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The Impact of Digital Capabilities on Enhancing Organizational Innovation: An Applied Study in government banks in Babylon

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A B S T R A C T
this study aims to explore the impact of digital capabilities on the increase in organizational innovation in government banks in Babylon Governorate, Iraq. The study was descriptive-analytical with a structured questionnaire distributed to 200 employees in government banks for data collection. Digital capabilities were analyzed based on their major aspects such as digital technology capability and digital data and analytical capability, and organizational innovation was considered as the dependent variable. Data were collected using Cronbach's alpha, descriptive statistics, Pearson correlation coefficient, and regression analysis in the Statistical Package for the Social Sciences (SPSS) and used for measuring the value of digital capabilities in order to understand how digital capabilities are contributing to organizational innovation in government banks to better navigate technological and organizational changes. According to the findings, digital capabilities have a strong positive impact on organizational innovation. This suggests that we should enhance technological capabilities and the effective use of digital data in government banks to create innovative practices and improve organizational performance. Digital infrastructure should be reinforced, employees' digital skills increased, and data and analysis technologies should be used to drive innovation in the organizations.

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INTRODUCTION

Digital technologies have changed how organizations create value, manage resources, provide services and react to the environment. Technologies like artificial intelligence, cloud computing, big data analytics, the Internet of Things and digital platforms have transformed from being technical instruments to strategic tools that will be at the heart of organizational capabilities and innovation. And so companies need to not only build the ability to use digital technologies but also the capability to integrate them into business processes and decision making. Digital capabilities have become a vital resource of an organization to combat technological shocks and also to develop new ways of working (Warner & Wäger, 2019; Tortora et al., 2021).

Digital capabilities refer to the capacity of the organization to mobilize these technologies, knowledge, skills, data, and resources in a way that is supportive of the organization's activities and in turn to the change in its business environment. They are important in more than infrastructure because for digital value creation to be realized, organizations need to develop complementary capabilities in areas of digital knowledge, coordination and integration, learning and reconstruction of existing resources. Based on dynamic capabilities theory, companies operating in rapidly changing environments need to see new opportunities, seize them, and reorient their resources and processes to address them (Teece, 2007; Warner & Wäger, 2019).

Digital capabilities are increasingly important in the world of government, where government is expected to deliver services that are faster, more accessible, more integrated and more citizen-oriented. The digital transformation of public institutions does not simply involve new technology but also the changes in organizational processes, structures, knowledge and the process of delivering public value. Bertot et al. (2016) stress that innovative digital public services demand technical, organizational and policy abilities in government organizations. Innovation has become an increasingly important task for governments in the face of complex social needs, rising citizen expectations and technological change and the need to improve the efficiency and quality of public services.

Public sector innovation can be through the development and implementation of new ideas, practices, processes, services and organizational arrangements that create public value. De Vries et al. (2016) in their systematic review of public sector innovation research show that innovation in government organizations is influenced by several organizational and environmental aspects and impacts public services and organizational functioning through a variety of organizational and environmental factors and can contribute to improvement in public services. Organizational innovation is the ability of an organization to adopt and implement new or better practices and processes of its organization, its internal practices, processes, structures, governance, and service delivery. Damanpour (1991) pointed out that organizational innovation is linked to a number of organizational factors, such as managerial attitude to change, technical knowledge and communication, and organizational structure. The OECD and Eurostat (2018) have argued that innovation is not just the

development of an idea but the implementation or adoption of an innovative product or process. Digital capabilities can be used to bring together information in a consolidated way across the organization and to coordinate activities and to find new methods, concepts and methods to apply and improve processes. The digital capabilities can be used in the organization to take digital resources for development of new practices and solutions. These capabilities can therefore establish the conditions for new ideas to be created and implemented (Tortora et al., 2021; Warner & Wäger, 2019).

