

Artificial intelligence adoption, digital innovation, and information technology governance in IT companies in Beijing, China: Basis for an enhanced competitive advantage strategies

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Abstract

The rapid changes occurring within the environment of information technology on the global scale seem to have been greatly influenced by the artificial intelligence, digital innovation and information technology (IT) governance. Beijing, the capital city of China and known as the Silicon Valley of technology focused cities, has these aspects in predicting the performance and the competitiveness of IT based companies. This research aims to explore the relationship between the Artificial Intelligence technology, the introduction of new digital products, and Information Technology management in a sample of IT firms located in Beijing China. In doing so, the study looks to resonate the identified factors which can directly or indirectly affect competition and enhancing growth in the dynamic economy. This study utilized the descriptive design as it described the current status of the IT companies' AI implementation, digital transformation, and IT governance. A self-constructed questionnaire was used as it helped to identify targeted information which addressed the research objectives. Being specialists in their own right, IT 400 managers were used as respondents of the study as they are extremely knowledgeable about the operational environment of the IT industry, including new developments, challenges faced, and overall best practices employed. The IT managers have an overall agreement on the satisfactory view of AI inclusion in the business processes in three domains, Technical Infrastructure, Employee Technical Capability, and Employee Productivity. They also expressed agreement that digital innovation is very well attended to in terms of cultural readiness, technology readiness and management support in most IT organizations. The practices of IT governance are effectively addressing the concerns of governance efficiency, management of risks as well compliance as agreed by the respondents. Respondents agreed that artificial intelligence adoption, digital innovation, and information technology governance did not have any significant relationships. Strategies for enhancing competitive advantage were established.

Keywords: artificial intelligence adoption, digital innovation, information technology governance, competitive advantage enhancement strategies

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1. Introduction

Technological advancement can be a powerful tool for businesses to gain and maintain a competitive advantage in the marketplace. Chinese IT companies are aggressively seeking competitive advantages through the adoption of artificial intelligence (AI), digital innovation, and robust information technology (IT) governance. The Chinese government's strong push for AI development and digital transformation creates a favorable environment for IT companies, but also comes with specific regulations to align with. Acquiring and retaining top talent in AI, data science, and other advanced technical fields is crucial to staying ahead in the competitive landscape. Addressing issues of bias, accountability, and transparency in AI development will be important for building trust with customers and partners. As per the research conducted by Perifanis et al. (2023), there is significant potential for enterprises to create novel business models and gain a competitive edge by incorporating artificial intelligence (AI) into their IT and business strategies. While some innovators are effectively using AI, most firms are finding it challenging to seize the chances for value creation. The only way for organizations to flourish in the current era's digital transformation alignment is to carefully acquire and apply these novel, cutting-edge technology.

In recent years, digital innovation has emerged as a major commercial trend. The swift advancement of information and communication technology has made it possible for businesses to alter how they run, engage with clients, and fight for market share. Research of Agustian et al. (2023) sought to examine how company models and competitive advantage are affected by digital transformation. The study's findings demonstrated that it is impossible to overlook how the continuous digital transformation is affecting business models and competitive advantage. The foundations of how businesses run, engage with clients, and compete in a more cutthroat market have all altered as a result of digital innovation. A major paradigm shift in business has been brought about by digital transformation. More businesses nowadays are using digital technology as a crucial component of their commercial arrangement. To stay relevant and competitive in the market, it is now a must rather than an option. Implementing a sound IT governance strategy, companies can unlock the full potential of technology to drive innovation, optimize operations, and gain a significant edge over their competitors. Robust IT governance frameworks help identify, assess, and mitigate risks associated with technology, such as data breaches, cyber attacks, and system failures. This proactive approach minimizes disruptions, protects valuable information, and fosters trust with customers and partners.

While Chinese IT companies, especially those in Beijing, are rapidly pushing forward with Artificial Intelligence (AI), Digital Innovation, and Information Technology (IT) governance, they face several challenges and issues within this space. China faces a shortage of highly skilled AI talent, making it difficult for companies to acquire the expertise needed for successful development and deployment. The rapid pace of digital innovation requires agility. IT companies must be ready for ongoing evolution and adjustment of their business models. The Chinese regulatory landscape is multifaceted, with evolving compliance requirements across industries. Companies need strong governance practices to ensure they stay ahead of potential risks and avoid penalties.

