Digital Transformation and Firm Performance Nexus: A Study of Commercial Banks in Delta State, Nigeria

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Abstract

Digital transformation has become imperative for most firms to compete favorably in today's highly competitive and changing environment, but its influence on firm performance remains unclear. Due to this challenge, the study aimed to determine how digital transformation affects firm performance by accounting for the mediating mechanism of organizational learning. The study used a cross-sectional survey to obtain data from 284 mid-level employees sampled from commercial banks in Delta State, Nigeria. The data was evaluated with the partial least squares [PLS] approach to structural equation modeling. The PLS analysis reveals that digital transformation positively and significantly affected firm performance directly and indirectly through organizational learning at the 0.05 significance level. Additionally, the effect of organizational learning was more profound on organizational performance than digital transformation. Consequently, organizational learning can optimize the impact of digital transformation on organizational performance. The study, among other things, recommended that banks move beyond the euphoria of mere technology adoption and implementation to the active development of technological capabilities, which helps leverage technological resources to support a firm's strategy, practices, and performance.

Keywords: Digital Transformation, Firm Performance, Organizational Learning, Information Technology Capabilities, Banks

1. Introduction

Presently, digital transformation is an important trend in the world of business. Digital transformation represents "a fundamental change process enabled by the innovative application of digital technologies, accompanied by the strategic leverage of key resources and capabilities, with the aim of improving a firm and redefining its value propositions to its stakeholders" (Gong & Ribiere, 2021:12). The increasing use of technology among businesses is a manifestation of strategic alignment with the digital trend. Many firms have begun to integrate different digital technologies to transform their existing business behaviors, models, and practices (Zhu & Jin, 2023). Ohiani (2020) asserts that this growing phenomenon has triggered innovations in most economic sectors. The advent of information technology (IT) and its accelerated application in the Nigerian economy have transformed different economic sectors. However, the rapid technological change poses a challenge for firms as they attempt to catch up and adjust with the latest trend in the digital environment. Nigerian customers are increasingly using digital platforms and devices, leading to a shift in their preferences, needs, and expectations (Igwe & Ononye, 2020). The shifting preferences and expectations make the application of digital transformation strategies appear important. In the banking sector, digital technologies play a crucial role in creating and delivering value to customers. The urgency to respond to important environmental trends puts significant pressure on them to change their operations through digital transformation initiatives. Thus, digital transformation has become a strategic imperative for managing changing externalities for sustainable organizational growth and development.

Investments in IT-related tools and resources in Nigerian firms may not have immediate results or benefits, as transformation processes require time and other contextual or situational environmental factors to be effective (Jardak & Hamad, 2022; Nguyen-Thi-Huong *et al.*, 2023). The contradictory conclusions on the relationship between digital transformation and firm performance, indicating a significant relationship (Zhai et al., 2022) and an insignificant relationship (Nguyen-Thi-Huong et al., 2023), support this notion. The application of new and emerging digital technologies can be an ongoing and interactive process in which other internal and external factors hold equal importance to the transformation process (Krasonikolakis *et al.*, 2020). According to Otioma (2023), technology alone does not provide sustainable performance and advantages for firms because it is readily available and easily acquired. However, integration with dynamic capabilities accounts for the firm's distinctiveness and performance, as firms are able to not only use technological resources but also renew and adapt them to different contexts where they generate value. Furthermore, not all firms have similar capabilities to transform digitally. The impact of digital technologies on performance may be variable and uncertain because of the unique dynamic capabilities developed and maintained by firms in a rapidly changing and highly competitive environment (Nguyen-Thi-Huong *et al.*, 2023). Arguably, dynamic capabilities could place firms in a better position to benefit from digital transformation. Because digital transformation is complex and always changing, there may be certain capabilities that can help businesses adapt to new externalities. This makes it even more important to understand the factors that can maximize its performance benefits (Merín-Rodriganez et al., 2024; Tan et al., 2024). We argue that the dynamic qualities of organizational learning could embed strategic and practical changes aligned with the digital imperatives for optimal performance. Organizational learning is defined as knowledge-related

activities that enable firms to leverage external knowledge to incorporate technological changes more efficiently for value addition.

Organizational learning relates closely with innovation and adaptation, thereby establishing unique advantages that are critical for firm performance in highly turbulent environments. Organizational learning helps firms to change or redefine their business processes, practices, and/or models in ways that promote profit from applying new technologies or creating new uses for existing digital resources (Merín-Rodriganez et al., 2024). Organizations can use digital transformation to bring about changes but to ensure ongoing changes produce sustainable results, they must successfully activate organizational learning to sense and seize opportunities and threats. Arguably, organizational learning ensures responsive yet comprehensive change, which promotes smart organizational transformation amid changing externalities. This is critical for firms to not only thrive in the new digital landscape. Strategic change would be more effective in value creation if guided by organizational learning. As a social and iterative process, organizational learning allows firms to adapt courses of action and give form to the transformation process to achieve the desired state. Research asserts a relationship between organizational learning and digital transformation (Schönherr et al., 2023) and firm performance (Mollah et al., 2023), but the way it connects these two concepts within a framework remains largely unexplored. This indicates a necessity for further integrative studies on how digital transformation affects firm performance.