Recent empirical evidence substantiates this relationship. Tian et al. (2025) showed that different aspects of digital capabilities greatly enhance innovation performance and argued that digital capabilities should be viewed as dynamic organizational resources not just technological assets. Liu et al. (2024) found that digital capabilities positively influence innovation behavior across a large international sample of firms. There is also recent evidence from the public sector that digital transformation and digital innovation capabilities are crucial to organizational innovation. Thus, the impact on organizational innovation of digital capabilities is of high importance to government institutions. Digital technologies are increasingly available to public organizations but digital technology is not a guarantee of organizational innovation. And the key question to ask is if government institutions are equipped to effectively utilize digital resources, to leverage digital knowledge, to coordinate activities, and to redesign existing organizational processes. This issue presents a strong theoretical and practical justification for investigating if stronger digital capabilities contribute to greater organizational innovation in government institutions.

LITERATURE REVIEW

Digital Capabilities

Digital capabilities emerged from the literature on organizational capabilities, information technology capabilities, digital transformation and dynamic capabilities. Traditional information technology research typically focused on the ability to access technology infrastructure and IT resources. But today we learn that the competitive and organizational advantage is not a result of ownership of technology but of the ability of an organization to use technology in combination with knowledge, human skills, organizational processes and management. Digital capabilities are what the organization can do with digital technologies that are available, as well as other knowledge and resources to efficiently work in an organization, react to environmental changes and create new opportunities.

This takes the concept beyond a technical perspective and focuses on the organizational processes in which digital resources are utilized and transformed into value. Warner and Wäger (2019) provide an important theoretical foundation by conceptualizing digital transformation capabilities as dynamic capabilities. Organizations need to develop capabilities which enable them to understand digital opportunities, seize them and change or reformulate their organizational resources and processes. Likewise, Tortora et al. (2021) highlight the significance of dynamic and knowledge-driven capabilities in enabling companies to address the digital transformation and digital innovation problem.

They claim that digitalization has pushed organizational boundaries and organizations need to develop capabilities that allow them to create new combinations of resources and to improve the existing capabilities. More recently Tian et al. (2025) conceptualized digital capabilities through the notion of perception, operation and coordination. They also emphasized that digital capabilities are not only about digital technologies, but also how organizations acquire, integrate and use digital resources to facilitate innovation. So digital capabilities in this study are the ability of organizations to acquire, integrate, utilize, coordinate and continually develop digital technologies, knowledge, data and human skills to be able to improve activities and to respond to changes in the environment.

Theoretical Foundation of Digital Capabilities

The Dynamic Capabilities View (DCV) is a good theoretical tool to understand digital capabilities. Teece et al. (1997) conceptualized dynamic capabilities as the ability of an organization to integrate, develop and re-invent its own and external competencies in a rapidly changing environment. Teece (2007) developed this perspective with the three processes of sensing, seizing and transforming/reconfiguring. Sensing, in a digital environment, involves identifying new technologies, new opportunities, new stakeholder expectations and new ways of generating digital value. Seizing is allocating resources and implementing the appropriate technology and organizational response. Reconfiguring means changing the organization's resources, structures, processes and capabilities so it can adapt to environmental change. Warner and Wäger extend this logic to digital transformation and show that to achieve digital transformation, the organizations should build dynamic capabilities and strategic renewal. So digital capabilities are an important manifestation of dynamic capabilities in the digital age.

Dimensions of Digital Capabilities

Based on the literature available at the present time, we can operate digital capabilities in four dimensions:

i. Digital Technology Capability: using and integrating digital technologies in the organization's activities and operation.
ii. Digital Data and Analytical Capability: how the organization's digital data is collected, managed, integrated and analyzed and how it uses it in decision making and organizational processes.
iii. Digital Integration and Coordination Capability: the ability of an organization to connect digital systems, departments, employees and organizational activities.
iv. Digital Learning and Adaptation Capability: the ability of the organization to continuously acquire digital knowledge, develop employee digital skills, learn from technological developments and to be flexible and adapt to technological change.

