

Employee innovation behavior, technology adoption, and process innovation among public universities: Basis for digitalization construction framework

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Abstract

The rapid development of digital technology has brought development opportunities to higher education, as well as challenges. Under the impact of digital technology, public universities are actively exploring digital construction paths. In order to promote digital construction, continuous innovation is needed. Employee innovation behavior is the starting point and key to organizational innovation. Digital technology adoption enhances organizations' ability to leverage data-driven innovation. Universities apply digital technology resources to business and service processes, optimize resource allocation, carry out process innovation, and promote digital construction. The study aimed to determine employee innovation behavior, technology adoption, and process innovation among public universities and establish a digitalization construction framework. This study adopted a descriptive research design. Descriptive statistical analysis methods were used to study the current status of employee innovation behavior, technology adoption and process innovation in public universities. Correlation analysis method was used to explore the relationship between employee innovation behavior, technology adoption and process innovation. The respondents were 400 teachers from Shandong University, Shandong Normal University, Shandong University of Finance and Economics, Jinan University and Qilu University of Technology. Questionnaire is the main instrument of this study. Questionnaires can collect data from a larger number of respondents in less time. The results of the study are as follows: The respondents have a moderate level of employee innovation behavior in terms of personal factors, flourishing, and psychological capital. The respondents have a moderate level of technology adoption as to infrastructure, cyber security, and mobility. The respondents have a moderate level of process innovation in terms of policies, procedures, and guidelines. There is a highly significant relationship between employee innovation behavior, technology adoption, and process innovation in public universities. A digitalization construction framework for public universities was developed. The findings of this study have important implications for theory and practice in the areas of employee innovation behavior, technology adoption, and process innovation. Public universities can carry out process innovation through employee behavior

management and technology adoption, promote the digital construction of universities, improve digital governance efficiency, and maintain the sustainable development of universities.

Keywords: employee innovation behavior, technology adoption, process innovation, digitalization construction

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1. Introduction

In today's era of rapid development of information technology, digital technology has become an important driving force for the development of contemporary society. Many enterprises, institutions, and organizations have been impacted by technological changes in their production and management. To maintain sustainable development and market competitiveness, enterprises, institutions, and organizations need to undergo digital transformation and innovation in their production and operation, product research and development, marketing, and other aspects. Public universities, as institutions that cultivate advanced specialized talents for society, are influenced by social development and technological progress. They actively adopt new digital technology means, carry out process innovation, promote digital construction, and continuously move towards the digital era. On January 31, 2024, the parallel conference on "Educational Governance Digitalization and Digital Educational Governance" of the World Digital Education Conference was held. Chen Jie, Deputy Minister of Education of China and Director of the National Committee of UNESCO, pointed out that "The rapid development of digital technology has brought unprecedented challenges and opportunities to global education. At the same time, it is profoundly changing educational concepts, educational models and educational forms."

Digitization is an endogenous variable in the systemic transformation of education, and it is also an important lever and approach to leading the modernization of education development (Jiang, 2023). To promote the digital construction of public universities, continuous innovation is needed. Innovation is the driving force behind the sustainable development of any organization. Innovation includes many types, such as product innovation, process innovation, strategic innovation and so on. Process innovation captures new production methods, management methods, and the introduction of new technologies, which can be used to improve production, management and service procedures. The most crucial aspect of the operation of public universities is process management, which includes various aspects of education and teaching, such as teaching, learning, management, and evaluation. The use of digital technology for process innovation is crucial for public universities to increase overall performance and improve employee and customer satisfaction.

Innovation is based on talent, and enterprise innovation is the result of the joint efforts of employees. For public universities, their process innovation cannot be separated from the innovative behavior of university employees. Employee innovative behavior is the key driving force of organizational innovation (Yang et al., 2020; Lu et al., 2022; Bao et al., 2024). Dong et al. (2024) proposed that employee innovative behavior refers to employees introducing new ideas, products or processes at work, which is the starting point and key to organizational innovation. Personal factors, flourishing, and psychological capital are all considered important areas that influence employee innovation behavior. They interact and influence each other, ultimately shaping a person's motivation and ability to generate new ideas and implement them.

