ILMA Journal of Social Sciences & Economics (IJSSE)
E-ISSN: 2790-5896 P-ISSN: 2709-2232
Volume 4 Issue 2 (2023) 211- 224

IMPACT OF DIGITIZATION ON FINANCIAL PERFORMANCE: MEDIATING ROLE OF SERVITIZATION

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Abstract

The study investigates the effect of digitization on financial performance and the mediating role of servitization. The positivist philosophy was adopted, leading the researcher to use the deductive approach and a quantitative research design. Primary cross-sectional data were acquired through a questionnaire with a sample size of 300 participants. The researchers used the purposive sampling technique to achieve the research objectives. The PLS-SEM software is employed for data analysis due to the complexity of the model. A simple regression model is used to test the hypotheses. The study's findings suggest that digitization insignificantly positively impacts financial performance, and servitization mediates the relationship between digitization and bank performance. As Pakistan is an underdeveloped country and the size of the Pakistan banking sector is too small, corporate governance is reluctant to adopt and implement technological advancement in the banking sector in Pakistan due to its cost. In the future, the relationship might be significant among the construct.

Keywords: *Digitization, Financial Performance, & Servitization*
JEL: **B23, C21, & G21**

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1. INTRODUCTION

Digitization is the transformation of physical objects, data, and information into a digital format that can be easily stored, shared, transmitted, and manipulated using digital technology. Rachinger et al. (2018) describe digitalization as transforming information, products, services, and processes from their physical to a digital form, creating new values , and improving business models, customer experiences, and customer loyalty. Digitalization has transformed many industries and sectors, including finance, healthcare, education, entertainment, and more, improving the efficiency, accuracy, and availability of information and services (Xia et al., 2023). Advances in digital technology are forcing companies to rethink how they organize. Some companies demonstrate exceptional skills in using digital technologies to outperform competitors in various sectors (Mubarak et al., 2019). In 2009, mobile banking services were launched in Pakistan, allowing customers to bank using their mobile phones. It represents a significant change in the country's financial sector, providing greater access to financial services to people living in remote and underserved areas (Manzoor et al., 2021).

The introduction of mobile banking has paved the way for further digitalization of the financial sector in Pakistan. Pakistan has been driving the digital transformation of its financial sector since 2008 with the introduction of digital financial services through industry-free regulation. The country's adoption of the National Payment System Strategy (NPSS) and approval of the National Financial Inclusion Strategy in 2015 further boosted the development of digital financial services. It has led to the emergence of efficient distribution channels for traditional banking products such as telephone banking, online banking, ATMs, and credit and debit cards. Due to these measures, private sector investment in microfinance institutions has also increased. Digital transformation significantly impacts business performance, and digital technologies enable unprecedented convergence of people, businesses, and things (Kharlamov & Parry, 2021; Nwankpa & Roumani, 2016).

This study aims to examine the impact of digitalization on the performance of banks in Pakistan. This study is particularly relevant to Pakistan's current financial situation, where the government promotes digital financial services. Adopting this policy will encourage digital service providers to increase their investments. The banking sector in Pakistan is undergoing rapid digital transformation, with digitalization revolutionizing how banks operate and providing new growth opportunities. However, the existing literature needs comprehensive empirical evidence on the specific effects of digitalization on the financial performance of banks in the country. Furthermore, the role of servitization as a mediator between digitalization and financial performance has yet to be studied in depth (Favoretto et al., 2022). Servitization, defined as integrating services into traditionally product-oriented businesses, has become a strategic approach for banks to increase their competitiveness and customer value proposition in the digital age. Despite its potential importance, the specific mechanisms through which servitization mediates the relationship between digitalization and financial performance in the Pakistani banking sector still need to be better understood (Kohtamäki et al., 2020).

Therefore, this study aims to fill this research gap by conducting an in-depth analysis to examine the direct impact of digitalization on the financial performance of banks in Pakistan while considering the mediating role of servitization. By examining how digitalization impacts various financial indicators such as productivity, efficiency, and profitability and how servitization acts as a mediating factor, this study aims to provide valuable insights into the interplay of digitalization, servitization, and financial performance in the banking sector of Pakistani countries. The results provide practical implications for banks seeking to effectively leverage digital technologies and adopt servitization strategies to improve financial performance and maintain a competitive advantage in an evolving digital landscape (Potapova et al., 2022; Zhou et al., 2021).