Organizational Innovation

Organizational innovation is often considered in management literature as a mechanism by which organizations respond to environmental changes and enhance their operations and create new forms of value. Damanpour (1991) is

among the most influential scholars in this area and demonstrated through a meta-analysis that organizational innovation is driven by many structural, managerial, resource-related and communication factors. Innovation is not just about the generation of new ideas. An idea becomes an innovation when it is implemented and used. The OECD and Eurostat (2018) stress the relevance of implementation in distinguishing innovation from invention. As a result, innovation is a change that is both new or improved and has been implemented in the real world.

Organizational innovation in the public sector is particularly important since the purpose is not to make money in the business sector but to create public value through improvements in processes, services, administrative practices, and organizational systems. De Vries et al. (2016) show that public sector innovation has different types and objectives and it is linked to internal organizational improvement and public service delivery. So we suggest that organizational innovation in the current study is the ability of a government institution to develop and implement new or significantly improved administrative practices, organizational processes, service practices and organizational models and ways of working in order to increase the effectiveness of the organization and public value.

Theoretical Perspective of Organizational Innovation

Organizational innovation can be understood from various theoretical perspectives: organizational change theory, innovation diffusion theory, resource-based theory, and dynamic capabilities theory. For this purpose, the Dynamic Capabilities View is particularly appropriate because innovation requires organizations not only to have resources but also to change and adapt them. Organizations innovate when they can see what the possible improvements are, where appropriate resources can be found, try new methods, and modify old routines. So the innovation process involves the transformation of organizational knowledge and resources into new practices and outcomes. Gullmark (2021) investigated public-sector organizations on innovation capability and found that this process is driven by organizational capabilities including routines, processes, tools, and structures that drive innovation. This finding is particularly relevant because it shows how public-sector innovation can be institutionalized through organizational ability rather than a person's creativity.

Dimensions of Organizational Innovation

Organizational innovation can be organized in four dimensions for this study.

i. Administrative Innovation: introducing new or improved management methods, decision-making mechanisms, organizational policies, or administrative practices.
ii. Process Innovation: introducing new or improved procedures and methods for doing organizational activities.
iii. Service Innovation: developing new or significantly improved methods of delivering public services to citizens and stakeholders.
iv. Organizational Structure and Work Innovation: changes in how responsibilities are distributed, how organizational units coordinate activities, and how employees perform and organize their work.

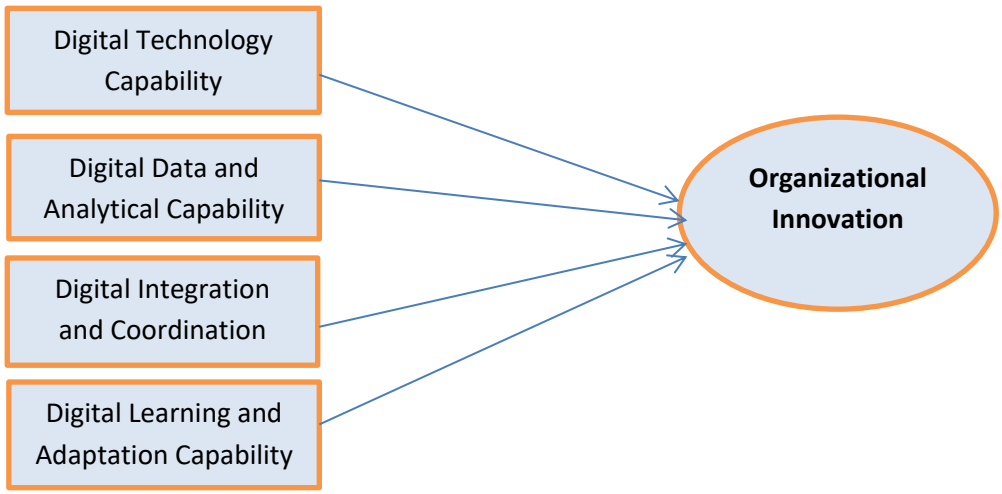
The Theoretical Relationship Between Digital Capabilities and Organizational Innovation