The subject of innovation is humans, and it is closely related to the technological environment in which it operates. The adoption of digital technology has enhanced the ability of enterprises to leverage data-driven innovation. Through digital transformation, enterprises can rely on digital technology to achieve breakthrough development and innovation (Niu et al., 2023). Wen et al. (2022) proposed that the essence of digital technology application is the process by which enterprises transform their digital resource advantages into application innovation in the digital, grid based, and intelligent digital context. The digital construction of universities focuses on teachers and students, emphasizes overall process optimization and collaborative cooperation among different functional departments, redesigns management, processes, and models, and transforms organizational, business, and teaching models (Xiang, 2022).

The digital technology capabilities of enterprises allow them to learn how to apply digital technology resources to business processes and empower them to utilize digital technology to achieve business process innovation (Ye, 2022). The application of digital technology in enterprises will be beneficial for optimizing resource allocation. With the help of digital technology, comprehensive analysis of data in various business processes of the enterprise can be carried out, which can improve the efficiency of resource flow, reduce resource mismatch, improve utilization efficiency, and thus reduce the operating costs within the enterprise (Yan, 2022). The ability to expand information technology business can provide integrated strategies for digitizing the operational processes of various departments in enterprises, specifically by utilizing digital technology to coordinate organizational resources and implement flexible business process innovation (Rossini et al., 2021).

At present, digital transformation of enterprises is a hot topic of research by scholars both domestically and internationally. Most of the research related to digital construction in universities is based on theoretical research, with relatively few empirical studies. The process of digital transformation in universities is a deep integration of information technology with the education, teaching, and management in their respective universities (Xiang, 2022). The Chinese government pays great attention to the digitization of education governance, actively exploring and practicing digital governance. Many universities have begun to gradually carry out digital construction, and the university where the researcher works is also one of them. Studying the relationship between employee innovation behavior, technology adoption and process innovation in public universities has important theoretical and practical significance for the digital construction of public universities. This study can provide some management suggestions for the researcher's university and other universities that are actively engaged in digital construction. Public university managers can carry out process innovation through employee behavior management and technology adoption, promote digital construction of universities, enhance digital governance efficiency, and maintain sustainable development of universities.

Objectives of the Study - The study aimed to determine employee innovation behavior, technology adoption, and process innovation among public universities and establish a digitalization construction framework. Specifically, it sought to describe employee innovation behavior in terms of personal factors, flourishing, and psychological capital; determine technology adoption in terms of infrastructure, cyber security, and mobility; assess process innovation in terms of policies, procedures, and guidelines; test the relationship between employee innovation behavior, technology adoption, and process innovation; and propose a framework for digitalization construction based on the result of the study.

2. Methods

Research Design - This study adopts a descriptive research design to explore the relationship between employee innovation behavior, technology adoption, and process innovation in public universities in Jinan, Shandong, China. First, a comprehensive review of relevant literature and books on employee innovation behavior, technology adoption, and process innovation was conducted, summarizing the current research status related to these variables, and laying a solid theoretical foundation for subsequent research. Secondly, based on the research objectives, a structured questionnaire was designed to measure the research variables. A random sampling method was used to ensure the representativeness of the sample. An electronic questionnaire is used to collect relevant data and information on the innovation behavior, technology adoption and process innovation of employees in public universities to minimize research costs. Finally, statistical analysis methods were used to organize and analyze the data. Through descriptive statistical analysis methods, descriptive statistics were conducted on the three key variables of public university employees' innovative behavior, technology adoption and process innovation to analyze their overall situation and salient features. The correlation analysis method is used to explore the correlation between employee innovation behavior, technology adoption and process innovation. In order to ensure the scientific and rigor of the entire research design, scientific principles and standardized processes were strictly followed from literature review, goal setting, questionnaire design, sample selection, data collection and processing, and conclusion analysis. This research design comprehensively and systematically describes the current status and interrelationships of employee innovation behavior, technology

adoption, and process innovation in public universities. A detailed description of the data collected provides strong evidence for understanding the relationship between these variables.