To identify the impact of digitalization on the functioning of the banking sector in Pakistan and the mediating role of servitization. The main objective of this study is to examine the extent to which digitalization has impacted banks' performance, including their profitability. Furthermore, the study focuses on the factors contributing to adopting digital technologies in the Pakistani banking sector. In achieving this objective, the study will contribute to the current knowledge on digitalization in the banking sector and provide insights to help Pakistani banks make informed decisions regarding their strategies. This research is very important today, which is moving towards digitalization, and the banking sector is no exception. Given the widespread use of technology in the banking sector, this study aims to examine the impact of digitalization on the performance of banks in Pakistan. This study is important as the banking sector supports Pakistan's economic development. Given the potential impact on the entire sector, understanding the impact of digitalization on banking performance is an important concern for policymakers, regulators, and banking professionals (Martín-Peña et al., 2019). This study aims to close the existing knowledge gap and provide insights into the effectiveness of digitalization in the banking sector. By examining the impact of digitalization on the performance of the banking sector, this study can provide valuable insights that can assist in decision-making. The results of this study can help banking professionals identify areas where digitalization has proven effective and where improvements are needed. Overall, this study is essential as digitalization is becoming increasingly important in the banking sector, and understanding its impact on performance is crucial for the growth and development of the sector.

2. LITERATURE REVIEW

Although it may seem like a modern trend, converting analog or physical processes and documents into digital form has been happening for many years; the digitalization process began in the 1950s with the introduction of computers into companies when General Electric introduced the UNIVAC 1 computer. This computer was the first to be used in a payroll system in the United States, significantly increasing efficiency and cost savings. Subsequently, continued advances in digitizing resulted in almost everything being converted into a computer-readable format. Since then, digitalization has represented continuous progress toward creating a globalized, connected, and accessible world. One such development took place in the financial sector. The introduction of computers led to automating many financial processes, such as bookkeeping and bookkeeping. However, it was only in the 1980s and 1990s that digitalization changed the financial sector significantly.

In recent years, the introduction of electronic payment systems, including credit cards and electronic fund transfers, has significantly accelerated and simplified financial transactions. This technological advancement enabled faster and more efficient execution of financial transactions during this period. The emergence of the Internet in the 1990s further accelerated digitalization in the financial sector. Online banking, investment trading, and financial information became available to consumers, and banks and other financial institutions began offering their services over the Internet. This change is the main reason the financial sector has grown and attracted more people due to its easy access and automated structure.

However, implementing digitalization does not guarantee better business results in the long term. The financial sector covers various activities, including banking, investing, and insurance. Each of these areas has unique performance metrics by which success is measured. Return on Investment (ROI) and Return on Equity (ROE) are common performance metrics. ROI calculates the return or loss of an investment relative to the original amount invested. This metric is often used in investment banking and wealth management to evaluate an investment›s financial profitability and success. According to Garg & Kumar, (2020), there is a relationship between digitalization and supply chain performance in the Indian manufacturing sector.

The researchers collected data from 138 manufacturing companies using a structured questionnaire as a data collection tool. Statistical techniques, including structural equation modeling, were used to analyze the collected data. This method allowed them to examine relationships between variables and draw meaningful conclusions from the data set. The results suggest that digitalization has a positive impact on supply chain performance. In particular, digitalization in areas such as supply chain planning, communication, and coordination with suppliers and customers, as well as the use of digital technologies in logistics and inventory management, significantly impacts supply chain performance.

Hazarika (2020) focused on studying the impact of digitalization on employment in the Indian banking sector. The authors collected data from 100 banks in India and conducted statistical analyses to examine the relationship between digitalization and employment. The results suggest that digitalization significantly impacts employment in the banking sector. In particular, introducing digital technologies such as online banking, mobile banking, and digital payments has reduced staffing requirements in some banking operations.

Mubarak et al., (2019) examined the impact of digital transformation on the performance of small and medium-sized enterprises (SMEs) in Pakistan. The authors argue that digital transformation is becoming increasingly important for SMEs that want to remain competitive in a rapidly evolving business landscape. This article presents the results of a study that examined the relationship between digital transformation and the business performance of SMEs in Pakistan. The results showed that SMEs that adopted digital technologies such as social media, mobile applications, and e-commerce platforms showed better financial performance than those that did not. The article highlights that digital transformation significantly impacts the performance of SMEs in Pakistan. SMEs that actively use digital technologies are more likely to achieve better financial performance, while SMEs that do not undertake digital transformation risk falling behind competitors in the market. The study highlights the importance of promoting digital transformation among SMEs to boost economic growth and competitiveness in Pakistan.

