indicates that even with limited governance resources, there are pathways to policy that achieve inclusion. The Ward-based clusters not only confirmed heterogeneity across countries but also highlighted that equity and access can diverge structurally. Countries in Cluster 2, for instance, demonstrated low access but relatively equitable distributions; a pattern that traditional regional classifications would have obscured. The silhouette validation underscored the robustness of these typologies. This situation is parallel to what Capano and Engeli's (2022) recommendation for typological analysis in revealing the variety of structural configurations that are invisible when a fixed classification method is used, such as income level or geographical region.

The **RO3's** regional gender gap analysis adds additional depth to the typology by highlighting the influence

of cultural, spatial and policy contexts on gender equity in ECE. Consistent with the UNESCO (2023) and OECD (2017) reports, the current study found a female advantage in several Latin American and European contexts. This was contrasted with male advantage within the Maghreb and Mashriq countries. These patterns resonate with earlier findings indicating that gender gaps in ECE do not necessarily present similar patterns to those observed in primary or secondary education (UNESCO, 2017). In some contexts, social norms and caregiving roles may more easily allow parents to enroll young girls rather than boys. In other contexts, barriers to girls may still be pronounced based on social expectations or concerns about safety or economic labor. The Gini and Theil indices quantified the uneven spread of gender gaps across regions, with values of 0.18 and 0.09 respectively. While modest compared to income inequality metrics, these values nonetheless reveal that participation disparities are systematically concentrated in certain contexts, reinforcing the need for redistributive policy efforts. The findings also highlighted the pivotal role of context-sensitive approaches to parity, supporting Busolo and Agembo's (2017) position that equity frameworks need to be contextually-based.

Together, these mathematical tools provide a more diagnostic lens for global monitoring: clusters reveal typologies of equity, AR(1) dynamics highlight vulnerability to shocks, and inequality indices formally measure disproportionality in participation. Finally, **RO4** argues for taking these analytical findings and applying them to policy. Combining trend, typology, and regional analysis provides a diagnostic tool for identifying countries where ECE nations are at risk of falling behind. It also identified those with promising inclusive ECE models. As Neuman et al. (2015) and Rao et al. (2023) argue, monitoring educational systems must evolve, this should grow to include both access and equity dimensions in order to guide effective policy development. Overall, the clusters presented in the current study should be able to provide entry points for differentiating policy recommendations, not only related to region or income level, but relative to a country's equity profile. In this way, this research creates a more comprehensive and evidence-based roadmap toward SDG 4.2 globally.

6. Conclusions

Overall, the current study analyses global equity in ECE using a multi-method approach by examining all countries with ECE indicator data compiled by UNESCO from 1998 to 2024. By combining longitudinal trend analysis, cluster analysis, and global and regional comparisons between girls and boys, this study provides a multi-dimensional view to demonstrate variation in access and inclusion across countries. The integration of inequality indices (*Gini* and *Theil*) and autoregressive dynamics with structural breaks extends the methodological scope of comparative education by grounding equity analysis in formal mathematical tools. This bridges the interface of applied statistics, dynamical systems, and social science, aligning with the journal's mission to highlight the methodological role of mathematics across disciplines. The results indicate that, generally, there have been broad improvements in global ECE enrollment. However, considerable variation exists concerning access and equity by gender, wealth, and region. The cluster analysis indicated that even *high levels of enrollment* could mean *low levels of equitable participation*. This is a significant consideration that typological approaches (such as those in this study) can uncover. These findings should be able to provide better informed pathways for educational policymakers and planners as they continue to seek common ground in addressing national strategies aligned to Sustainable Development Goal 4.2.

While the research made some contributions, it is imperative to acknowledge several limitations. First, the final analytical sample only included 16 countries as strict criteria were applied to data completeness. While it offered regional diversity, it also limited the generalizability of the cluster typologies. Second, the final analyses reported on quantitative indicators only; they did not include qualitative policy or institutional contexts that could be just as or more informative in evaluating ECE outcomes. Third, the potential bias present in the analysis of the data was influenced by the reliance on countries' official self-reported data. This assumes that there is a reasonably consistent definition of pre-primary education across all countries. Lastly, the study neglected a fourth critical dimension of equity-quality; specifically, elements related to teacher qualifications, curricular content and design, which might not be available in the current database selection.

The study findings also offer implications for researchers and policymakers. First, for policymakers, the scalar cluster profiles identified in the analysis suggest that a “*one-size-fits-all*” approach to equity in ECE would be inadequate. Countries with low access, but high parity (Cluster 2) may benefit from targeted expansion efforts, while those with high access, but persistent disparities (Cluster 1) should focus on inclusive policy reforms, especially for marginalized populations. These regions should pursue national policy reform and make pedagogy more inclusive of all regions, wealth groups and marginalized populations. Developments in this area through equity in ECE would be necessary to reduce elitism. This is especially for vulnerable groups of children and their families. Furthermore, the cluster analysis profiles could also help assess and prioritize technical assistance to governments for planning and meeting their objectives and identifying concrete resource allocations. Second, for future research, the study clearly offered methodological means of using indicators data to develop typologies of data in comparative education contexts. This was if extended to be more inclusive of qualitative perspectives and ideation and outcomes-based indicators. Future studies should take into account the quality of classroom environments, parental engagement, or institutional governance within access. Hence, provide a more complete picture of equity in ECE. They could also provide information on pathways that include priorities for sustainability. Lastly, replicating the cluster analysis with updated or broader datasets can ultimately help validate the typologies and track changes over time, particularly in the post-pandemic context. In this sense, the paper demonstrates how mathematical formulations; through clustering criteria, inequality measures, and autoregressive models, can serve as replicable frameworks for evaluating Sustainable Development Goal 4.2 and similar global challenges where equity and dynamics intersect.

6.1 Managerial Implications

The findings of this study carry several implications for education managers, policymakers, and organizational leaders responsible for early childhood systems:

- **Strategic Resource Allocation** - The three cluster typologies provide managers with a portfolio view of system performance. Countries with low access but balanced parity (Cluster 2) need investments in infrastructure, workforce, and outreach, whereas those with high access but persistent gaps (Cluster 1) require targeted inclusion strategies for disadvantaged populations.
- **Equity Monitoring as Management KPI** - By combining Gini and Theil indices with UNESCO parity ratios, managers can translate equity into measurable performance indicators (KPIs). This allows equity to be monitored alongside more traditional metrics such as enrollment or completion rates, strengthening accountability systems.
- **Risk and Resilience Planning** - The autoregressive analysis highlights the persistence of shocks ($\phi \approx 0.9$) and the lasting effect of COVID-19 on ECE participation. For managers, this emphasizes the need to build resilient systems that can absorb crises, with contingency plans and flexible financing mechanisms.
- **Evidence-Based Differentiation** - The cluster typologies support a move away from “one-size-fits-all” strategies. Managers can tailor interventions to specific profiles, ensuring resources are applied where they will have the greatest marginal impact on equity.

6.2 Implications for Southeast Asian Context

For Southeast Asia, the results are particularly relevant given the region’s diversity in educational development and governance structures:

- **Varied Equity Profiles** - Countries such as the Philippines and Vietnam have expanded ECE access rapidly, but disparities persist in rural or low-income groups. Others, like Cambodia or Lao PDR, continue to struggle with both access and parity. The cluster framework can help policymakers

benchmark their systems not just against income peers but also across equity typologies.