Participants - This study focuses on teachers from the top five public universities in Jinan, Shandong Province, China as research samples; 80 respondents are randomly selected for each university. There are 19 public universities in Jinan, Shandong, China. According to the university rankings released by ABC Consulting in 2024, the top five are Shandong University, Shandong Normal University, Shandong University of Finance and Economics, Jinan University and Qilu University of Technology. These five universities are role models for other universities to learn from. They are in a leading position in the adoption of digital technology, and their innovation capabilities and levels are representative to a certain extent. Therefore, this study selected these five universities as research samples and used random sampling methods to select respondents. In order to ensure the accuracy of the collected data, the respondents of this study must be full-time teachers in the above five universities, and be able to correctly understand the content of the questionnaire and voluntarily fill in the questionnaire based on the actual situation. Other staff members of the above universities are not included as interviewees. Based on the above criteria, 400 eligible respondents were randomly selected and a questionnaire survey was conducted to enhance the credibility and reliability of the study.

Instrument of the Study - This study explores three key variables: "employee innovation behavior", "technology adoption" and "process innovation" in public universities. Questionnaire is the main instrument of this study. Using the questionnaire method, data can be collected from a large number of people in a relatively short period of time. Not only are electronic questionnaires less expensive to distribute and return, but they also enable researchers to collect data from different locations.

Specifically, the questionnaire used in this study was divided into three parts. The first part is the employee innovation behavior questionnaire, which is divided into three dimensions: personal factors, flourishing and psychological capital. Each dimension has 5 items, totaling 15 items. The second part is the technology adoption questionnaire, which is divided into three dimensions, namely infrastructure, cyber security and mobility. Each dimension also has 5 items, for a total of 15 items. The third part is the process innovation questionnaire, which is also divided into three dimensions, namely policies, procedures and guidelines. There are also 5 items for each dimension, totaling 15 items. The questionnaire was carefully revised based on the research objectives and on the basis of previous studies. In order to measure employee innovation behavior, researchers adapted items from previous studies (Wang, 2023). Respondents need to choose appropriate answers from a 4-point Likert scale based on their actual feelings. 1 means strongly disagree and 4 means strongly agree. The measurement of technology adoption was adapted from the scales of Rubel et al. (2020) and Zhang (2022). The questions used a 4-point Likert scale ranging from (1) "Strongly disagree" to (4) "Strongly agree." In order to measure process innovation, the researchers modified the items used in previous studies (Wang et al., 2023; Zhao et al., 2022). A 4-point Likert scale was used, with 1-4 representing "strongly disagree" to "strongly agree" respectively. To ensure the accuracy and reliability of the questionnaire, the questionnaire was verified by relevant professional experts and modified based on expert opinions.

To ensure the reliability of the questionnaire, a pilot test was conducted in this study. As part of a preliminary study, the researchers randomly selected 30 samples and conducted reliability tests. Cronbach alpha is an indicator used to measure the reliability of the scale. The closer the coefficient value is to 1, the stronger the internal consistency of the scale. As can be seen from the above table data, the Cronbach alpha of the nine indicators are all greater than 0.9, specifically: personal factors (0.927), flourishing (0.924), psychological capital (0.940), infrastructure (0.932), cyber security (0.916), mobility (0.965), policies (0.948), procedures (0.959) and guidelines (0.977). These data indicate that these indicators have good internal consistency.

Data Collection Procedure - The data collection procedure involves several key steps to ensure effective collection and management of survey data. First, an investigator was identified in each of the top five public universities in Jinan, Shandong Province, and the investigators were trained. The investigators are responsible

for the distribution and recovery of questionnaires, as well as questionnaire consultation. In order to ensure the quality of filling in the questionnaire and the recovery rate of the questionnaire, the investigator needs to introduce the purpose of the research to the respondents and the anonymity and confidentiality of the survey results. Secondly, after obtaining the informed consent of the respondents, the investigators distributed electronic questionnaires to them and answered the difficulties and questions encountered in filling out the questionnaires. The distribution, collection and management of electronic questionnaires are carried out through Questionnaire Star, an online platform widely used by Chinese academic researchers to design and manage surveys. Questionnaire Star realizes real-time recovery of data and improves the timeliness and effectiveness of data collection. Finally, the collected valid questionnaires were systematically organized and entered into the data statistics software. Statistical analysis of data was performed through data statistics software to achieve the research objectives.