The relationship between digital capabilities and organizational innovation can be thought of from the Dynamic Capabilities View. The central point of this perspective is that companies operating in dynamic environments need to constantly reinvent and reorient their capabilities and resources. Digital capabilities allow organizations to identify opportunities in technology, acquire and process information, integrate digital resources, and change organizational processes. These activities are key to innovation and the foundation for this kind of work. First, digital capabilities raise the threshold of opportunity sensing.

Digital companies with a better ability to access and evaluate information from internal and external sources are better positioned to do so. Digital technologies can help government institutions identify the issues of citizen demand, administrative issues, technology development, and opportunities to improve public service. Second, digital capabilities allow organizations to seize opportunities. Finding opportunities does not mean to do something else. So organizations need to be able to convert the opportunities identified into actions. Digital capabilities help companies to marshal technology, staff, integrate information, and implement new solutions. Third, digital capabilities help organizations change their practices and processes to support innovation. Digital capabilities bring in a new mode of working, bring people together, change responsibilities, build new service channels, and change workflows. And fourth, digital capabilities can facilitate knowledge sharing and organizational learning—two ingredients of innovation. Digital systems are systems for storing, accessing, communicating, and analyzing organizational knowledge.

This enables employees and organizational units to get information and learn from previous experience so that new ideas get generated and implemented in a way that makes it possible. This theory is well supported by the empirical evidence. Tian et al. (2025) showed that digital capabilities are beneficial to innovation performance and further argued that digital capabilities should be viewed as dynamic processes that enable organizations to acquire and coordinate resources. Liu et al. (2024) also found a positive influence of digital capabilities on innovation behavior.

The formwork of study



Research Hypotheses

Based on the theoretical framework, the following hypotheses were formulated:
H1: Digital capabilities have a statistically significant positive effect on organizational innovation.
H1a: Digital Technology Capability has a statistically significant positive effect on organizational innovation.
H1b: Digital Data and Analytical Capability has a statistically significant positive effect on organizational innovation.
H1c: Digital Integration and Coordination Capability has a statistically significant positive effect on organizational innovation.
H1d: Digital Learning and Adaptation Capability has a statistically significant positive effect on organizational innovati

METHODOLOGY

Research Design

This research design was based on a quantitative, descriptive-analytical, cross-sectional research design for the impact of digital capabilities on organizational innovation in government banks in Babylon Governorate, Iraq. The data were collected by a structured questionnaire using a five-point Likert scale from 200 participants. The descriptive approach was used to assess the level of digital capabilities and organizational innovation. The analytical approach was used to analyze the relationships and effects on the study variables. This study design fit the study hypotheses well and also found the contribution of digital capabilities to organizational innovation.

Study Population and Sample

The study population consisted of employees working in government banks in Babylon Governorate, Iraq. A total of 200 respondents were selected from people who knew banking activities, digital technology and organizational processes. The subjects came from different levels of the banking organization and work environment. The questionnaire was provided. The sample size of 200 respondents was enough to carry out descriptive and inferential statistical analyses to test the study hypotheses.

Data Collection

The primary data were gathered via a questionnaire of the study framework. The questionnaire was sent to employees of government banks in Babylon Governorate. It was the digital capabilities dimensions as independent variable and organizational innovation as dependent variable. The respondents were informed that the data would be used for academic purposes and treated confidentially. In total, 200 valid responses were collected and used for statistical analysis.

Data analysis

The collected data were analyzed using SPSS. Cronbach's alpha was applied to evaluate the reliability of the questionnaire. Descriptive statistics (means and standard deviations) were used to describe the study variables. Pearson's correlation coefficient was used to examine whether the study variables were related or not and regression analysis was used to assess the effectiveness of digital capabilities in organizational innovation. The study used a five-point Likert scale from (1) "Strongly Disagree" to (5) "Strongly Agree."