The Chinese government heavily promotes AI development, digital transformation, and IT growth. Studying how Beijing-based IT companies navigate this environment offers insights into policy implications, resources, and the advantages government backing creates. China's IT sector is innovating at a remarkable pace. Investigating companies in Beijing provides a snapshot of cutting-edge trends, unique strategies, and potential pitfalls in a dynamic market. Beijing houses tech giants and numerous startups, creating a highly competitive

environment. Understanding how companies gain an edge in this setting reveals best practices applicable to other competitive markets. By studying this intersection of AI, digital innovation, and IT governance in Beijing's specific context, one gains transferable knowledge about optimal strategies for leveraging technology to enhance competitiveness, overcoming the challenges of AI implementation and digital transformation and best practices in IT governance for security, compliance, and decision-making. Studying this topic with a focus on Beijing IT companies offers a unique window into a dynamic technological hub. The insights gained can inform strategies for competitive advantage enhancement applicable to IT companies worldwide.

Objectives of the Study - The study aimed to assess the artificial intelligence adoption, digital innovation and information technology governance among IT companies in Beijing, China that will be the basis in developing competitive advantage enhancement strategies. Specifically, it described the adoption of artificial intelligence as to technical infrastructure, employee's technical capability and employee's productivity; determined the digital innovation system in terms of cultural readiness, technological capability and management support; assessed the information technology governance as to efficiency, risk management and compliance; tested the significant relationship among artificial intelligence adoption, digital innovation and information technology governance and developed an enhanced competitive advantage strategies for IT companies.

2. Methods

Research Design - A descriptive approach was used in this study to systematically describe the population, define the conditions, and assess the artificial intelligence adoption, digital innovation and information technology governance among IT companies in Beijing, China. According to Rahi, (2017) descriptive method of research refers to the type of research that aimed at obtaining information on current state of phenomena. This type of research sets out to provide an accurate profile of situations, people or events. The primary goal is to describe the characteristics, frequencies, trends, and categories within the chosen topic.

Participants of the Study - Target participants were 400 IT Managers and Supervisors of selected IT companies in Beijing, China. These companies are Perfect World (Beijing) Network Technology Co., LTD, CICA Technology (China) Co., Ltd China Unicom Digital Technology Co., LTD, Beijing Jinshan Office Software Co., LTD and Beijing Xiaomi Technology Co., LTD. IT managers are in charge of implementing and managing AI projects and digital innovation strategies and practices in the organization. They are well aware of the dynamics and the problems and gains in these areas. IT managers are frequently consulted in the processes of strategic technology choices. Their understanding of the drivers of AI, digital innovation and IT governance adoption, would be useful in informing the strategies for enhancing competitive advantage. The study used the purposive-convenience sampling in determining the 400 participants of the study.

Instruments of the Study - A survey questionnaire was used as the main instrument for data collection. This was used to determine the perception of the IT managers on artificial intelligence adoption, digital innovation and information technology governance. The researcher spent time investigating and researching related literature about the study variables and dimensions, which provided a guideline and foundation for the statements in the research questionnaire. It was thoroughly validated by the researcher's mentor and field specialists and underwent reliability testing. In the first part of the questionnaire, the researcher determined the perception of the respondents on artificial intelligence adoption as to technical infrastructure, employee's technical capability and employee's productivity. The second part determined the digital innovation system in terms of cultural readiness, technological capability and management support. The last part was used to assess the information technology governance as to efficiency, risk management and compliance. The Likert scale was employed in this study to assess bank customers' attitudes on the topics under consideration. The questions on the four-point Likert scale contained responses of "Strongly Agree," "Agree," "Disagree," and "Strongly Disagree," with weights ranging from 1 to 4, with 1 being the lowest (Strongly Disagree) and 4 being the highest (Strongly Agree). For this study, the Likert Scale grading was 3.5-4 for Strongly Agree, 2.5-3.49 for Agree, 1.5-2.49 for Disagree, and 1.00-1.49 for Strongly Disagree. For the purpose of validity, the researcher consulted

with the adviser from the school and all the adviser's and panel's comments and suggestions were integrated in the study to ensure validity and dependability of the research contents and output. For the purpose of reliability, the questionnaire was subjected to Cronbach Alpha reliability test. This was done by collecting data from at least 20 respondents in order to determine the whether the survey questions are excellent, good, or acceptable.