Data Analysis - This study mainly uses data analysis to explore the current status and correlation of three variables and their dimensions, namely employee innovation behavior, technology adoption and process innovation. The data analysis tool used is SPSS (Statistical Product and Service Solutions). This software's extremely user-friendly interface and beautiful output results make it a common tool for many scholars to conduct academic research. The data analysis methods used include: First, descriptive statistical methods were used to process the collected data to understand the current status of employee innovation behavior, technology adoption and process innovation in public universities. Descriptive statistics refers to summarizing data in tabular, graphical or numerical form to describe data characteristics. Secondly, correlation analysis is used to process the collected data. Pearson correlation coefficient (r) is used to explore the relationship between employee innovation behavior, technology adoption and process innovation, as well as their relationship strength. The closer the coefficient is to ± 1.00 , the higher the positive/negative correlation between the variables. Through the above quantitative data analysis, the relationship between the three main variables and their dimensions becomes very clear. The analysis results provide an important basis for the construction of this research framework and conclusion discussion.

Ethical Considerations - Any academic research needs to pay attention to ethical factors. Ethical considerations are particularly important for academic research that uses human samples. In conducting this study, the researchers considered ethical considerations such as informed consent and disclosure of information. First, in terms of informed consent, the researcher introduced the purpose and significance of the study to the target respondents. They can voluntarily choose whether to participate in this survey. If the questions in the questionnaire make them uncomfortable, they can withdraw from the survey at any time. Secondly, in terms of information disclosure, the researchers explained to the target respondents that the survey was anonymous, no video or audio was recorded, and the researchers ensured that the survey results would only be used for academic research. In addition, the researchers submitted a research application and a series of review materials to LPU-B's research ethics review committee before officially conducting the research. Ethical review is a critical step in conducting this research and is an important component of research integrity. After a rigorous review of compliance with ethical standards, the LPU-B-research ethics review committee approved this study. This means that this study complies with ethical standards.

3. Results and discussion

Table 1 presents the summary table on employee innovation behavior as to personal factors, flourishing, and psychological capital. The composite mean is 2.73, indicating that the respondents generally agree. Among the dimensions, "Personal factors" obtained the highest rank with a weighted mean score of 2.86 points and an agreed verbal interpretation. Teachers in public universities need to continuously learn and innovate themselves, whether in teaching or scientific research. Innovative behavior not only requires new ideas, but also requires a lot of effort to implement new ideas.

Table 1*Summary Table on Employee Innovation Behavior*

Key Result Areas	Composite Mean	VI	Rank
Personal Factors	2.86	Agree	1
Flourishing	2.68	Agree	2
Psychological Capital	2.65	Agree	3
Grand 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

This requires university teachers to have a strong sense of responsibility, a pursuit and love for teaching and scientific research, and to actively engage in learning, exploration and creation, and then devote themselves wholeheartedly to their work. Personality traits such as initiative and innovation, as well as intrinsic motivation of college teachers can promote innovative behavior and improve performance. This can be related to the study of He et al. (2020), which is based on role stress theory and resource conservation theory to construct a model between role stress, proactive personality, job satisfaction, job performance and health status. Through data analysis, it was found that proactive personality can alleviate the negative impact of role conflict and role ambiguity on job satisfaction, thereby improving the work performance of college teachers. Wang et al. (2023) explored the relationship between personality traits, self-efficacy and scientific research performance of university teachers. The results showed that there is a positive correlation between conscientiousness, agreeable personality traits and teachers' scientific research performance.