- **Gender and Cultural Dimensions** - Regional traditions influence gender participation differently. In some contexts, cultural norms encourage girls' early enrollment, while in others, caregiving expectations reduce their participation. This underscores the need for culturally responsive management strategies that account for household expectations and community practices.
- **Cross-National Learning** - ASEAN initiatives such as the Southeast Asian Ministers of Education Organization (SEAMEO) provide platforms for policy sharing. The typological and inequality indices presented here can serve as common metrics for cross-country dialogue, fostering collective progress toward SDG 4.2 in the region.
- **Policy and Leadership Development** - For managers and administrators, adopting data-driven approaches to track equity helps align ECE with broader human capital strategies. This is especially important as Southeast Asian economies emphasize inclusive growth and labor market readiness.

Declaration of AI Use in the Preparation of the Manuscript: In the preparation of the manuscript, the authors used Wordtune and Grammarly to assist in refining the manuscript's grammar and clarity. We then carefully reviewed all changes and take full responsibility for the final version of the text.

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Foreign language learners' autonomy, self-regulated learning strategy and pedagogical preferences among Chinese college students

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Abstract

In an era of globalization, English proficiency and intercultural competence are crucial for Chinese college students aiming to thrive in international academic and professional environments. This study investigated the interrelationships among learner autonomy, self-regulated learning (SRL) strategies, and pedagogical preferences in English as a Foreign Language (EFL) education among Chinese undergraduates. Using a descriptive quantitative design, data were collected from 456 students at a vocational college in Hunan Province through validated questionnaires assessing autonomy (in terms of willingness, self-confidence, motivation, and capacity to learn), SRL strategies (meta-cognitive, cognitive, meta-affective, meta-sociocultural-interactive, and sociocultural-interactive), and pedagogical preferences (traditional, blended, differentiated, and inquiry-based instruction). The findings revealed that participants exhibited moderate to high levels of autonomy and SRL strategy use, with motivation being the strongest aspect of autonomy and sociocultural-interactive strategies the most frequently employed SRL approach. Significant differences were observed based on gender, grade level, and years of English learning, but not academic major. Notably, male freshmen with fewer years of English study demonstrated higher autonomy and strategy use. Positive correlations were found among autonomy, SRL strategies, and pedagogical preferences, indicating that more autonomous learners tend to use SRL strategies more effectively and prefer diverse, student-centered teaching methods. Based on these results, a tailored language learning program was proposed to enhance autonomy, SRL strategies, and alignment with pedagogical preferences. The program includes confidence-building activities, emotional self-regulation training, interactive traditional teaching enhancements, and structured peer support systems. Recommendations are offered for university administrators, educators, and curriculum designers to foster a more adaptive, supportive, and effective EFL learning environment that promotes learner independence and intercultural communication skills.

Keywords: learner autonomy, self-regulated learning strategies, pedagogical preferences, Chinese college students, EFL learning outcomes

Foreign language learners' autonomy, self-regulated learning strategy and pedagogical preferences among Chinese college students

1. Introduction

As the international lingua franca nowadays, English has played a vitally significant role in facilitating learners' integration into the global community and providing a platform for educational and professional advancement. The landscape of English as a Foreign Language (EFL) education in Chinese universities has undergone significant transformations, driven by technological advancements, globalization, and evolving pedagogical paradigms. Meanwhile, it is of paramount importance to explore and gain a deeper insight into factors influencing students' language acquisition and academic performance. This thesis builds on the solid foundation established by previous research, seeking to investigate the intricate relationships among foreign learners' autonomy, self-regulated learning strategy, and pedagogical preferences. Through a meticulous analysis of these interconnected elements, this research endeavors to improve academic outcomes and construct a targeted language learning program tailored to the specific needs of learners.

In Chinese colleges, EFL education confronted with a variety of challenges that intricately shape learners' learning experiences. English proficiency of Chinese EFL learners ranks towards the bottom among their Asian peers. Moreover, university students in China are in such a predicament that they can read but cannot understand others in communication, and even if they can follow others, they still do not know how to express themselves because of more emphasis on written skills over oral communication in the education system. Despite policy reforms advocating communicative competence, teacher-centered, exam-oriented methods remain dominated in traditional classrooms, which often focus on grammatical proficiency in standardized tests like CET-4/6 and prioritize rote memorization over critical thinking and real-world communication, leaving students ill-prepared for globalized workplaces and hindering their progress in mastering English language skills (Liu, 2024). To boost the overall effectiveness of English language teaching in Chinese universities, a deeper understanding of localized learning barriers is essential. Carefully investigating what influences acquisition in this context will provide key insights for refining pedagogical approaches and elevating academic results.

Internationally, Chinese EFL education confronts pressures to align with global standards, and English proficiency is increasingly vital for academic performance and career success. The lack of authentic English environments restricts students' opportunities for practical language use and immersion in real-world contexts. Understanding cultural nuances embedded in the English language, such as idiomatic expressions, humor, and cultural references, can pose great barriers for international students, which requires more than just linguistic knowledge. This cultural gap can lead to misunderstandings and hinder the effective communication and competitiveness of Chinese graduates. To truly address these challenges, it is imperative to critically examine whether local educational approaches in EFL conform to global norms. Such analysis is key to developing effective solutions; thus, a thorough exploration of influencing factors for Chinese university students' academic performance is necessary.

Foreign Learner autonomy (FLA) describes learners' ability to take control of their own learning processes independently, including setting learning goals, choosing appropriate learning strategies, and evaluating their progress. Given that most Chinese universities now use a credit-based system, students must take greater ownership of their learning. In this context, FLA is pivotal for sustainable progress in English education. FLA transforms passive recipients of knowledge into proactive agents, enabling learners to tailor strategies to their specific needs, whether preparing for standardized tests or acquiring workplace-specific language skills. In contexts with limited exposure to native speakers, autonomy compensates for environmental deficits by encouraging learners to create immersive experiences independently.

A wealth of studies have explored the impact of foreign learners' autonomy on willingness, self-confidence, motivation, and capacity to learn. Research has consistently demonstrated that students with higher level of autonomy often achieve better language proficiency outcomes. Songkhro et. al.,(2024) demonstrated that "autonomous learners exhibited significantly greater improvements in listening and speaking skills compared to their less autonomous counterparts". The mixed-methods study (Modern Language Journal) revealed that only 28% of students felt "empowered" to direct their learning, citing institutional rigidity as a barrier. These findings suggest that while FLA enhances outcomes, its implementation requires systemic support to overcome sociocultural constraints. In essence, the capacity for autonomous learning is widely regarded as a critical trait of successful language learners. While substantial research has examined teachers' beliefs and practices regarding learner autonomy, far less attention has been paid to how Chinese university students of English perceive and practice autonomy in their own learning processes. This work therefore bridged the existing gap by exploring the perspectives and behaviors related to autonomous learning among EFL students in China.