Table 1
Reliability Summary Table

| Indicators | Cronbach Alpha | Remarks |
|--|----------------|------------|
| Artificial Intelligence Adoption, Digital Innovation, And Information Technology Governance Instrument | .932 | Excellent |
| Per variable | | |
| Artificial Intelligence Adoption | .933 | Excellent |
| Technical Infrastructure | .920 | Excellent |
| Employee's Technical Capability | .918 | Excellent |
| Employee's Productivity | .891 | Good |
| Digital Innovation | .903 | Excellent |
| Cultural Readiness | .941 | Excellent |
| Technological Capability | .940 | Excellent |
| Management Support | .935 | Excellent |
| Information Technology Governance | .756 | Acceptable |
| Efficiency | .956 | Excellent |
| Risk Management | .947 | Excellent |
| Compliance | .934 | Excellent |

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

Based on result, the Artificial Intelligence Adoption, Digital Innovation, And Information Technology Governance Instrument has an Excellent consistency as exhibited by the Cronbach's Alpha value of (.932). This was validated by the Excellent remark from Artificial Intelligence Adoption (.933); it was confirmed by the Excellent result from Technical Infrastructure (.920), Employees Technical Capability (.918), and Good result on Employees Productivity (.891). Also, it was validated by the Excellent remark from Digital Innovation (.903); it was confirmed by the Excellent results from Cultural Readiness (.941), Technological Capability (.940), and Management Support (.935). It was further validated by the Acceptable result from Information Technology Governance (.756); it was confirmed by the Excellent results from Efficiency (.956), Risk Management (.947), and Compliance (.934); which shows that the instrument at hand passed the reliability index test.

Data Gathering Procedure - The researcher used the completed questionnaire as a data-collecting tool after incorporating thoughts and comments from the research advisor. Following the successful completion of the reliability test, the results were encoded and disseminated to the respondents using an online questionnaire distribution platform in Beijing, China. Prior to delivering the questionnaire, the researcher wrote a formal letter to the management of the selected and participating companies, seeking permission to conduct the customer perception study. More significantly, prior to participating in the study, the consumers' consent was obtained. The obtained data were summarized, evaluated, and interpreted by the researcher.

Ethical Considerations - Conducting research ethically is paramount to ensure the protection of participants, the validity of findings, and the integrity of the research process. Following these ethical considerations ensures that research was conducted responsibly and contributes to knowledge advancement in a way that respects human rights and well-being. Participants must be able to freely choose whether to participate in the research without coercion or undue influence. The researcher will provide informed consent, which includes clear and understandable explanation of the research purpose, procedures, risks, and benefits; opportunity to ask questions and receive thorough explanations; and freedom to withdraw from the study at any point without penalty. The researcher took all reasonable steps to minimize physical, psychological, and social risks to participants and will protect the privacy of participants, ensuring confidentiality of their data and identities unless explicit consent is granted for disclosure. The author observed honesty and transparency throughout the research process, including data collection, analysis, and reporting and to consider the broader societal implications of the research and how it may impact different groups or communities.

Data Analysis - Weighted mean and rank were used to describe the adoption of artificial intelligence as to technical infrastructure, employee's technical capability and employee's productivity; determine the digital innovation system in terms of cultural readiness, technological capability and management support; and assess the information technology governance as to efficiency, risk management and compliance. 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.