The dimension "Flourishing" got the middle-rank with a weighted mean score of 2.68, and a verbal interpretation of Agree. The dimension "Psychological capital" got the lowest rank with a weighted mean score of 2.65, and a verbal interpretation of Agree. The knowledge and skills that teachers in public universities possess give them greater confidence in their ability to handle their work tasks. Improving the level of psychological capital can not only stimulate teachers' work initiative and creativity, but also contribute to teachers' personal development, subject progress and the realization of university goals. According to the study of Ye (2022), research on psychological capital and innovative teaching was carried out for secondary vocational school teachers. Teachers' psychological capital was measured from four aspects: confidence, hope, optimism, and resilience. Teachers' innovative teaching was measured from four aspects: teaching philosophy, teaching content, teaching methods, and teaching evaluation. The empirical results show that there is a significant positive correlation between each dimension of teachers' psychological capital and each dimension of innovative teaching. Wu et al. (2021) explored the mechanism between teachers' psychological capital, positive work behavior and teacher work performance for teachers in higher vocational colleges. Psychological capital and positive work behavior can significantly predict work performance.

Table 2*Summary Table on Technology Adoption*

Key Result Areas	Composite Mean	VI	Rank
Infrastructure	2.67	Agree	1
Cyber Security	2.65	Agree	2.5
Mobility	2.65	Agree	2.5
Grand 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 2 presents the summary table on technology adoption as to infrastructure, cyber security, and mobility. The composite mean is 2.66, indicating that the respondents generally agree. Among the dimensions, "Infrastructure" obtained the highest rank with a weighted mean score of 2.67 points and an agreed verbal interpretation. The infrastructure construction of public universities relies on campus networks, data centers, and information-based teaching environments to provide technology, equipment, and physical environment support for the digital construction of universities. A complete "basic platform" can provide an open and collaborative operating environment for the teaching, personnel, scientific research and financial business systems of

universities, establish a standardized and flexible digital service system, and provide strong support for the daily management of universities (Zhu, 2022).

The dimensions “Cyber security” and “Mobility” got the lowest rank with a weighted mean score of 2.65, and a verbal interpretation of Agree. Cyber security is the basis for ensuring the sustainable development of higher education information. Mobility allows users to access one or more networks from any location. Cyber security and mobility are important metrics for measuring technology adoption. The adoption of digital technologies can improve cyber security and mobility, such as using machine learning algorithms to detect abnormal behavior and identify cyber attacks and malware. Safe and convenient use of digital technology can improve performance and promote innovation. According to the study of Cong et al.,(2022), the adoption of digital technology can increase the number of corporate innovation outputs and enhance corporate human capital, thus promoting corporate high-quality innovation. This promotion effect is more significant among technology-intensive enterprises, large-scale enterprises and non-state-owned enterprises. Research by Chen et al. (2021) also found that the application of digital technology has brought innovation-enabling effects to enterprises and promoted corporate innovation.

Table 3

Summary Table on Process Innovation

Key Result Areas	Composite Mean	VI	Rank
Policies	2.65	Agree	1
Procedures	2.61	Agree	3
Guidelines	2.62	Agree	2
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

Table 3 presents the summary table on process innovation as to policies, procedures, and guidelines. The composite mean is 2.63, indicating that the respondents generally agree. Among the dimensions, “Policies” obtained the highest rank with a weighted mean score of 2.65 points and an agreed verbal interpretation. This means that to meet the needs of digital construction, universities need to start with rules and regulations, formulate policies that meet the requirements of digital technology, change the division of responsibilities of management and service departments, clarify the rights and obligations of faculty and staff, and innovate business and service processes. This can be related to the study of Jiang (2023), the digital and intelligent transformation requires a regulatory system and technological support, and that existing regulations need to be revised, abolished, or replaced to form a new regulatory system.

The dimension “Guidelines” got the middle-rank with a weighted mean score of 2.62, and a verbal interpretation of Agree. The dimension “Procedures” got the lowest rank with a weighted mean score of 2.61, and a verbal interpretation of Agree. This could mean that innovative business and service processes can accelerate the achievement of university goals, and the adoption of digital technology can help universities improve their business and service processes to meet the personalized needs of teachers, students, and staff. With the popularity of digitalization, more and more organizations are introducing digital technologies into their business processes to achieve the goal of improving or innovating business processes (Mendling et al.,2020). However, according to the study of Baier et al. (2022), not all organizations can obtain corresponding value from the adoption of digital technology. This study adopts an exploratory approach to address the issue of introducing digital technology into business processes and explores the factors that influence digitalization to improve the effectiveness of business processes.