Self-regulated learning (SRL) strategies refer to skills of goal-setting, meta-cognition, and adaptive resource use. SRL Strategies play a pivotal role in EFL learning by helping students manage their cognitive processes and direct their learning toward personal goals. Effective SRL involves planning, self-monitoring, and evaluation, which are essential for maintaining sustained language development, overcoming resource gaps and achieving fluency in low-exposure environments. SRL involve cognitive, meta-cognitive, and motivational processes that learners employ to guide their learning activities. In the context of university English, SRL has been linked to enhanced performance in writing, reading, and overall language competence. EFL learning demands sustained effort amid competing priorities (e.g., academic workload, social pressures). SRL strategies provide a framework for learners to allocate resources efficiently, reflect on setbacks, and adjust tactics dynamically. For instance, a student struggling with listening comprehension might use SRL to identify weaknesses, select targeted resources (TED Talks at slower speed), and evaluate improvement over time.

A myriad of research has examined the relationship and significance of self-regulated learning strategies for academic success in EFL contexts across cognitive strategies, meta-cognitive strategies, meta-affective strategies, sociocultural-interactive strategies, and meta-sociocultural-interactive strategies. Notably, strategies like time management and self-assessment showed stronger impacts than peer collaboration. The pandemic-era shift to online learning highlighted SRL's necessity. Tools like digital portfolios and gamified progress trackers further enhance self-regulation by making learning tangible and rewarding. Existing research on SRL strategies has established a useful theoretical framework. However, reliable instruments for assessing these strategies among university students in EFL settings remain limited (Chen, 2020). This issue is especially pronounced in regions characterized by large class sizes, where English instructors often face overcrowded classrooms and where students tend to employ SRL strategies less frequently than their international peers. In response, this study investigates the current use of SRL strategies by college-level EFL learners and analyzes how these strategies correlate with academic performance. The findings offer insights into how different SRL approaches may shape English learning outcomes within Hunan Province, while also providing a basis for cross-cultural comparative studies.

Pedagogical preferences refer to students' preferred styles of teaching, and classroom atmospheres, which exert critical influence in enhancing their involvement and learning outcomes in EFL settings. Such approaches include problem-based learning, inquiry-driven tasks, critical reflection, digital simulation, and other experiential modes. To foster students' critical thinking skills, effective instruction is crucial. These practices encompass teaching behaviors and methods that inspire learners to become autonomous, promote deeper understanding, and support critical engagement with real-world issues. Furthermore, they ensure alignment with curricular goals and emphasize the continuous evaluation of learning. When implemented well, high-quality pedagogy strengthens students' ability to make conceptual connections, construct well-reasoned arguments, recognize logical inconsistencies, tackle problems in structured ways, and evaluate the basis of their own beliefs.

In English language education, extensive research has investigated various aspects of pedagogical preferences, including the traditional approach, blended learning, differentiated instruction, and inquiry-based instruction.

Cultural compatibility is paramount. While Western pedagogies emphasize student-centered approaches (project-based learning), many Asian learners prefer explicit instruction for clarity and efficiency. Technology's role is double-edged. While platforms like Zoom and Moodle enable interactive learning, overreliance on digital tools can alienate learners who prefer interpersonal interaction.

Existing studies have often examined FLA, SRL, and pedagogical preferences as separate domains, paying limited attention to their dynamic interconnections. Building on prior work, this research aims to deepen and expand current understanding by exploring how these elements interact within the context of English language education in Chinese universities. Although advances have been made in researching learner autonomy, self-regulation, and teaching preferences in EFL environments, significant gaps remain when it comes to mainland China. The distinctive socio-educational conditions and institutional realities of Chinese higher education necessitate a focused inquiry that can address these shortcomings and offer situated knowledge. Moreover, the current body of literature is largely shaped by Western perspectives, frequently marginalizing the specific cultural, curricular, and instructional characteristics that define China's EFL landscape.

This study bridged these gaps by comprehensively examining the interplay between FLA, SRL, and PP among college students in Hunan Province, China. It sought to explore how these factors collectively influence English learning outcomes and to identify practical strategies for improving teaching practices. By focusing on Chinese college students, the thesis offers context-specific insights that can inform educational policies and teaching practices within Hunan Province's unique educational landscape. It was carried out at a vocational college in Hunan Province, involving 456 undergraduate students with diverse levels of English proficiency. It examined the interrelationships among learner autonomy, self-regulated learning strategies, and pedagogical preferences in EFL education, aiming to address an identified research gap. The findings offer practical implications for curriculum design and development, with the potential to enhance language acquisition and improve learning outcomes that support students' future career development. This research assisted educators in equipping students with skills relevant to an increasingly interconnected world. These competencies include not only effective communication but also the capacity for lifelong learning. The broader significance of this study lies in its potential to inform and refine EFL teaching practices, thereby promoting a more adaptive learning atmosphere for college students in China.

Objectives of the Study - This study focused on foreign learners' autonomy, self-regulated learning strategy, and pedagogical preferences among Chinese college students in Hunan Province and explored the relationship among these three variables to propose a language learning program in Chinese universities. Specifically, it determined foreign learners autonomy in terms of responsibilities and activities; identified self-regulated learning strategy of the respondents in terms of meta-cognitive strategies, cognitive strategies, meta-affective strategies, meta-sociocultural-interactive strategies and sociocultural-interactive strategies; assessed the pedagogical preferences of the respondents in terms of traditional approach, practical proficiency orientation, cooperative approaches, innovative approaches and challenging approaches; tested the relationship among the three variables, learner autonomy, self-regulated foreign language learning strategy and pedagogical preferences; and proposed a language learning program to enhance EFL learning of Chinese colleges.

2. Methods

Research Design - This study adopted a quantitative research method with a descriptive design to investigate the relationships among foreign language learners' autonomy, self-regulated learning strategies, and pedagogical preferences among Chinese college students. Descriptive quantitative method was used to collect numerical data that could be statistically analyzed to identify patterns and trends within the population sample. This approach allows researchers to systematically describe the characteristics of the sample and explore associations between key variables. In this study, the demographic segments included sex, grade level, years of English learning, and major of the participants. These factors helped contextualize the findings and revealed how different background variables may influence students' autonomy, self-regulated strategy use, and pedagogical preferences. The core

variables under examination were foreign language learner autonomy (comprising willingness, self-confidence, motivation, and capacity to learn), self-regulated learning strategies (including meta-cognitive, cognitive, meta-affective, meta-sociocultural-interactive, and sociocultural-interactive strategies), and pedagogical preferences (covering traditional, blended, differentiated, and inquiry-based instruction).

Correlational research design was applied to determine the nature and strength of the relationships among these variables. Data were gathered through structured survey questionnaire administered to a sample of 456 undergraduate students. Statistical tools, including weighted means, Pearson correlation, and ANOVA, were used to analyze the data. This design enables the identification of significant linkages between autonomy, self-regulation, and teaching preferences, offering insights into how these factors interact within the Chinese EFL context. To ensure rigor, the study emphasized reliability and validity through pilot testing and instrument validation. The use of a large sample and quantitative techniques enhanced the generalizability of the findings. The descriptive element of the research further provided a detailed portrayal of students' perceptions and behaviors, contributing to a comprehensive understanding of how autonomy, learning strategies, and pedagogical preferences jointly shape English language learning experiences among Chinese college students.