3. Results and discussion

Table 2
Summary Table on Artificial Intelligence Adoption

| Key Result Areas | Composite Mean | VI | Rank |
|---------------------------------|----------------|-------|------|
| Technical Infrastructure | 3.22 | Agree | 2 |
| Employee's Technical Capability | 3.34 | Agree | 1 |
| Employee's Productivity | 3.18 | Agree | 3 |
| Grand Composite Mean | 3.25 | 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 table summarizes the impact of artificial intelligence (AI) adoption across three key result areas: Technical Infrastructure, Employee's Technical Capability, and Employee's Productivity. The grand composite mean of 3.25 reflects the overall positive perception of AI adoption across all key result areas. Employees generally agree that AI has beneficial impacts, though the degree of impact varies slightly among the different areas. The highest ranking of Employee's Technical Capability suggests that organizations have been successful in implementing AI in ways that enhance employees' skills. Continuous investment in training and development will be crucial to maintain and further this improvement. The positive ranking of Technical Infrastructure indicates that AI adoption is likely accompanied by significant upgrades to the organization's technical framework. Ensuring that infrastructure keeps pace with technological advancements will be essential for sustaining these benefits. While Employee's Productivity is the lowest-ranked area, the agreement still shows a favorable impact. Organizations might need to explore additional ways to leverage AI to boost productivity further, perhaps by optimizing AI tools for everyday tasks or by integrating AI more seamlessly into workflows.

Overall, the table reflects a generally positive view of AI adoption across key result areas. Employees feel that their technical capabilities have improved the most, followed by enhancements in technical infrastructure, and finally, productivity gains. The findings suggest that while AI has made a favorable impact, there are opportunities for further improvements, particularly in maximizing productivity. Organizations should continue to invest in technical training and infrastructure while exploring new ways to leverage AI to boost employee productivity.

Table 3
Summary Table on Digital Innovation System

| Key Result Areas | Composite Mean | VI | Rank |
|--------------------------|----------------|-------|------|
| Cultural Readiness | 3.21 | Agree | 3 |
| Technological Capability | 3.22 | Agree | 2 |
| Management Support | 3.27 | Agree | 1 |
| Grand Composite Mean | 3.23 | 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 comprehensive overview of various key result areas within the digital innovation system of an organization. It summarizes how these areas are rated based on their effectiveness or perceived importance. The grand composite mean of 3.23 represents the overall level of agreement across the key result areas of the digital innovation system. This mean suggests that, on average, the organization generally agrees that it is effectively addressing aspects of digital innovation. However, there are varying levels of effectiveness across different areas, with management support being the strongest area and cultural readiness being relatively weaker.

The table reveals that the organization is relatively well-positioned in terms of management support and technological capability for digital innovation. However, cultural readiness, while adequate, shows room for improvement. To enhance the digital innovation system, the organization may focus on strengthening its cultural readiness to better align with its technological and managerial strengths. Westerman et al. (2014) assesses the essential capabilities for successful digital transformation, emphasizing the importance of aligning management support, technological infrastructure, and organizational culture. Their research underscores that a balanced approach across these dimensions is crucial for achieving overall effectiveness in digital innovation. They argued that leadership must effectively support and advocate for digital initiatives, the organization needs to have the necessary technological resources, and the culture must be open and adaptive to change. By integrating these elements, organizations can better navigate and leverage digital transformation efforts, aligning with the concept of achieving a well-rounded and effective digital innovation system as reflected in the grand composite mean of 3.23 from Table 3.