Ekaterina et al., (2022) studied the impact of digitalization on the performance indicators of commercial banks in Russia in 2021. The researchers collected data from 32 banks and used statistical analysis to examine the relationship between digitalization and performance indicators. The results show that digitalization positively impacts the performance indicators of commercial banks in Russia. Udobi et al. (2020) focus on studying the impact of digital banking on the profitability of Nigerian banks. The researchers collected data from a sample of 15 Nigerian banks over five years and conducted a regression analysis to analyze the data. Their analysis showed a positive relationship between digital banking and the profitability of Nigerian banks. In particular, banks adopting digital technologies such as online banking, mobile banking, and card payments have shown higher profitability than banks that have not used these digital channels.

Digitalization is converting physical entities, data, and information into a digital form that allows for easy storage, retrieval, transmission, and manipulation using digital technology. Since the beginning of digitalization, there has been debate about whether it helps a company achieve higher sales and profits and whether servitization helps reduce its profits. Servitization is the process that moves a company from just selling products to providing services alongside or instead of products. Servitization aims to build a long-term customer relationship rather than a one-time transaction by providing customized or general services such as customer service, delivery, guarantees (Wang et al., 2018).

According to María-Luz et al., (2019), digitalization mediates the relationship between servitization and business performance. They also argue that digitalization and servitization complement each other and create synergies that benefit both the company and the customer, resulting in better revenue generation, customer retention, and a better unique selling proposition (USP) than the competition. Abou-foul et al., (2021) show in their research that digitalization and servitization clearly and positively impact companies' financial results. Even a manufacturing company can benefit from digitalization and servitization. Zhou et al., (2021) argue that digitalization alone cannot improve financial performance, especially when a company has many assets.

H1: Digitization has a significant impact on Financial Performance

H2: Servitization mediates the relationship between Digitization & Financial Performance

3. RESEARCH METHODOLOGY

This study aims to understand the attitudes and perceptions of those working in the Pakistani banking sector towards digitalization. Primary data was collected through a questionnaire using a quantitative research approach with a deductive data analysis method. The study sample included people of different age groups working in the banking sector in Pakistan and was selected through purposive sampling. This purposive sample focused on participants who met specific criteria in line with the study's objectives and were selected from the target group of individuals working in the banking industry. This approach enables targeted screening to collect information about the challenges, benefits, and overall impact of digitalization in the banking sector.

The study's aim, consisting of a sample of 300 participants based on relevant characteristics, is to examine various aspects of digital transformation in the banking sector. The aim is to provide strategies and recommendations for further developing and implementing digitalization in the Pakistani banking sector. A questionnaire was used to collect data and was distributed via online platforms such as Google Forms, social media, and email. Participants were asked to complete the questionnaire within a specific period to ensure convenience, accessibility, and a diverse participant pool.

The questionnaire aimed to collect relevant information on digitalization, financial performance, and servitization in the banking sector, thereby obtaining a comprehensive data set for analysis. Using a deductive approach, the data collected was analyzed, systematically coded, and classified based on the research questions and objectives. Codes and categories were derived directly from the research questions to ensure consistency. Quantitative data analysis software, particularly PLS-SEM, has made it easier to manage, organize, and apply statistical techniques effectively and draw meaningful conclusions from the data collected.
The following is the econometric model this study is based on:

$$FP\ i = C\ i + \beta1\ i\ D\ i + \beta2\ i\ S\ i + e\ i$$

4. FINDINGS

4.1 Descriptive Analysis

For this research, researchers have studied Digitization's impact on a firm's financial performance, with servitization acting as a mediator. For this, the authors collected data from 300 participants from various banks in Pakistan. From the collected data, 54.6% were males, while the remaining 45.4% were females. The age bracket for the substantial majority, 64.4% of the population, was between 21 - 30 Years old, and 23.1% were between 31 - 40 Years old. The latest completed education for 56.7% of the participants was a Bachelor's degree, while 24% were a Master's qualification. The monthly income of 16.3% of the partakers was between PKR 50,000 - 100,000 and the same percentage was for the bracket of PKR 100,000-200,000. Although the data the investigators collected is diverse, the high percentage of age and education in a particular group may cause generalizability concerns. It may show the difference in the thinking process between the higher authority and senior leaders.