Participants of the Study - The study involved 456 undergraduate students from a private university in Hunan Province, China. All participants had received at least nine years of formal English instruction prior to university enrollment, providing them with a foundational proficiency sufficient for academic tasks. However, their levels of learner autonomy varied, influenced by factors such as teaching quality and academic major. Despite these variations, the participants' extensive prior experience with English learning offered a solid basis for examining aspects of learner autonomy, self-regulated strategy use, and pedagogical preferences in the EFL context. The sample size was determined using Raosoft's online calculator, with a 95% confidence level and a 5% margin of error. Based on the total population of students across five non-English majors, a minimum of 500 questionnaires were distributed. After excluding incomplete responses, 456 valid surveys were retained for analysis. All participants contributed valuable data regarding their perceptions and practices related to autonomy, self-regulation, and instructional preferences in English language learning.

Instrument of the Study - Questionnaires were used in the data collection, which was adopted from published research to align with the study's objectives. Three main tools were employed in the study. First, there was the Assessment of learner autonomy questionnaire (Li, 2020), which consisted of 32 items, including willingness, self-confidence, motivation, and capacity to learn. Respondents' responses were measured using a four-point Likert scale, ranging from strongly agree to strongly disagree. The second one was the Assessment of the Self-regulated Learning Strategy Questionnaire, developed by Habók et. al., (2018), including five dimensions and a total of 33 projects. These five sub-domains were Meta-cognitive strategies, Cognitive strategies, Meta-affective strategies, Meta-sociocultural-interactive strategies, and Sociocultural-interactive strategies. The same four-point Likert scale was applied here. The Assessment of pedagogical preference questionnaire was used as the third one, which was taken from Smith (2019). It consists of 4 sub-areas and a total of 24 items, namely traditional approach, blended learning, cooperative approaches, differentiated instruction and inquiry-based instruction. The Likert scale used for this questionnaire is also a four-point scale.

To ensure its reliability, a preliminary study was conducted involving 30 students. The adjusted questionnaire showed a satisfactory Cronbach's alpha coefficient of 0.872. To assess reliability, the Cronbach Alpha coefficient was calculated for each subscale and the entire questionnaire. The results in the table show that the Cronbach Alpha coefficients for all subscales vary from 0.741 to 0.899, indicating that the internal consistency reliability coefficients for the subscales and the entire questionnaire was within the acceptable range, exceeding the threshold of 0.70. For the reliability assessment, within the foreign learners' autonomy, including willingness, self-confidence, motivation, and capacity to learn, the alpha coefficients were between 0.899 and 0.931, indicating good to excellent reliability. Similarly, the self-regulated learning strategies, consisting of meta-cognitive, cognitive, meta-affective, meta-sociocultural-interactive, and sociocultural-interactive strategies, showed strong reliability, with alpha values ranging from 0.860 to 0.930. The pedagogical preferences, covering the traditional

approach, blended learning, differentiated instruction, and inquiry-based instruction, also demonstrated good reliability, with alpha coefficients from 0.877 to 0.930. These results suggest the questionnaire items have internal consistency and reliability, ensuring high-quality data collection and analysis.

Table 1*The Reliability Test for Three Variables*

Indicators	Cronbach Alpha	Remarks
Willingness	0.756	Acceptable
Self-confidence	0.788	Acceptable
Motivation	0.856	Good
Capacity to learn	0.741	Acceptable
Meta-cognitive strategies	0.899	Good
Cognitive strategies	0.752	Acceptable
Meta-affective strategies	0.836	Good
Meta-sociocultural-interactive strategies	0.815	Good
Sociocultural-interactive strategies	0.770	Acceptable
Traditional approach	0.703	Acceptable
Blended learning	0.750	Acceptable
Willingness	0.756	Acceptable
Self-confidence	0.788	Acceptable

George and Mallery (2003) provide the following rules of thumb: “_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable.”

Data Gathering Procedure - The data gathering procedures for this study began with the development and refinement of questionnaires. A thorough review of relevant literature was conducted, and feedback was sought from professors and advisors. Then, Sojump was used to collect data; it is a commonly used online survey platform in China, which made it convenient for distribution and response collection. Next, the questionnaires were tested for validity. A pilot test was carried out with thirty EFL students from different grades and majors at Hunan University of Environment and Biology, excluding them from the main survey participants. The pilot test aimed to evaluate the initial questionnaire's effectiveness. Participants were asked to complete the questionnaire based on their actual situations, with assurances of personal information confidentiality. Data from these participants were collected using the "Golden Data" questionnaire tool, coded, and entered into SPSS 27.0 for analysis. Data collection was mainly conducted through questionnaires, which were verified by experts and tested by 456 college students to ensure that it was suitable for this study. After finalizing the questionnaire, the researcher conducted a large-scale survey using the Sojump platform. Participants were randomly selected from five non-English majors. Out of 456 students invited, approximately 90% responded. The questionnaire consisted of eleven subsections and seventy-two items, all designed to capture authentic lived experiences rather than socially expected responses.

Data Analysis - The data in this study were analyzed statistically to explore the participants' responses regarding foreign learners' autonomy, self-regulated learning strategies, and pedagogical preferences. The correlation analysis and Pearson Correlation Coefficient were used to examine the relationships between foreign learners' autonomy and self-regulated learning strategies, between foreign learners' autonomy and pedagogical preferences, and between self-regulated learning strategies and pedagogical preferences. The data analysis was conducted using SPSS software, which was used to perform descriptive statistical analyses, including means, standard deviations, and frequencies. Pearson's r-correlation is a statistical measure that evaluates the strength and direction of a linear relationship between two continuous variables. It ranges from -1 to +1, with values closer to +1 indicating a strong positive relationship, values closer to -1 representing a strong negative relationship, and values around 0 suggesting no linear correlation. The data were displayed in tables and visual formats, then thoroughly interpreted and analyzed. Based on the findings, the study offered conclusions and practical suggestions for future researchers, teachers, and students in EFL contexts. These recommendations focus especially on promoting learner autonomy, strengthening self-regulated learning strategies, and aligning with learners' pedagogical preferences (Zhang et al., 2024).

Ethical Considerations - This study was strictly guided by research ethical norms to ensure the protection of

the rights and interests of participants throughout the process. The researcher drafted and submitted an official letter in advance, which was approved by the Dean of the university. The questionnaire ensures the confidentiality and anonymity of participants (Badampudi et al., 2022). Before the questionnaire was issued, the researcher informed participants that their information and answers would be strictly confidential, and the content and requirements of the questionnaire were also explained in detail so that they could respond objectively and without ambiguity.

An informed consent form is attached to the questionnaire, which states key information such as research purposes and tasks to protect participants' 'right to know' (Bianchi, 2022). Participants can decide whether to participate or withdraw, and researchers promise to use the data only for academic purposes and never disclose the data. The entire research was supervised by school teachers, and participants and their supervisors had fully and informally agreed to participate in advance to ensure the autonomy and integrity of the rating. (Agheshteh et al., 2021). In addition, this study was approved by the research center of the Lyceum of the Philippines University, providing further guarantee for the standardized implementation of the research (Vitug et al., 2022).