Table 4
Summary Table on Information Technology Governance

| Key Result Areas | Composite Mean | VI | Rank |
|----------------------|----------------|-------|------|
| Efficiency | 3.38 | Agree | 1 |
| Risk Management | 3.22 | Agree | 3 |
| Compliance | 3.30 | Agree | 2 |
| Grand 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 4 provides an overview of the key result areas within Information Technology (IT) governance, summarizing their effectiveness based on composite mean scores and ranking. The Grand Composite Mean of 3.30 indicates a general agreement that IT governance practices are effectively addressing various aspects of governance. This mean suggests that, on average, the organization perceives its IT governance framework as reasonably effective, though there may still be room for improvement. Efficiency is recognized as the strongest area, suggesting well-established and effective processes. Compliance is also viewed positively but is slightly less effective compared to efficiency. Risk Management, while agreed upon, is identified as an area with potential for improvement. This distribution highlights the need for ongoing evaluation and enhancement of IT governance practices to strengthen all key result areas. Wijnhoven et al. (2021) emphasized that assessing IT governance performance involves more than evaluating individual components like compliance, efficiency, and risk management. Instead, they advocate for a comprehensive approach that considers the integration and effectiveness of these components in driving organizational success. The study explores how well-designed IT governance frameworks contribute to organizational success. It highlights that effective IT governance can lead to improved decision-making, better alignment with business objectives, and enhanced overall performance. By managing IT resources efficiently and ensuring compliance with relevant regulations, organizations can achieve greater strategic and operational outcomes.

Table 5
Relationship between Artificial Intelligence Adoption and Digital Innovation

| Variables | rho | p-value | Interpretation |
|--|--------|---------|-----------------|
| Technical Infrastructure | | | |
| Cultural Readiness | -0.008 | 0.876 | Not Significant |
| Technological Capability | -0.014 | 0.784 | Not Significant |
| Management Support | 0.045 | 0.366 | Not Significant |
| Employee's Technical Capability | | | |
| Cultural Readiness | 0.029 | 0.563 | Not Significant |
| Technological Capability | -0.005 | 0.928 | Not Significant |
| Management Support | 0.010 | 0.845 | Not Significant |
| Employee's Productivity | | | |
| Cultural Readiness | 0.014 | 0.774 | Not Significant |
| Technological Capability | 0.001 | 0.987 | Not Significant |
| Management Support | 0.034 | 0.497 | Not Significant |

Significant at p-value < 0.01

The computed rho-values ranging from -0.008 to -0.014 indicate a very weak indirect relationship between technical infrastructure and the sub variables of digital innovation namely cultural readiness and technological capability while the computed rho-value of 0.045 indicates a very weak direct relationship between technical infrastructure and management support. The computed rho-value ranging from 0.010 to 0.029 indicate a very weak direct relationship between employee’s technical capability and the sub variables of digital innovation namely cultural readiness and management support while the computed rho-value of -0.005 indicates a very weak indirect relationship between employee’s technical capability and technological capability. The computed rho-values ranging from 0.001 to 0.034 indicate a very weak direct relationship between employee’s productivity and the sub variables of digital innovation. There was no statistically significant relationship between artificial intelligence adoption and digital innovation because the obtained p-values were greater than 0.01. None of the relationships examined show a significant correlation, as all p-values are above the 0.01 threshold.

This implies that the variables studied (cultural readiness, technological capability, and management support) do not have a statistically significant impact on technical infrastructure, employee’s technical capability, or employee’s productivity in the context of AI adoption and digital innovation. The absence of significant findings suggests that there may be other factors influencing AI adoption and digital innovation that were not captured in this analysis. Future research could explore additional variables or employ different methodologies to uncover significant relationships. For organizations looking to enhance digital innovation through AI adoption, this table suggests that focusing solely on cultural readiness, technological capability, or management support may not be sufficient. A more holistic approach, considering a wider range of factors, might be necessary to drive meaningful improvements in technical infrastructure, employee capabilities, and productivity.

Cho et al. (2018) explored the applications of virtual reality (VR) in the financial sector, analyzing how VR can be integrated into financial services and its potential benefits. The authors highlight that while cultural readiness and technological capability are crucial for adopting new technologies, they alone are insufficient to ensure successful implementation. Instead, a combination of factors, including management support, organizational structure, and employee training, are necessary for effectively leveraging VR in financial services. This finding aligns with the interpretation of Table 5, which shows that none of the individual factors (cultural readiness, technological capability, and management support) significantly influence technical infrastructure, employee technical capability, or productivity in AI adoption.