Table 1: Descriptive Analysis

		Frequency	Percent
Gender	Male	164	54.6%
	Female	136	45.4%
	Total	300	100%
Age	Upto 20 Years	15	4.8%
	21-30	193	64.4%
	31-40	70	23.1%
	41-50	11	3.8%
	Greater Than 50 Years	11	3.8%
	Total	300	100%
Education	Intermediate / A Levels	26	8.7%
	Bachelors	170	56.7%
	Masters	72	24%
	Doctorate	20	6.7%
	Others	12	3.9%
	Total	300	100%
Income	Less Than 25,000	98	32.7%
	25,000-50,000	61	20.2%
	50,000-100,000	49	16.3%
	100,000-200,000	49	16.3%
	Greater Than 200,000	43	14.4%
	Total	300	100%

4.2 Correlation Analysis

The table shows the correlation coefficients between Digitization, Performance, and Servitization. Digitization has a moderately positive correlation with Performance (0.748) and a weaker positive correlation with Servitization (0.471). Performance has a strong positive correlation with Servitization (0.895). These coefficients indicate the direction and strength of the relationships between the variables.

Table 2: Correlational Analysis

	Digitization	Performance	Servitization
Digitization	1		
Performance	0.748	1	
Servitization	0.471	0.895	1

4.3 Statistical Analysis & Model Assessment

To assess the internal consistency reliability of the data, Outer Loadings has been applied. The outcomes of the outer loading analysis indicate that the items exhibit values greater than 0.7, which falls within the acceptable range.

Table 3: Outer Loadings

	Digitization	Performance	Servitization
D1	0.825		
D10	0.844		
D2	0.818		
D3	0.816		
D5	0.826		
D6	0.759		
D7	0.791		
D8	0.779		
D9	0.882		
P1		0.865	
P2		0.843	
P3		0.899	
P4		0.922	
P5		0.883	
P7		0.875	
S1			0.866
S2			0.763
S4			0.843
S5			0.775
S6			0.859

S7			**0.84**
S8			**0.827**
S9			**0.865**

There is an internal consistency of reliability in the data as Cronbach's Alpha is greater than 0.7 throughout. To check the validity of the data, Average Variance Extracted (AVE) test is applied. The result shows that the AVE is greater than 0.5 which proves that there is convergent validity in the data.

Table 4: Reliability & Validity

	Cronbach's Alpha	Composite Reliability (Rho_a)	Composite Reliability (Rho_c)	Average Variance Extracted (AVE)
Digitization	**0.937**	**0.938**	**0.947**	**0.666**
Performance	**0.943**	**0.947**	**0.954**	**0.777**
Servitization	**0.935**	**0.938**	**0.947**	**0.69**

The results show that the correlation between Digitization and Performance is 0.618, which is lower than the correlation of Digitization (0.816). This indicates discriminant validity between Digitization and Performance. The correlation between Digitization and Servitization is 0.811, which is lower than the correlation of Digitization (0.816). This suggests discriminant validity between Digitization and Servitization. The correlation between Performance and Servitization is 0.695, which is lower than the correlation of Performance (0.881). This indicates discriminant validity between Performance and Servitization.

Table 5: Discriminant Validity

	Digitization	Performance	Servitization
Digitization	**0.816**		
Performance	**0.618**	**0.881**	
Servitization	**0.511**	**0.695**	**0.831**

The results of VIF shows that only the items P4 (6.874) and P5 (5.339) may cause the issue of Collinearity. In order to uphold the integrity of our analysis and ensure reliable outcomes, we have chosen not to eliminate variables that goes above the 5% threshold. Furthermore, to address concerns related to collinearity, we have established a criterion for VIF at a threshold of 10%. Thus, variables exhibiting a VIF value below 10 are retained in our analysis. These decisions have been made with due consideration for the specific nature of the dataset, and the research objective.

Table 6: R-Square

	R-SQUARE	R-SQUARE ADJUSTED
PERFORMANCE	0.491	0.481
SERVITIZATION	0.658	0.655

The R-square value for Digitization and Performance is 0.491, indicating that approximately 49.1% of the variation in Performance can be attributed to Digitization. Similarly, the R-square value for Digitization and Servitization is 0.658, suggesting that approximately 65.8% of the variation in Servitization can be explained by Digitization. The Digitization variable explains approximately 1.7% of the variance in Performance, suggesting a weak relationship. On the other hand, Digitization accounts for around 21.6% of the variance in Servitization, indicating a moderate impact on this variable. This model shows that Digitization is the independent variable (IV), Performance is the dependent variable (DV), and Servitization serves as the mediator. The diagram illustrates the output of the measurement model.