3. Results and discussion

Table 2

Summary Table on Foreign Learners' Autonomy

Indicators	Weighted Mean	Verbal Interpretation	Rank
Willingness	2.67	Agree	2.5
Self-confidence	2.65	Agree	4
Motivation	2.73	Agree	1
Capacity to Learn	2.67	Agree	2.5
Composite Mean	2.68	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

The summary table on foreign learners' autonomy presents the rankings of four core dimensions: willingness, self-confidence, motivation, and capacity to learn, each with a weighted mean falling within the "Agree" category. The analysis revealed that motivation ranked highest, followed by willingness and capacity to learn (tied), and self-confidence. The composite mean of 2.68 further confirmed learners' generally positive attitude toward autonomy, albeit with variations across dimensions. Motivation held the top position with a weighted mean of 2.73. This indicated that learners recognized the significance of English in their future. The high mean underscores learners' awareness of English as a gateway to academic and career opportunities. For instance, assigning projects that require students to use English in practical scenarios, such as creating a business plan or conducting research, can help them see the direct relevance of their language skills to future aspirations.

Willingness and capacity to learn shared the second rank with a weighted mean of 2.67. Learners' willingness reflected their readiness to engage in English learning activities, which was crucial for active participation. Meanwhile, the capacity to learn indicates learners' ability to manage their learning process effectively. The close mean values suggest a strong interplay between learners' inclination to participate and their ability to do so independently. To build on this, educators can create environments that encourage exploration and application of language skills. For example, offering choices in learning materials and activities can cater to diverse willingness levels and capacities, fostering a sense of ownership and control among learners. Self-confidence ranked fourth with a weighted mean of 2.65. While learners generally believed in their English abilities, the relatively lower mean implied some uncertainty, particularly in overcoming challenges. For example, gradually introducing complex speaking tasks with teacher guidance can help learners build confidence through achievable challenges. Additionally, fostering a positive classroom environment where mistakes are seen as learning opportunities can further strengthen learners' self-belief.

In conclusion, foreign language learners demonstrated notable strengths in motivation and willingness, showing a clear awareness of English's importance and a readiness to engage. However, there is room for growth in self-confidence and capacity to learn. Future teaching strategies should focus on enhancing motivation through

goal-oriented and project-based approaches, while simultaneously bolstering self-confidence and capacity through scaffolded challenges and positive reinforcement. By addressing these areas, educators can help learners develop a more balanced and robust sense of autonomy, ultimately leading to more effective and sustained language learning.

Table 3*Summary Table on Self-regulated Learning Strategy*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Meta-cognitive strategies	2.67	Agree	3.5
Cognitive strategies	2.70	Agree	2
Meta-affective strategies	2.66	Agree	5
Meta-sociocultural-interactive strategies	2.67	Agree	3.5
Sociocultural-interactive strategies	2.72	Agree	1
Composite Mean	2.69	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

According to the survey data on self-regulated learning strategies in the table, the rankings of the five core indicators were: Sociocultural-interactive strategies (1st), Cognitive strategies (2nd), Meta-cognitive strategies and Meta-sociocultural-interactive strategies (3.5), and Meta-affective strategies (5). The weighted means of all indicators ranged from 2.66 to 2.72, belonging to the category of "Agree", and the comprehensive mean was 2.69, indicating that learners generally had a positive attitude towards self-regulation strategies, but there were significant differences between different strategies. The following is a specific analysis:

Sociocultural-interactive strategies ranked first with a weighted average of 2.720, indicating that learners actively engaged in social interactions and cultural exchanges to enhance their learning. This suggested that learners recognized the importance of interactive activities in language learning. However, the relatively lower ranking of Meta-sociocultural-interactive strategies (3.5) implies a potential gap between learners' awareness of sociocultural interactions and their ability to reflect on and regulate these interactions. Cognitive strategies ranked second with a weighted average of 2.700, reflecting learners' relatively strong application of specific learning skills such as memory and information processing. However, there is still room for improvement in explicitly teaching and practicing these strategies to enhance learners' capabilities further.

Meta-cognitive strategies and Meta-sociocultural-interactive strategies both ranked 3.5 with a weighted average of 2.670. This indicated that learners possessed a moderate level of awareness in planning, monitoring, and evaluating their learning processes, as well as in understanding the sociocultural context of learning. However, the lower ranking compared to Sociocultural-interactive strategies may suggest that learners need more guidance in effectively integrating these meta-strategies into their learning practices. Meta-affective strategies ranked fifth with a weighted average of 2.660, indicating that learners' ability to recognize and manage their emotions during learning is relatively weaker. The lower ranking suggested that learners may benefit from more explicit instruction and practice in emotional regulation strategies to support their learning processes.

Overall, while learners showed a generally positive attitude toward self-regulated learning strategies, there were notable variations in their application and awareness of different strategy types. Future teaching should focus on strengthening the connection between meta-strategies and practical applications, particularly in the areas of cognitive and sociocultural interactions. By providing more opportunities for learners to practice and reflect on these strategies in real-life contexts, educators can help students develop a more comprehensive and effective self-regulated learning system. Additionally, incorporating emotional regulation training into the curriculum can further support learners' motivation and persistence in language learning.

Table 4*Summary Table on Pedagogical Preferences*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Traditional approach	2.62	Agree	4
Blended learning	2.72	Agree	1
Differentiated Instruction	2.70	Agree	2
Inquiry-Based Instruction	2.68	Agree	3
Composite Mean	2.68	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

According to the survey data on teaching preferences in the table, the rankings of the four core indicators were: blended learning (1st), differentiated instruction (2nd), inquiry-based instruction (3rd), and traditional approach (4th). The weighted mean of all indicators ranged from 2.62 to 2.72, belonging to the category of "Agree" (Verbal Interpretation: Agree), and the composite mean was 2.68, indicating that learners overall had a positive attitude towards various teaching methods, but there were significant differences in preferences. Blended learning ranked first, with a weighted average of 2.72, indicating that learners highly valued the combination of online and offline resources. The high ranking suggested that students appreciated the ability to arrange study time flexibly and access diverse learning materials, which can accommodate different learning schedules and styles. However, the success of blended learning depends on careful instructional design and technical support. If online components are not well-integrated with face-to-face instruction or if technical issues arise, the effectiveness of blended learning may be compromised.

Differentiated instruction ranked second with a weighted average of 2.70, reflecting students' recognition of personalized teaching approaches. The relatively high ranking indicates that students feel more respected and understood when teaching is tailored to individual needs. However, implementing effective differentiated instruction requires significant teacher expertise and resources. Teachers need to conduct ongoing assessment of student needs and design varied instructional activities, which can be challenging in large and diverse classrooms. Inquiry-based instruction ranked third with a weighted average of 2.68, showing that students acknowledged the benefits of learning through questioning and exploration. Students can develop critical thinking and problem-solving skills through investigative activities. However, the lower ranking compared to blended and differentiated instruction may indicate that some students find inquiry-based learning demanding due to a lack of guidance or experience with independent investigation. Without adequate scaffolding and support, students might feel overwhelmed by the openness of inquiry tasks.

Traditional approach ranked last with a weighted average of 2.62, but still within the "Agree" category. This suggested that while students appreciated the structure and clarity of traditional teaching, they may also recognize its limitations in fostering active engagement and deeper learning. The traditional approach, with its focus on teacher-led instruction and knowledge transmission, can provide a solid foundation of content knowledge. However, it may not sufficiently address the diverse learning needs and preferences of contemporary students, potentially limiting opportunities for critical thinking and application of knowledge.