The relationship between digital transformation and organizational performance remains an empirical issue owing to the rapid rate of technological change driving new waves of organizational transformation in the banking industry (Osei et al., 2023). Furthermore, digital transformation processes can be risky and may not consistently take firms to the next level of performance. In light of this uncertainty, it is important to understand the operationalization and workability of digital transformation in a given industry to encourage its successful application. This study aims to contribute to our knowledge by focusing on Nigerian firms, specifically banks. The study will also contextualize the role of organizational learning to reveal the intricate nature of this relationship. Organizational learning's inclusion as a potential mediator is based on its dynamic connections to transformative capabilities and performance improvements in highly uncertain environments. The findings will help managers invest resources in developing and improving related strategies and practices to stimulate firm performance.

2. Literature Review

Digital transformation is a firm’s ability to develop and use information technology’s (IT) capabilities to upgrade the way they operate and deliver services. This definition focuses on IT capabilities' roles rather than IT implementation in firms, which has been one of the main limitations of related studies (Tippins & Sohi, 2003; Pérez-Aróstegui et al., 2015). The concept comprises three capabilities: IT infrastructure, IT integration, and IT knowledge. IT infrastructure describes the shared hardware and software capabilities that are required to develop a robust and adaptive IT system for value creation. IT integration is the ability to connect disparate IT sub-components (new and existing) into one functional system while also aligning with the firm's strategy. The ability to know and understand the capabilities and

functionalities of existing and new or emerging IT solutions, applications, and/or systems is known as IT knowledge (Pérez-Aróstegui et al., 2015). Together, they help to deploy digital resources that contribute to the attainment of desirable outcomes through concerted organizational change. Furthermore, digital transformation is a second-order construct that combines the aforementioned capabilities to trigger or accelerate change. This change reconfigures the value-creation activities firms have formerly relied upon to stay resilient and competitive. Many firms need to improve the digital transformation process, as they start with only technology adoption without developing complementary capabilities to reinforce it. IT capabilities play a crucial role in guiding IT investments, enabling firms to achieve more holistic results by creating differentiated value and securing a sustainable competitive edge. Technology adoption must translate to the development of IT capabilities within organizations for the effective and efficient management of IT resources (Barba-Sánchez et al., 2024). While IT offers minimal value to firms, the development of IT capabilities unlocks its transformative potential, opening up new pathways to value creation and business growth. Some outcomes of digital transformation include enhanced service quality, customer satisfaction, innovation, organizational effectiveness and efficiency, organizational agility, and competitive advantage (Otioma, 2023; Barba-Sánchez et al., 2024).

Firm performance is a subjective or an objective outcome concept that indicates the extent to which a firm achieves different performance objectives, such as financial, operations, quality, customer satisfaction, innovation, market growth, sales, and so on. This shows how well firms leverage strategic resources to effectively and efficiently achieve stated corporate goals. Organizations consistently link firm performance to one or more set objectives (Elena-Juliana & Maria, 2016). Most management studies aim to identify the factors influencing this variable to enhance and maintain it. Firms use this evaluative criterion to examine specific courses of action to improve strategy and practice over time. This research will concentrate on financial performance, as a firm's primary purpose is profit generation, reflecting its current development and growth potential. In their measurement of financial performance, Udofia et al. (2021) include revenue, profitability, market share, and return on assets.

Research shows that the digital transformation effect on firm performance is mixed. Some research found a significant effect (Wang et al., 2022; Zhai *et al*., 2022); others found an insignificant effect (Jardak & Hamad, 2022; Nguyen-Thi-Huong *et al*., 2023). Yet, less research has elucidated whether digital transformation, guided by IT capabilities, influences firm performance. The majority of research has concentrated on the adoption and deployment of digital technologies rather than the competencies or capabilities required to optimize these resources for enhancing products and services (Tippins & Sohi, 2003; Pérez-Aróstegui *et al.*, 2015). IT capabilities significantly enhance firm performance because they help to combine and reconfigure IT resources in ways that yield desired outcomes (Barba-Sánchez *et al.*, 2024). Firms' performance can improve when they possess the capabilities needed to facilitate the application of new or emerging technologies. Additionally, although digital transformation may improve firm performance, it is important to show the specific performance parameters affected by it to inform strategy and practice. The study focuses on financial performance as a performance metric because the primary aim of such an investment is to improve the financial health and standing of firms. Recent studies have recognized the positive influence digital transformation has on firms' financial performance. For example, Jardak and Ben Hamad

(2022) suggest that digital transformation has the potential to increase the profit-making capabilities of firms since it facilitates innovations and changes that drive business growth. Gun et al. (2024) found a positive association between digital transformation and financial performance, as firms are able to increase the value it provides. The creation of more value can help attract new customers, which improves the market share and enhances the overall profitability.