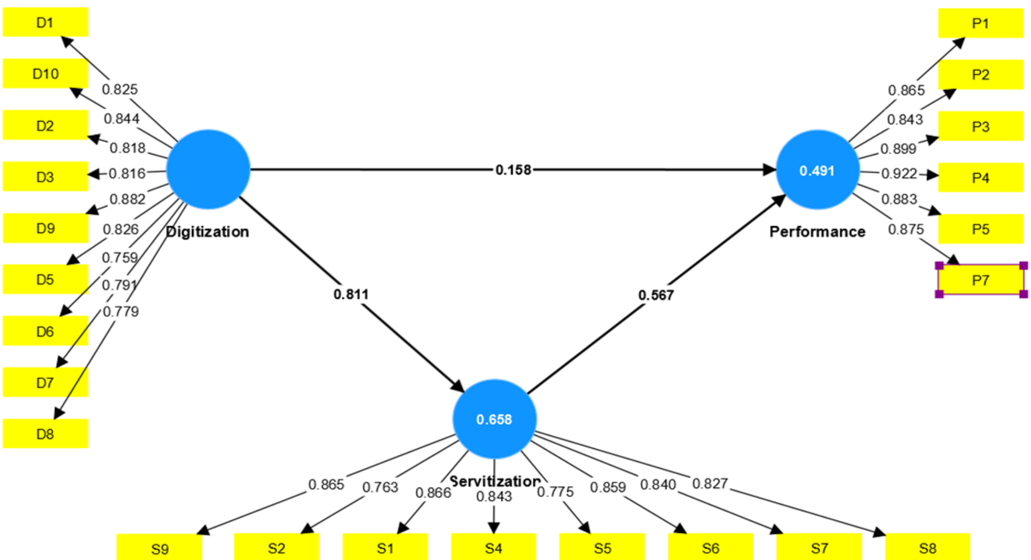

Figure 2: Measurement Model

4.4 Structural Model

With this model, the investigators can concur the hypotheses to be: Digitization has an insignificant impact on Financial Performance. The p-value of 0.277 suggests that there is enough evidence to support the claim that digitization has an insignificant impact on performance. The second hypotheses is accepted that Servitization mediates the relationship between the digitization and bank performance.

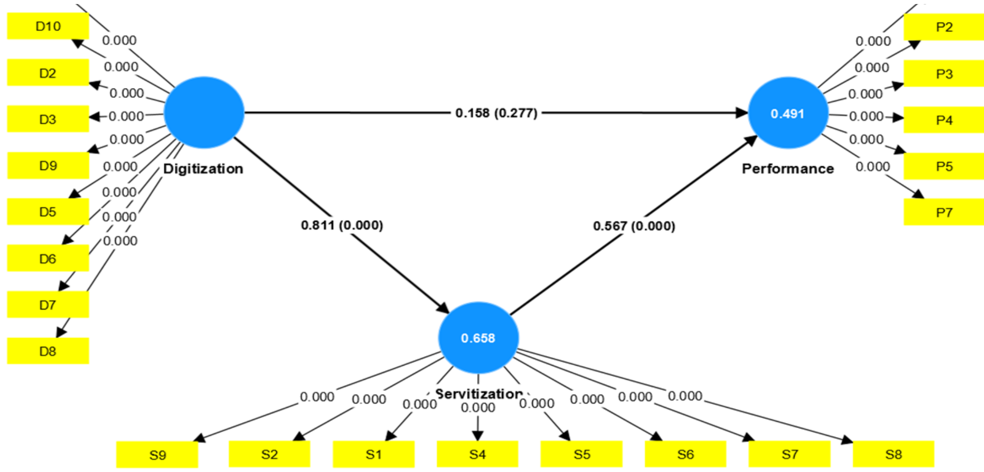

Figure 3: Structural Model

The following equation can be formulated for calculating financial performance (FP):

$$FP\ i = C\ i + B\ 1\ i\ D\ i + B\ 2\ i\ S\ i + e\ i$$
$$FP\ i = C\ i + B\ 1\ i\ 0.158 + B\ 2\ i\ 0.567 + e\ i$$