Table 4 demonstrates a moderate to strong and highly significant relationship between employee innovation behavior and technology adoption, focusing on three key variables: infrastructure, cyber security, and mobility. Across all three categories—personal factors, flourishing, and psychological capital—the correlation coefficients (rho) consistently indicate significant positive relationships. For personal factors, infrastructure (rho=0.504), cyber security (rho=0.586), and mobility (rho=0.616) are all highly significant, with p-values less than 0.001

showing a moderate to strong positive correlations. Flourishing shows a moderate relationship with infrastructure ($\rho=0.560$), cyber security ($\rho=0.599$), and mobility ($\rho=0.583$), with highly significant p-values. Psychological capital is moderately correlated with infrastructure ($\rho=0.531$), cyber security ($\rho=0.595$), and mobility ($\rho=0.588$), significant at the 0.001 level.

Table 4*Relationship Between Employee Innovation Behavior and Technology Adoption*

Variables	rho	p-value	Interpretation
Personal Factors			
Infrastructure	0.504**	<.001	Highly Significant
Cyber Security	0.586**	<.001	Highly Significant
Mobility	0.616**	<.001	Highly Significant
Flourishing			
Infrastructure	0.560**	<.001	Highly Significant
Cyber Security	0.599**	<.001	Highly Significant
Mobility	0.583**	<.001	Highly Significant
Psychological Capital			
Infrastructure	0.531**	<.001	Highly Significant
Cyber Security	0.595**	<.001	Highly Significant
Mobility	0.588**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

These findings suggest that improvements in these technology adoption areas—especially mobility—are closely linked to enhanced employee innovation behavior. Fu et al. (2024) believe that enterprise digital transformation has a profound impact on employees' innovative behavior. This study explores the mechanism of digital technology requirements on employee innovative behavior. The results show that digital technology requirements are positively related to employee innovative behavior. On the one hand, digital technology requirements drive employees to quickly understand and master digital tools and technologies. On the other hand, they also allow employees to face the new content and scenarios that digital transformation brings to their work, and put forward more requirements for employees' innovative behaviors. Building a digital work platform and applying digital technologies and tools can free employees from repetitive and tedious work and use digital resources to engage in innovative behaviors that can produce greater value. Liu et al. (2024) explored the application of artificial intelligence technology in the workplace and its impact on employees' innovative behavior. The study believes that the application of artificial intelligence technology can promote employee job reshaping, relieve employees of repetitive and complicated work tasks, so that they can have time and energy to invest in innovative work, thereby stimulating their innovative behavior.

Table 5*Relationship Between Employee Innovation Behavior and Process Innovation*

Variables	rho	p-value	Interpretation
Personal Factors			
Policies	0.574**	<.001	Highly Significant
Procedures	0.553**	<.001	Highly Significant
Guidelines	0.535**	<.001	Highly Significant
Flourishing			
Policies	0.602**	<.001	Highly Significant
Procedures	0.550**	<.001	Highly Significant
Guidelines	0.566**	<.001	Highly Significant
Psychological Capital			
Policies	0.571**	<.001	Highly Significant
Procedures	0.479**	<.001	Highly Significant
Guidelines	0.521**	<.001	Highly Significant

** . Correlation is significant at the 0.01 level

Table 5 illustrates the moderate to strong and highly significant relationships between employee innovation behavior and process innovation across three categories: personal factors, flourishing, and psychological capital.