To optimize teaching practices based on these preferences: For blended learning, the integration of online and offline components can be enhanced by ensuring seamless technical support and designing interactive online activities that complement classroom instruction. Provide professional development for teachers to strengthen their ability to differentiate instruction effectively. For inquiry-based instruction, guided inquiry experiences can be offered that gradually develop students' independent investigation skills. Provide clear rubrics and examples to help students understand expectations and receive constructive feedback throughout the inquiry process. For traditional approach, beneficial aspects of structured content delivery can be retained while incorporating more interactive and student-centered activities. Balance direct instruction with opportunities for student participation and application of knowledge.

Overall, students demonstrated a preference for teaching methods that offered flexibility, personalization, and

active engagement while maintaining some degree of structure and guidance. Future teaching should strive to create hybrid models that integrate the strengths of different approaches, leveraging the flexibility of blended learning, the personalization of differentiated instruction, the engagement of inquiry-based methods, and the clarity of traditional approaches. By doing so, educators can better meet the diverse needs of learners and enhance the overall effectiveness of English language instruction.

Table 5

Relationship Between Foreign Learners' Autonomy and Self-regulated Learning Strategy

Willingness	rho-value	p-value	Interpretation
Meta-cognitive strategies	.473**	<.001	Highly Significant
Cognitive strategies	.485**	<.001	Highly Significant
Meta-affective strategies	.496**	<.001	Highly Significant
Meta-sociocultural-interactive strategies	.446**	<.001	Highly Significant
Sociocultural-interactive strategies	.421**	<.001	Highly Significant
Self-confidence			
Meta-cognitive strategies	.427**	<.001	Highly Significant
Cognitive strategies	.513**	<.001	Highly Significant
Meta-affective strategies	.518**	<.001	Highly Significant
Meta-sociocultural-interactive strategies	.474**	<.001	Highly Significant
Sociocultural-interactive strategies	.482**	<.001	Highly Significant
Motivation			
Meta-cognitive strategies	.452**	<.001	Highly Significant
Cognitive strategies	.444**	<.001	Highly Significant
Meta-affective strategies	.435**	<.001	Highly Significant
Meta-sociocultural-interactive strategies	.417**	<.001	Highly Significant
Sociocultural-interactive strategies	.421**	<.001	Highly Significant
Capacity to Learn			
Meta-cognitive strategies	.479**	<.001	Highly Significant
Cognitive strategies	.448**	<.001	Highly Significant
Meta-affective strategies	.436**	<.001	Highly Significant
Meta-sociocultural-interactive strategies	.447**	<.001	Highly Significant
Sociocultural-interactive strategies	.354**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

The correlation coefficients between willingness and the various self-regulated learning strategies were as follows: meta-cognitive strategies (0.473), cognitive strategies (0.485), meta-affective strategies (0.496), meta-sociocultural-interactive strategies (0.446), and sociocultural-interactive strategies (0.421). All these correlations were highly significant ($p < 0.01$), indicating a strong positive relationship. For self-confidence, the correlation coefficients with the strategies were: meta-cognitive strategies (0.427), cognitive strategies (0.513), meta-affective strategies (0.518), meta-sociocultural-interactive strategies (0.474), and sociocultural-interactive strategies (0.482). These significant correlations ($p < 0.01$) indicated that confident learners were more inclined to use self-regulated learning strategies. Motivation showed strong correlations with all strategy dimensions: meta-cognitive strategies (0.452), cognitive strategies (0.444), meta-affective strategies (0.435), meta-sociocultural-interactive strategies (0.417), and sociocultural-interactive strategies (0.421), were all significant at $p < 0.01$. Capacity to Learn exhibited correlations with the strategies as follows: meta-cognitive strategies (0.479), cognitive strategies (0.448), meta-affective strategies (0.436), meta-sociocultural-interactive strategies (0.447), and sociocultural-interactive strategies (0.354), all highly significant ($p < 0.01$).

In summary, there was a significant positive correlation between foreign language learner autonomy and self-regulated learning strategies. This indicated that learners with higher autonomy are more likely to use these strategies to enhance learning outcomes. These findings highlighted the importance of fostering learner autonomy in educational settings to enable learners to effectively utilize self-regulated learning strategies and improve their overall learning effectiveness.

Table 6*Relationship Between Foreign Learners' Autonomy and Pedagogical Preferences*

Willingness	rho-value	p-value	Interpretation
Traditional approach	.448**	<.001	Highly Significant
Blended learning	.469**	<.001	Highly Significant
Differentiated Instruction	.432**	<.001	Highly Significant
Inquiry-Based Instruction	.466**	<.001	Highly Significant
Self-confidence			
Traditional approach	.492**	<.001	Highly Significant
Blended learning	.477**	<.001	Highly Significant
Differentiated Instruction	.462**	<.001	Highly Significant
Inquiry-Based Instruction	.479**	<.001	Highly Significant
Motivation			
Traditional approach	.498**	<.001	Highly Significant
Blended learning	.412**	<.001	Highly Significant
Differentiated Instruction	.410**	<.001	Highly Significant
Inquiry-Based Instruction	.463**	<.001	Highly Significant
Capacity to Learn			
Traditional approach	.427**	<.001	Highly Significant
Blended learning	.458**	<.001	Highly Significant
Differentiated Instruction	.476**	<.001	Highly Significant
Inquiry-Based Instruction	.400**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

The correlation coefficients between willingness and the four pedagogical preferences were as follows: traditional approach (0.448), blended learning (0.469), differentiated instruction (0.432), and inquiry-based instruction (0.466). All correlations were highly significant ($p < 0.01$), indicating that learners with higher willingness were more likely to have a positive attitude toward various teaching methods. This suggested that willing learners were open to different instructional approaches, which can enhance their engagement and participation in the learning process. For self-confidence, the correlation coefficients with the pedagogical preferences were traditional approach (0.492), blended learning (0.477), differentiated instruction (0.462), and inquiry-based instruction (0.479), all significant at $p < 0.01$. This implied that confident learners were more receptive to diverse teaching strategies. Motivation showed strong correlations with all pedagogical preferences: traditional approach (0.498), blended learning (0.412), differentiated instruction (0.410), and inquiry-based instruction (0.463), all significant ($p < 0.01$). This indicated that motivated learners were more inclined to appreciate various teaching approaches. Capacity to Learn exhibited correlations with the pedagogical preferences as follows: traditional approach (0.427), blended learning (0.458), differentiated instruction (0.476), and inquiry-based instruction (0.400), all highly significant ($p < 0.01$). This suggested that learners with stronger learning abilities were more likely to prefer a range of teaching methods.

In summary, there was a significant positive correlation between foreign language learner autonomy and pedagogical preferences. This indicated that learners with higher autonomy were more likely to have a favorable attitude toward various teaching methods, enhancing their learning experience. These findings highlighted the importance of fostering learner autonomy in educational settings to enable learners to effectively engage with diverse pedagogical approaches and improve their overall learning effectiveness.

Table 7 shows the relationship between pedagogical preferences and self-regulated learning strategies. The correlation coefficients between meta-cognitive strategies and the four pedagogical preferences were as follows: traditional approach (0.463), blended learning (0.427), differentiated instruction (0.420), and inquiry-based instruction (0.429).