RESEARCH RESULT

Reliability Analysis

Cronbach's Alpha was used to evaluate the internal consistency of the questionnaire items.

Table 1. Reliability Analysis

Variable / Dimension	No. of Items	Cronbach's Alpha
Digital Technology Capability	4	0.823
Digital Data and Analytical Capability	4	0.846
Digital Integration and Coordination Capability	4	0.831
Digital Learning and Adaptation Capability	4	0.858
Digital Capabilities – Overall	16	0.914
Administrative Innovation	4	0.817
Process Innovation	4	0.839
Service Innovation	4	0.851
Organizational Structure and Work Innovation	4	0.826
Organizational Innovation – Overall	16	0.921

The results indicate that all Cronbach's Alpha coefficients exceeded the commonly accepted threshold of 0.70. The overall reliability coefficient was 0.914 for digital capabilities and 0.921 for organizational innovation. These results indicate a high level of internal consistency among the questionnaire items.

Descriptive Statistics

Table 2. Descriptive Statistics of Study Variables

Variable / Dimension	Mean	SD	Relative Importance
Digital Technology Capability	3.71	0.68	74.2%
Digital Data and Analytical Capability	3.58	0.71	71.6%
Digital Integration and Coordination Capability	3.64	0.69	72.8%
Digital Learning and Adaptation Capability	3.52	0.75	70.4%

Digital Capabilities – Overall	3.61	0.62	72.2%
Administrative Innovation	3.55	0.70	71.0%
Process Innovation	3.63	0.67	72.6%
Service Innovation	3.69	0.66	73.8%
Organizational Structure and Work Innovation	3.49	0.73	69.8%
Organizational Innovation – Overall	3.59	0.61	71.8%

The overall mean of digital capabilities was 3.61; the standard deviation was 0.62 and the relative importance was 72.2%. This indicates favorable digital capabilities in the government banks. Digital Technology Capability is the highest mean of digital abilities (M = 3.71), and this indicates that the adoption and utilization of technology is one of the strongest components of digital capabilities. Digital Learning and Adaptation Capability is the lowest mean (M = 3.52). Although it is still better than the midpoint of the theoretical value of 3, it also indicates that employee digital learning and organizational adaptation need to be further developed. For organizational innovation, the mean was 3.59 with a standard deviation of 0.61 and relative importance of 71.8%. Service Innovation had the highest mean (M = 3.69) which indicates that innovation is relatively visible in the development and improvement of banking services. Organizational structure and work innovation had the lowest mean of 3.49 suggesting relatively lower levels of structural and work-related innovation.

Pearson Correlation Analysis

Table 3. Correlation between Digital Capabilities and Organizational Innovation

Digital Capability Dimension	**Organizational Innovation (r)**	**Sig.**
Digital Technology Capability	0.611**	0.000
Digital Data and Analytical Capability	0.657**	0.000
Digital Integration and Coordination Capability	0.684**	0.000
Digital Learning and Adaptation Capability	0.719**	0.000
Digital Capabilities – Overall	0.746	0.000

**Note: $p < 0.01$.

The results indicate positive and statistically significant associations between all dimensions of digital capabilities and organizational innovation. The overall correlation between digital capabilities and organizational innovation was $r = 0.746$, $p < 0.001$, indicating a strong positive relationship. Digital Learning and Adaptation Capability had the strongest correlation with organizational innovation ($r = 0.719$), followed by Digital Integration and Coordination Capability ($r = 0.684$), Digital Data and Analytical Capability ($r = 0.657$), and Digital Technology Capability ($r = 0.611$).

Multiple Linear Regression Analysis

Table 4. Model Summary

Model	R	R^2	Adjusted R^2	F	Sig.
Digital Capabilities → Organizational Innovation	0.781	0.610	0.602	76.28	0.000

The results show that the regression model is statistically significant ($F = 76.28$, $p < 0.001$).