Within personal factors, there are notable correlations with policies ($\rho=0.574$), procedures ($\rho=0.553$), and guidelines ($\rho=0.535$), all yielding p-values less than 0.001, indicating high significance. In the flourishing category, policies show the strongest correlation ($\rho=0.602$), followed by guidelines ($\rho=0.566$) and procedures ($\rho=0.550$), again with highly significant p-values. Psychological capital also demonstrates significant correlations, particularly with policies ($\rho=0.571$), followed by guidelines ($\rho=0.521$) and procedures ($\rho=0.479$), all of which are statistically significant at the 0.001 level.

These results suggest that effective policies, procedures, and guidelines are crucial in fostering employee innovation behavior, highlighting the importance of process innovation in enhancing organizational performance. Employee innovative behavior is an important driver of corporate innovation capabilities and performance. Research by Dai et al. (2024) believes that employee innovative behavior plays a key role in promoting corporate innovation, and it can enable companies to adapt to complex and changing business environments. Li et al. (2019) investigated 110 manufacturing companies from China and constructed a model between companies' responsibilities to employees, employee innovative behaviors, service innovation performance, and two control mechanisms. The study found that in the context of manufacturing transformation, an enterprise's responsibility to employees has a positive effect on service innovation performance, and employee innovative behavior plays a mediating role between the two.

Table 6

Relationship Between Technology Adoption and Process Innovation

Variables	ρ	p-value	Interpretation
Infrastructure			
Policies	0.525**	<.001	Highly Significant
Procedures	0.502**	<.001	Highly Significant
Guidelines	0.523**	<.001	Highly Significant
Cyber Security			
Policies	0.590**	<.001	Highly Significant
Procedures	0.569**	<.001	Highly Significant
Guidelines	0.605**	<.001	Highly Significant
Mobility			
Policies	0.601**	<.001	Highly Significant
Procedures	0.574**	<.001	Highly Significant
Guidelines	0.556**	<.001	Highly Significant

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

Table 6 highlights the significant relationships between technology adoption and process innovation, with a focus on three critical infrastructure elements: policies, procedures, and guidelines. The data reveals moderate to strong positive correlations across all variables. For infrastructure, the correlation coefficients indicate a highly significant relationship with policies ($\rho=0.525$), procedures ($\rho=0.502$), and guidelines ($\rho=0.523$), all achieving p-values below 0.001. In the realm of cyber security, the relationships are even more pronounced, with policies ($\rho=0.590$), procedures ($\rho=0.569$), and guidelines ($\rho=0.605$) all showing highly significant correlations. Similarly, for mobility, the correlations remain robust, with policies ($\rho=0.601$), procedures ($\rho=0.574$), and guidelines ($\rho=0.556$) all demonstrating high significance as well.

Overall, these findings suggest that effective technology adoption, particularly in the areas of policies, procedures, and guidelines, plays a crucial role in driving process innovation within organizations. Nwankpa et al., (2022) conducted a survey among CIOs and IT executives of American companies and constructed a model between digital business intensity, knowledge management and process innovation. Digital business intensity is a measure of the level of strategic organizational investment in digital technologies and is a prerequisite for realizing digital business strategies. This research model shows that there is a positive relationship between digital business intensity and process innovation, and knowledge management has a mediating role in this relationship. Research by Yu et al. (2022) proposes that digital technology is a powerful lever to drive manufacturing companies to innovate and achieve high-quality development. The research adopted a case study

method and used the coding technology of programmed grounded theory to explore the "black box" of digital technology empowering manufacturing enterprises' technological innovation activities to enrich digital innovation theory. Its connotation includes three levels: first, empowering innovation subjects, reflected in the digital transformation of traditional enterprises; second, empowering the innovation process, reflected in the digitization of corporate innovation activities and innovation ecosystems; third, empowering innovation results, reflected in the digitization of products and services.