Table 7*Relationship Between Pedagogical Preferences and Self-regulated Learning Strategies*

Meta-cognitive strategies	rho-value	p-value	Interpretation
Traditional approach	.463**	<.001	Highly Significant
Blended learning	.427**	<.001	Highly Significant
Differentiated Instruction	.420**	<.001	Highly Significant
Inquiry-Based Instruction	.429**	<.001	Highly Significant
Cognitive strategies			
Traditional approach	.509**	<.001	Highly Significant
Blended learning	.504**	<.001	Highly Significant
Differentiated Instruction	.475**	<.001	Highly Significant
Inquiry-Based Instruction	.504**	<.001	Highly Significant
Meta-affective strategies			
Traditional approach	.496**	<.001	Highly Significant
Blended learning	.485**	<.001	Highly Significant
Differentiated Instruction	.494**	<.001	Highly Significant
Inquiry-Based Instruction	.479**	<.001	Highly Significant
Meta-sociocultural-interactive strategies			
Traditional approach	.478**	<.001	Highly Significant
Blended learning	.463**	<.001	Highly Significant
Differentiated Instruction	.432**	<.001	Highly Significant
Inquiry-Based Instruction	.452**	<.001	Highly Significant
Sociocultural-interactive strategies			
Traditional approach	.464**	<.001	Highly Significant
Blended learning	.464**	<.001	Highly Significant
Differentiated Instruction	.422**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

All these correlations were highly significant ($p < 0.01$), indicating that learners who employed meta-cognitive strategies tended to have a positive attitude toward various teaching methods. This suggested that meta-cognitive strategies helped learners adapt to different instructional approaches by enabling them to plan, monitor, and adjust their learning processes effectively.

For cognitive strategies, the correlation coefficients with the pedagogical preferences were: traditional approach (0.509), blended learning (0.504), differentiated instruction (0.475), and inquiry-based instruction (0.504), all significant at $p < 0.01$. This implied that learners using cognitive strategies were more likely to engage actively with diverse teaching methods. Meta-affective strategies showed strong correlations with all pedagogical preferences: traditional approach (0.496), blended learning (0.485), differentiated instruction (0.494), and inquiry-based instruction (0.479), all significant ($p < 0.01$). This indicated that learners managing their emotions and motivations through meta-affective strategies were more likely to appreciate various teaching approaches. Meta-sociocultural-interactive strategies exhibited correlations with the pedagogical preferences as follows: traditional approach (0.478), blended learning (0.463), differentiated instruction (0.432), and inquiry-based instruction (0.452), all highly significant ($p < 0.01$). This suggested that learners using these strategies to interact with their social and cultural environments were more open to different teaching methods. This aligned with the sociocultural theory, which posits that learning was a social process and effective interaction strategies enhance adaptability to various instructional settings. Sociocultural-interactive strategies have the following correlations: traditional approach (0.464), blended learning (0.464), differentiated instruction (0.422), and inquiry-based instruction (0.410), all significant ($p < 0.01$). This implied that learners engaging actively with their social and cultural contexts were more likely to value diverse teaching approaches.

In summary, there was a significant positive correlation between self-regulated learning strategies and pedagogical preferences. This indicates that learners employing self-regulated strategies are more likely to have a favorable attitude toward various teaching methods. These findings highlight the importance of fostering self-

regulated learning in educational settings to enable learners to effectively engage with diverse pedagogical approaches and enhance their overall learning effectiveness.

Proposed Program

Based on the study's findings, the researcher proposes an integrated language learning program to enhance the development of learner autonomy, self-regulated learning (SRL) among Chinese college students in foreign language contexts, directly addressing their identified pedagogical preferences. This program targets three interconnected core aspects: learner autonomy cultivation, SRL strategy training, and pedagogical alignment. The implementation of this framework aims to empower students by strengthening their autonomy, equipping them with effective SRL strategies, and tailoring teaching approaches to better match their preferences, thereby optimizing the overall effectiveness of foreign language learning and teaching. To realize these objectives, the program delineates specific roles and responsibilities for key stakeholders (students, instructors, institutions) and establishes measurable indicators for evaluating success. The researcher anticipates that this program will offer valuable insights and practical guidance for curriculum design, teacher training, and pedagogical reforms aimed at fostering more autonomous and strategic learners within Chinese higher education.

Table 8

Proposed Language Learning Program to Enhance Autonomy, Self-regulated Learning Strategies, and Pedagogical Preferences of Chinese College EFL Learners

Key Result Areas	Program Objectives	Enhancement Activities	Success indicators	Persons involved
Foreign Learners Autonomy: - Self-confidence Enhancement I can be confident in my English ability. (the lowest item)	To help students gradually build confidence in their English ability, especially in the skills of listening, speaking, reading, and writing, by providing them with positive learning experiences and progressively challenging tasks.	1. Positive Feedback Sessions: Regularly organize sessions where students receive constructive and positive feedback on their English performances. Highlight their strengths and achievements to build their confidence. Include one-on-one meetings and group feedback workshops.	1. At least 80% of students have reported a 15 - 20% increase in confidence levels after participating in positive feedback sessions, as measured by pre and post - session confidence surveys.	1. Language Instructors 2. Peer Mentors 3. Student Volunteers 4. Program Coordinators
	To change students' negative perceptions of English language learning, develop their interest and enthusiasm for English language learning, and convince them that they can succeed in mastering English.	2. Success Story Sharing: Invite students who have shown significant progress in their English abilities to share their experiences. Their success stories can serve as inspiration and show that improvement is achievable through effort and the right strategies.	2. After attending success story - sharing events, at least 70% of students have indicated a 10 - 15% increase in their belief in their own ability to improve English skills, as reflected in self - efficacy questionnaires.	
	To develop personalized learning plans and provide targeted tutoring based on students' different English proficiency levels and learning needs to boost their confidence in learning.	3. Personalized Learning Plans: Develop individualized learning plans for each student based on their current English level and specific learning needs. Set clear, achievable goals and provide tailored resources and support to help them progress at their own pace.	3. A minimum of 85% of students have achieved 10 - 20% of their individual learning objectives outlined in their personalized learning plans within the first three months of implementation, as assessed through progress reports and teacher evaluations.	
	To create a supportive learning environment through activities such as group work, peer support and classroom interactions so that students can increase their confidence in interacting with each other.	4. Peer Support Networks: Establish peer mentoring programs where more confident or advanced students can support and encourage those who are less confident. Create a classroom environment that values mutual assistance and growth.	4. At least 70% of students have reported a 10 - 15% increase in confidence and motivation levels when supported by peer mentors, as measured by student self - assessments and participation in peer - supported learning activities.	