The coefficient of determination ($R^2 = 0.610$) indicates that the four dimensions of digital capabilities collectively explain approximately 61.0% of the variance in organizational innovation. The remaining 39.0% can be attributed to other variables that were not included in the current research model.

Table 5. Regression Coefficients

Predictor	β	t	Sig.	Decision
Digital Technology Capability	0.183	3.24	0.001	Supported
Digital Data and Analytical Capability	0.214	3.71	0.000	Supported
Digital Integration and Coordination Capability	0.267	4.56	0.000	Supported
Digital Learning and Adaptation Capability	0.341	5.89	0.000	Supported

The results indicate that all four dimensions have statistically significant positive effects on organizational innovation. Digital Learning and Adaptation Capability has the strongest effect ($\beta = 0.341$, $p < 0.001$). Digital Integration and Coordination Capability was the second strongest predictor ($\beta = 0.267$, $p < 0.001$). Digital Data and Analytical Capability recorded an effect of ($\beta = 0.214$, $p < 0.001$). Therefore H1, H1a, H1b, H1c and H1d are all supported.

DISCUSSION

The results corroborate the positive association between digital skills and organizational innovation in government banks in Babylon Governorate. The overall correlation coefficient between the two variables was 0.746 with a very positive relationship. The results indicate that banks with better digital capabilities are likely to have higher levels of organizational innovation. This is in line with recent banking research. Abdurrahman et al. found that technological and organizational capabilities are key to digital transformation and innovation in banking. They found that the organizational capabilities of 325 bankers from 48 banks were of great importance to leading the innovation process. The results also support the idea that banks cannot rely on technological investments to support innovation. It's dynamic capabilities that help banks change resources, processes, and organizational structure in the face of technological transformation.

In a recent study of traditional banking, digital adaptation, cross-functional collaboration, digital expertise, and organizational reconfiguration were also key in response to digital transformation. The descriptive results show that Digital Technology Capability has the highest mean of the digital capabilities ($M = 3.71$), which indicates that banking institutions have made relatively greater progress in the field of digital technology adoption. Which is not surprising as

banking institutions are among the most technology-dependent groups and are increasingly dependent on digital platforms, data, automation, and integrated applications. However, Digital Learning and Adaptation Capability has the lowest descriptive mean (M = 3.52). This level is still good but this result shows that the development of employees and organizational learning mechanisms may not have gone along the same pace as technology adoption. This is particularly important because Digital Learning and Adaptation Capability showed the strongest regression coefficient (β = 0.341) and therefore, we argue that learning and adaptation are more important in driving organizational innovation than technology adoption alone.

This is the same perspective that is supported by recent research showing that organizational learning and digitalization capabilities are linked and learning mechanisms are useful for organizations in the face of changing technology. And it also supports what is shown in the literature that information technology and knowledge management tools are contributing to organizational innovation through organizational agility. The second strongest predictor was Digital Integration and Coordination Capability (β = 0.267). This shows that having separate digital systems is not enough. The systems must be connected, and information needs to move effectively between departments and the organization. In government banks, the integration can reduce duplication, flow information more efficiently, help with coordination, and enable employees to work together to develop new procedures and services. A growing body of research around banking digital transformation focuses on integration, digital systems, organizational structures, and digital platforms for the development of businesses. A positive impact of Digital Data and Analytical Capability (β = 0.214) indicates that data are valuable resources for innovation in an organization. When banks are able to collect and analyze data in a timely fashion, managers can get more accurate information about customer needs and operational problems, performance, and improvement opportunities.