Framework

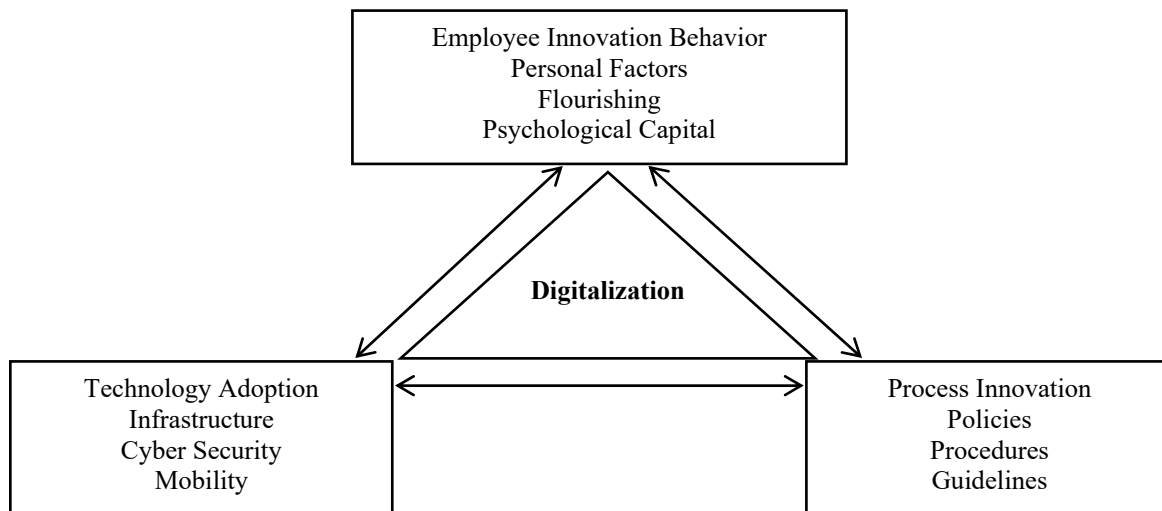


Figure 1 Digitalization Construction Framework for Public Universities

Through data analysis, this study constructed a relationship framework between employee innovation behavior, technology adoption and process innovation. There is a positive correlation between the three variables of employee innovation behavior (personal factors, flourishing, psychological capital), technology adoption (infrastructure, cyber security, mobility) and process innovation (policies, procedures, guidelines) and their measurement dimensions, which jointly promote Digital construction. Employees with innovative personality traits, flourishing and high psychological capital are more willing to accept new things, keep up with the pace of information technology development, actively learn digital technologies, improve their own knowledge and skills, and apply digital technologies to their work, thereby innovating business and service processes, improving organizational performance, and promoting digital construction. The adoption of digital technology provides digital infrastructure, secure network environment and mobile technology support for employee innovation. In response to employees' needs in the innovation process, measures such as building a resource service platform can be used to provide employees with technical support, market intelligence and other key resource guarantees to stimulate employees' enthusiasm for innovation. Employees' innovative behavior is a key driver of organizational process innovation and the core of organizational digital construction. The formulation of process innovation policies, procedures and guidelines based on digital construction provides human, financial, material and other policy support for organizational technology adoption, and also provides policy guarantees for innovation, thus promoting the occurrence of employee innovative behaviors. By implementing this framework, public universities can establish synergies between employee innovation behavior, technology adoption, and process innovation, ultimately promoting digital construction.

4. Conclusions and recommendations

The respondents have a moderate level of employee innovation behavior in terms of personal factors, flourishing, and psychological capital. The respondents have a moderate level of technology adoption as to

infrastructure, cyber security, and mobility. The respondents have a moderate level of process innovation in terms of policies, procedures, and guidelines. There is a highly significant relationship between employee innovation behavior, technology adoption, and process innovation in public universities. A digitalization construction framework for public universities was developed. Public university administrators may pay attention to the psychological capital status of employees, create a positive campus atmosphere, pay attention to employees' needs in a timely manner, help employees improve their self-efficacy, make employees full of hope for their own development, and make employees more optimistic and resilient. Public universities may prioritize campus cyber security and mobility when implementing digital construction reforms to ensure safe and seamless access to data platforms for employees and drive innovation in business and service processes. Digital technology may be leveraged to modernize operations, tailor services to the needs of the university community, and boost competitiveness to reach development goals. Public universities may review and utilize the digitalization construction framework. Future researchers may consider further research about employee innovation behavior, technology adoption, process innovation and should include innovation performance in their study.

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