Table 6

Relationship between Artificial Intelligence Adoption and Information Technology Governance

| Variables | rho | p-value | Interpretation |
|--|--------|---------|-----------------|
| Technical Infrastructure | | | |
| Efficiency | 0.026 | 0.611 | Not Significant |
| Risk Management | -0.033 | 0.510 | Not Significant |
| Compliance | -0.081 | 0.106 | Not Significant |
| Employee’s Technical Capability | | | |
| Efficiency | -0.045 | 0.370 | Not Significant |
| Risk Management | -0.043 | 0.388 | Not Significant |
| Compliance | -0.038 | 0.443 | Not Significant |
| Employee’s Productivity | | | |
| Efficiency | 0.038 | 0.452 | Not Significant |
| Risk Management | -0.014 | 0.786 | Not Significant |
| Compliance | 0.055 | 0.272 | Not Significant |

Significant at p-value<0.01

The computed rho-value of 0.026 indicate a very weak direct relationship between technical infrastructure and efficiency while the computed rho-values ranging from -0.033 to -0.081 indicate a very weak indirect relationship between technical infrastructure and the sub variables of information technology governance namely risk management and compliance. The computed rho-values range from -0.038 to -0.045 indicate a very weak indirect relationship between employee’s technical capability and the sub variables of information technology

governance. The computed rho-values range from 0.038 to 0.055 indicate a very weak direct relationship between employee's productivity and the sub variables of information technology governance namely efficiency and compliance while the computed rho-value of -0.014 indicates a very weak indirect relationship between employee's productivity and risk management. There was no statistically significant relationship between artificial intelligence adoption and information technology governance because the obtained p-values were greater than 0.01.

None of the relationships examined in Table 6 is statistically significant as all p-values are above the 0.01 threshold. This indicates that the IT governance variables (efficiency, risk management, and compliance) do not have a significant impact on technical infrastructure, employee's technical capability, or employee's productivity in the context of AI adoption. The absence of significant findings suggests that AI adoption is influenced by a variety of factors beyond just IT governance. This complexity highlights the need for a more comprehensive approach that includes additional variables such as organizational culture, leadership, and external market conditions. Organizations aiming to improve their AI adoption and digital innovation strategies should consider a broader range of factors. Solely focusing on IT governance aspects like efficiency, risk management, and compliance may not be sufficient to drive significant improvements in technical infrastructure, employee capabilities, or productivity.

Gartner (2018) emphasized the critical role of IT governance in the adoption of artificial intelligence (AI). It highlights that while efficiency, risk management, and compliance are essential components of IT governance, they alone do not guarantee successful AI implementation. Effective AI adoption requires a broader approach that includes strategic alignment, cultural readiness, technological capability, and continuous management support. The findings suggested that organizations need to integrate these governance aspects with a comprehensive strategy to achieve significant improvements in AI-driven innovation and productivity. This aligns with the interpretation of Table 6, where none of the IT governance variables (efficiency, risk management, and compliance) significantly impact technical infrastructure, employee technical capability, or productivity in AI adoption.

Table 7

Relationship between Digital Innovation and Information Technology Governance

| Variables | Rho | p-value | Interpretation |
|---------------------------------|--------|---------|-----------------|
| Cultural Readiness | | | |
| Efficiency | -0.006 | 0.897 | Not Significant |
| Risk Management | 0.018 | 0.726 | Not Significant |
| Compliance | 0.000 | 0.998 | Not Significant |
| Technological Capability | | | |
| Efficiency | -0.091 | 0.069 | Not Significant |
| Risk Management | -0.023 | 0.640 | Not Significant |
| Compliance | 0.006 | 0.899 | Not Significant |
| Management Support | | | |
| Efficiency | -0.023 | 0.653 | Not Significant |
| Risk Management | -0.034 | 0.494 | Not Significant |
| Compliance | -0.036 | 0.472 | Not Significant |

Significant at p-value < 0.01

The computed rho-value of -0.006 indicates a very weak indirect relationship between cultural readiness and efficiency while the computed rho-values ranging from 0.000 to 0.010 a very weak direct relationship between cultural readiness and the sub variables of information technology governance namely risk management and compliance. The computed rho-values range from -0.023 to -0.091 indicate a very weak indirect relationship between technological capability and the sub variables of information technology governance namely efficiency and risk management while the computed rho-value of 0.006 indicates a very weak direct relationship between technological capability and compliance. The computed rho-values range from -0.023 to -0.036 indicate a very weak indirect relationship management support and the sub variables of information technology governance.