The results are consistent with recent research that big data analytics capabilities can promote innovation and organizational performance, especially when combined with the right organizational and cultural capabilities. Digital Technology Capability (β = 0.183) had the lowest regression coefficient in all four dimensions, yet the effect was still significant. The finding is not a sign that technology is irrelevant to innovation. Rather, it is indicative that technology is a way of making an opening for innovation rather than an automatic source of innovation. In other words, purchasing or introducing new technologies does not necessarily lead to organizational innovation unless employees are able to use those technologies well, data can be analyzed, systems can be integrated, and organizational systems can adapt.

This interpretation is consistent with recent research in banking that suggests the impact of digital transformation in improving innovation is enhanced if technological capabilities are combined with organizational and dynamic capabilities. On organizational innovation, Service Innovation is the highest mean (M = 3.69). That's because government banks are more likely to introduce innovation in service delivery and not major organizational changes.

This is because digital banking technology can impact how customers access services and interact with banks and complete transactions in the digital world and be used directly by customers. Banking literature also focuses on customer experience, digital platforms, data-based services, and new digital channels as the leading areas of innovation for banks. Organizational Structure and Work Innovation had the lowest mean (M = 3.49), and this may indicate that structural changes are more difficult for a government banking institution because of the formal procedures, regulations, hierarchies, and organizational inertia.

This interpretation is particularly applicable for government banks since banks are regulated and work in regulated environments. Research on traditional banks has shown that regulatory and governance conditions can limit reconfiguration and need to be structured rather than open. Overall, the regression results demonstrate that digital capabilities are not just technological resources but a larger organizational capacity. It shows that technology, data, integration, and learning are all contributing to organizational innovation in this study. The relatively high explanatory power of the model ($R^2 = 0.610$) implies that digital capabilities are a key aspect of organizational innovation in government banking.

CONCLUSIONS AND RECOMMENDATIONS

We have studied the impact of digital capabilities on organizational innovation in government banks in Babylon Governorate. Based on the statistical results, we can draw several conclusions from this study.

i. Digital capabilities are fairly positive with a mean of 3.61, indicating that government banks have a reasonable level of digital capability, but there is still room for more development.
ii. Digital Technology Capability has the highest mean among the four dimensions, and it indicates that government banks have made very significant progress in adopting and utilizing digital technologies. \
iii. Organizational innovation was also evaluated positively in terms of an overall mean of 3.59. Service Innovation has the highest mean, and innovation is most evident in service delivery.
iv. We found a strong positive relationship between digital capabilities and organizational innovation ($r = 0.746$, $p < 0.001$). v. The regression study revealed that digital capabilities explain 61.0% of the variance in organizational innovation collectively.
v. All four dimensions of digital capabilities had a positive impact on organizational innovation. vii. Digital Learning and Adaptation Capability was the strongest predictor of organizational innovation. This emphasizes the role of employee development, organizational learning, knowledge acquisition, and adaptation to technological change.
vi. This indicates that digital transformation should not be seen as a 'new-and-improved' thing for the new digital technologies. Instead, digital transformation depends on the simultaneous development of technological, analytical, integrative, and learning capabilities.

RECOMMENDATIONS

Based on the findings, the study suggests government banks in Babylon Governorate:

I. Develop digital learning programs that are continuous in digital technologies, data analytics, cybersecurity and digital banking applications.
II. Design digital systems such that departments and organizational areas can exchange information efficiently.
III. Improve the quality of data and analytical capabilities by providing access, governance and analytical tools to improve data quality, accessibility and analytical tools.
IV. Facilitate organizational learning with the creation of ways of allowing employees to share digital and technology-based knowledge and learn from technology.
V. Support service innovation by always building digital banking services based on the needs of customers.
VI. The organization needs to reduce organizational rigidity by examining processes that may prevent employees from adopting novel ways to do their work.
VII. Encourage employee participation in innovation and promote innovation in the creation of new digital processes and banking services.
VIII. Connect technology investment with the aim of the organization with the aim of achieving organizational goals to ensure digital investments for digital technologies through digital investment are made in a way that's measurable through the performance of services, processes and management..

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