Based on these results, researchers can infer a statistically significant positive relationship between Digitization and Servitization and between Servitization and Performance. However, the relationship between Digitization and performance may be insignificant in the sample. There is an indirect effect between Digitization and Performance, as the Total Indirect Effect shows a p-value of less than 0.05. The analysis reveals that the total effects between Digitization and both Performance and Servitization and the total effect between Servitization and Performance exhibit statistical significance within the examined sample. This study seeks to investigate the impact of Digitization on Financial Performance, with a specific emphasis on the mediating role of Servitization. Utilizing a Quantitative research design, primary cross-sectional data was collected through a structured questionnaire distributed to a sample comprising 300 participants. The researcher employed the purposive sampling technique to ensure that targeted participant selection aligned with research objectives.

In evaluating the impact of Digitization on financial performance, the study employs the Linear Regression Model. Unexpectedly, the results suggest an absence of a direct relationship between Digitization and firms' performances. However, a significant finding emerges, indicating that a direct relationship is established with Servitization as a mediator. It aligns with both the empirical research findings and the underlying conceptual framework. Furthermore, the study underscores that Servitization directly correlates with Digitization and Financial Performance. As Digitization increases, the pivotal role of Servitization becomes apparent in enhancing Financial Performance. This nuanced relationship underscores the strategic importance of concurrently advancing Digitization within financial institutions to achieve optimal performance outcomes. Technology adoption in Pakistan's financial sector reveals a swiftly evolving competitive landscape. Recognizing the pivotal role of financial institutions in driving economic development, the study emphasizes the substantial contribution of conventional banks to the growth of the financial sector, subsequently fostering overall economic expansion.

A notable impact of Digitization on conventional banks is the extended reach to a broader spectrum of the population. This expanded outreach facilitates the growth of digital banks by increasing user or customer acquisition. The performance of conventional banks is intricately linked to the development of the financial sector, thereby contributing significantly to economic growth. The findings highlight the intricate relationship between Digitization, Servitization, and Financial Performance. The symbiotic nature of these elements is crucial for navigating the evolving landscape of the financial sector, ultimately contributing to economic development.

5. CONCLUSION & RECOMMENDATIONS

In conclusion, this comprehensive study aimed to examine the different impacts of digitalization on the performance of financial institutions in Pakistan, focusing on the banking sector. Through rigorous empirical analysis, the study provided several key insights that shed light on the industry's transformation dynamics. The study highlights the robust and positive relationship between digitization and servitization and between servitization and performance. It should be noted that although the direct relationship between digitization and performance may not reach statistical significance in the context of the current sample, the study shows a significant indirect effect. This indirect effect is highlighted by the statistically significant overall indirect effect between digitalization, efficiency, and servitization.

The transformative effects of digitalization in the banking sector emerge from the survey results. Adopting digital technologies catalyzes operational efficiency, expanding market reach and improving customer service. Critical aspects such as process automation, digital payment systems, and online banking optimize processes and reduce costs and manual errors. By leveraging digitalization, financial institutions are better equipped to serve their customers more effectively and efficiently. Furthermore, the study highlights the key role of servitization in increasing efficiency.

The integration of digital technologies facilitates the provision of value-added services and enables financial institutions to diversify their offerings and improve customer satisfaction. By leveraging digitalization to innovate and improve their services, financial institutions can create a clear niche in a highly competitive market, strengthening their overall performance. In acknowledging the results of this study, it is important to be aware of its limitations. Research that focuses on the specific context of the banking sector in Pakistan and applies the findings to other sectors or regions may not be warranted. Future research efforts are recommended to examine the complex mechanisms by which digitalization influences performance in different organizational contexts.

Further research into the factors that influence the success of implementing a digitalization strategy would provide valuable insights. Furthermore, longitudinal research can provide insights into the lasting effects of digitalization on performance and its evolving interaction with other variables. This study makes a significant contribution to the existing knowledge base on the impact of digitalization on the performance of financial institutions in Pakistan. The practical insights from the results provide invaluable guidance to financial institutions seeking to navigate and optimize their operations in a rapidly evolving digital landscape. Leveraging digitalization and adopting innovative strategies can increase competitiveness and customer satisfaction, ensuring that Pakistani financial institutions achieve sustained success in the dynamic digital era.

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