There was no statistically significant relationship between digital innovation and information technology governance because the obtained p-values were greater than 0.01.

None of the relationships in Table 16 is statistically significant, as all p-values exceed the 0.01 threshold. This suggests that the IT governance variables (efficiency, risk management, and compliance) do not significantly impact cultural readiness, technological capability, or management support in the context of digital innovation. The absence of significant findings indicates that digital innovation is influenced by a broader array of factors beyond IT governance alone. Other elements such as organizational culture, strategic alignment, market conditions, and employee engagement might play crucial roles. For organizations seeking to drive digital innovation, relying solely on IT governance aspects like efficiency, risk management, and compliance may not suffice. A more holistic approach that includes additional factors is necessary to foster meaningful digital innovation. Companies should incorporate a diverse range of factors into their strategic planning for digital innovation. This includes fostering a supportive culture, enhancing technological capabilities, and ensuring robust management support. The findings suggest a need for further research to identify other variables that might significantly influence the relationship between digital innovation and IT governance. To enhance digital innovation, organizations should create an environment that promotes continuous learning, adaptability, and collaboration, alongside effective IT governance practices.

Table 8

Competitive Advantage Enhancement Strategies

| Key Results | Objectives | Strategies | Persons | Expected Outcomes |
|---|---|--|--|--|
| Areas | | | Involved | |
| Artificial Intelligence Adoption as to Employees Productivity | Enhance employee productivity through AI adoption | Provide AI training programs to equip employees for necessary skills. Integrate AI tools to automate repetitive tasks Assess artificial intelligence tools in terms of performance efficiency towards the intended purpose and user-friendliness. | HR department IT managers/ Administrator | Improved employee efficiency Increased output and accuracy Reduction in task completion time Increased work quality and output |
| Digital Innovation System as to Cultural Readiness | Foster a culture that supports digital innovation | Offer cultural training to ensure that employees comprehend and appropriately utilize digital devices and tools. Make available opportunities and platforms for one’s professional growth and skills enhancement. Regularly assess and enhance the cultural readiness strategies in place. | HR Manager/ department heads Innovation team Top Management | Greater employee engagement Higher innovation rates Number of new ideas implemented Increased Employee satisfaction scores |
| Information Technology Governance as to Risk Management | Enhance risk management through effective IT governance | Create simple policies and processes necessary for conducting IT operations. Integrate a risk management framework that complies with the existing standards in the industry. Identify the threats that the IT technologies and data may be exposed to. Periodically conduct audits to evaluate the level of adherence to governance practices. | IT governance team Risk management team Audit committee | Reduced IT-related risks Enhanced compliance with regulations Number of identified and mitigated risks Compliance audit results |

4. Conclusions and recommendations

The employees generally agreed and had overall positive perception of AI adoption across three key result areas: Technical Infrastructure, Employee’s Technical Capability, and Employee’s Productivity. The respondents generally agreed that IT companies effectively addressing aspects of digital innovation in terms of cultural

readiness, technological capability and management support. IT governance practices effectively addressed various aspects of governance such as efficiency, risk management and compliance as agreed by the respondents. There were no significant relationships that exist between artificial intelligence adoption, digital innovation, and information technology governance. Competitive advantage enhancement strategies were developed. Management may allocate resources to research and development (R&D) for cutting-edge AI technologies and innovations. Business owners may set up dedicated innovation labs or teams focused on exploring new technologies, developing prototypes, and experimenting with cutting-edge solutions. This creates a structured yet flexible space for innovation. IT governance may be ensured that it aligns with overall business goals and strategies. This alignment helps in prioritizing IT projects that deliver the most value and support the organization's strategic objectives. The proposed strategies may be utilized by IT companies to enhance competitive advantage. The findings suggest a need for further research to identify other variables that might significantly influence the relationship between artificial intelligence adoption, digital innovation and IT governance.

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