Self-regulated Learning Strategies: - Meta-affective strategies Improvement I notice if I am tense or nervous when I am studying or using English. (the lowest item)	To enhance students' ability to recognize and monitor their emotional states, particularly feelings of tension and nervousness, while studying or using English. This will be achieved through guided reflection and mindfulness exercises designed to increase emotional self-awareness.	Mindfulness and Emotional Awareness Sessions: Conduct regular mindfulness workshops to help students recognize and label their emotional states during English learning. Include guided journaling exercises where students reflect on their feelings before, during, and after English tasks. Implement short daily check-ins using apps or prompts to encourage self-monitoring of emotions.	At least 80% of students can accurately identify and describe their emotional states before, during, and after English learning activities and a 15% increase in self-reported emotional awareness scores from pre-program to post-program assessments.	1. Language Instructors Student volunteers 3. Program coordinators
	To equip students with effective strategies for managing and regulating their emotions during English learning activities. This includes techniques for reducing anxiety and maintaining a positive mindset, such as deep breathing exercises, positive self-talk, and visualization. 3. To cultivate a growth mindset among students, emphasizing that challenges and difficulties are natural parts of the learning process and can be overcome with effort and the right strategies. This will help students develop resilience and persistence in the face of emotional barriers. 4. To encourage students to regularly apply emotional regulation techniques in their daily English learning routines. This will be supported by providing practical tools and resources, such as emotion tracking journals and stress-management guides, to help students integrate these practices seamlessly into their studies.	Emotional Regulation Workshops: Organize workshops teaching specific techniques like deep breathing, progressive muscle relaxation, and positive visualization. Facilitate role-playing activities where students practice managing anxiety during English presentations or conversations. Provide students with "emotion regulation toolkits" containing strategies and resources for stress management. Growth Mindset and Resilience Building: Arrange interactive sessions discussing the concept of a growth mindset, featuring testimonies from students who overcame emotional barriers. Design activities that frame challenges as learning opportunities, such as analyzing mistakes in English tasks as steps toward improvement. Create a classroom culture that celebrates perseverance and effort alongside success. Emotional Management Integration: Provide students with templates for emotion tracking journals to log their feelings and strategies used during English practice. Develop English learning activities that explicitly incorporate emotional check-ins and reflection steps. Offer downloadable guides or handouts with practical emotional regulation techniques tailored to common English learning scenarios.	A minimum of 75% of students demonstrate a 10% reduction in self-reported anxiety levels during English tasks, measured through pre- and post-workshop anxiety surveys. 3. At least 85% of students show a 10% increase in persistence and effort in challenging English tasks, as observed through task completion rates and teacher evaluations. A 15% increase in positive responses to growth mindset-related survey items 4. A minimum of 80% of students have integrated at least two emotional regulation strategies into their daily English practice routines. At least 75% of students report feeling more emotionally prepared for English tasks through post-program feedback surveys.	
Pedagogical Preferences: - Traditional Approach I prefer receiving information directly from the teacher in class. (the lowest item)	To increase students' active participation and engagement in traditional classroom lectures by making the learning experience more interactive and relevant to their needs.	Interactive Lectures: Transform traditional lectures into interactive sessions by incorporating polls, quick quizzes, and open-ended questions. Use clickers or mobile apps to collect real-time student feedback and adjust the lecture pace and content accordingly. For example, after explaining a grammar concept, ask students to vote on which example sentence is correct, then discuss the results.	1. At least 75% of students report a 20% increase in engagement during traditional lectures, as measured by participation rates and post-lecture surveys. A 15% increase in active participation during lectures.	a. Language Instructors c. English Faculty c. Teacher Trainers d. Student Volunteers
	To improve students' perception of receiving information directly from the teacher by ensuring content is presented in an interesting, clear, and supportive manner. To reinforce students' grasp of fundamental English knowledge and	Teacher Training and Development: Organize regular teacher-training workshops focusing on effective delivery methods for teacher-led instruction. Topics could include how to use vivid examples, storytelling techniques to make content more relatable, and how to provide clear and	A minimum of 80% of students indicate a 15% improvement in their perception of teacher-led instruction, as assessed through student feedback forms and surveys. Teachers demonstrate a 10% increase in the use of effective delivery methods in their	e. Program coordinators

skills through well-organized and systematic traditional teaching methods.	encouraging explanations. Encourage teachers to share successful teaching strategies with each other.	lectures, as observed by peer evaluations and teaching coordinators.
To cultivate a more positive attitude towards traditional learning approaches by highlighting their benefits and effectiveness in building a strong language foundation.	Structured Practice and Application Sessions: Schedule dedicated practice sessions following teacher - led instruction. For example, after a lecture on English writing styles, have students write a short paragraph using the newly - learned style and then work in pairs to give feedback. This reinforces the knowledge and gives students hands - on experience. Positive Classroom Environment Building: Create a classroom environment that appreciates traditional learning. Acknowledge and reward students for their participation and progress in traditional settings. For instance, have a "Traditional Learning Superstar" of the week award. Also, use positive affirmations to highlight the value of traditional learning methods, like starting each class with a motivational quote about traditional learning.	At least 85% of students show a 10% improvement in foundational English knowledge and skills through regular assessments and quizzes. A 15% increase in student performance on grammar and writing tasks related to the structured practice sessions. A minimum of 90% of students report a 10% more positive attitude towards traditional learning methods. At least 75% of students actively participate in traditional learning activities and express appreciation for the learning environment in written feedback.

4. Conclusions and recommendations

Respondents demonstrated moderate to high levels of agreement regarding their willingness to take an active role in English learning. They exhibited strong willingness to accept challenges in English learning, explore new perspectives, and engage in self-assessment, but showed relatively weaker willingness to sacrifice other activities to improve their English proficiency. In terms of self-regulated learning strategies, respondents demonstrated effective use of cognitive strategies, such as breaking down words to understand their meanings and using new words in sentences to memorize and learn vocabulary. They also generally agreed with meta-cognitive strategies, meta-affective strategies, meta-sociocultural-interactive strategies, and sociocultural-interactive strategies. However, their scores were relatively low on meta-cognitive emotional strategy. There was a highly significant positive correlation between foreign language learners' autonomy and self-regulated learning strategies; the stronger the autonomy, the better the application of self-regulated learning strategies. There was also a highly significant positive correlation between foreign language learners' autonomy and teaching preferences; the stronger the autonomy, the higher the evaluation of teaching preferences. Similarly, there was a highly significant positive correlation between self-regulated learning strategies and teaching preferences. Based on the analysis results, a language learning program aimed at enhancing Chinese EFL self- autonomy, self-regulated learning strategies and pedagogical preferences was proposed for implementation.

University administrators may add cross-cultural projects like international exchanges to enhance students' social and cultural interaction strategies. They may also support hybrid teaching with AI learning tools to improve instructional flexibility and appeal. They may also organize peer teamwork to build students' sociocultural adaptability. English teachers may use tailored teaching methods based on student choice, which can effectively boost motivation through emotional awareness. They may use technology for independent learning. College EFL students may be provided with activities that encourage them to apply autonomous learning strategies, engage in cross-cultural practices to enhance language use and cultural awareness, and pursue feedback-driven improvement through actively addressing learning challenges and seeking targeted support. School of Foreign Languages administrators may collect student feedback regularly to refine teaching approaches and integrate inquiry-based learning. Additionally, they may establish a certification program for social and cultural competencies to formally recognize students' development in cross-cultural communication skills through integrated academic and community-based activities. Language project designers may add structured peer teamwork enhance knowledge

sharing and engagement. They may create culture-based tasks to promote the application of social and cultural strategies. Future researchers may explore the dynamic interplay between learners' autonomy, self-regulated learning strategies, and teaching preferences. They may test technology like AI tools for self-learning and social skills in order to assess their impact on autonomous learning and sociocultural adaptation. They may also track student independence over time through long-term studies.

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