2.1 The Role of Organizational Learning

Organizational learning is an important contextual factor that could propel digital transformation and firm performance relationships. It is understood as a dynamic ability that enables the effective leverage of IT-related knowledge through the process of creating, acquiring, and sharing knowledge for better organizational action. Given the unclear relationship between digital transformation and firm performance, the utility of organizational learning is relevant in rethinking the workability of digital transformation to support stable performance in dynamic environments. Digital transformation is highly variable, which makes it possible to adjust actions aligned with the changing environmental context. In such a variable context, organizational learning could contextualize actions in a way that consistently maximizes value. Firms must constantly observe and interact with environmental changes to avoid becoming trapped within the existing knowledge paradigm, and modify their behaviors or actions to incorporate new knowledge and insights. Organizational learning combines a learning orientation with capability development and maintenance (Tripathi & Kalia, 2024). This underlines organizational learning as a catalyst for strategic renewal and change. Arguably, digital transformation capabilities can evolve dynamically through learning to unfold practical changes for beneficial results. It is worth noting that organizational learning allows digital capabilities to become embedded in core capabilities, a strong predictor of a firm's long-term competitive advantage due to greater resource differentiation.

There is currently no conclusive evidence regarding the relationship between digital transformation and firm performance (Samuel-Ogbu, 2022). The transformation paradox may relate to the extent to which firms leverage other dynamic organizational capabilities to drive the process. Digital transformation initiatives would not be financially rewarding unless firms and their management identify and develop these capabilities. In support, Perez-Lopez and Algre (2012) state that firms should have complementary strategic capabilities if digital transformation is to achieve the desired end. Hence, research needs to investigate the relationship between digital transformation and firm performance, highlighting the capabilities that could enhance its significance. Organizational learning is one of those capabilities that can direct firms' transformation efforts toward value creation by learning from emerging situations while making continuous improvements to reflect new insights. Both digital transformation and organizational learning are interrelated constructs due to their focus on the integration of change and the fostering of value creation.

Previous studies have shown that organizational learning improves many aspects of a company's performance, including financial performance (Mollah et al., 2023; Schönherr et al., 2023). Do and Mai's (2022) systematic review demonstrated that organizational learning consistently improves firms' financial and non-financial performance, primarily through innovation. Innovation allows for the creative application of learned knowledge in ways that

lead to value creation. The significant connection between organizational learning and firm performance has led studies to use it as an intervening construct that contributes to firms' performance in dynamic and competitive environments. For instance, Mollah et al. (2023) found that organizational learning mediated the influence of digital leadership on firm performance. Seok-young and Hyeong-seok (2020) argued for the same mediational significance of organizational learning in the relationship between organizational culture and firm performance. Given these studies, we can infer that organizational learning renders a similar mediational value to relationships involving organizational-level antecedents and firm performance. This may apply to the concept of digital transformation. Digital transformation utilizes generative and adaptive processes to enhance its effectiveness and benefits (Gardner, 2022). Organizational learning may intertwine with digital transformation, enacting changes from practical experience and reflecting new knowledge in existing capabilities.

Studies, though limited, have reported the significant association between digital transformation and organizational learning (Otioma, 2023). However, research has underexplored the mediational role that organizational learning could play between this organizational-related variable and firm performance. This may explain the urgent call by Choi (2020) for research to examine the relationship between organizational learning and organization-related antecedents and outcomes. Otioma (2023) conducted the only relevant study, suggesting that organizational learning significantly mediated the relationship between digital capabilities and innovation. Although this study focused on innovation, we can infer that the contextual value of organizational learning could prove significant in relationships involving digital transformation capabilities and other organizational-related variables. The positive and significant relationship between innovation and firm performance (Shah et al., 2024) reinforces this argument. Arguably, the complex relationship between digital transformation and firm performance could cause firms to embrace a learning mindset to cope with changing and competitive environments. According to Schönherr et al. (2023: 83), "digital transformation represents a strategic challenge that can serve as a learning vehicle."

The knowledge-based perspective sees knowledge as the most important strategic resource of an organization, and firms should continuously seek to create, share, capture, and use this strategic resource for superior performance and competitive advantage. Firms can capture knowledge with diverse and far-reaching impacts on value-creating activities through their interaction with their external environment. The integration of externally relevant knowledge into organizational activities ensures firms adapt to maintain their agility and competitiveness. According to the dynamic capability theory, knowledge-based dynamic capability enables firms to integrate, develop, transform, and use knowledge to manage strategic initiatives or activities in changing environments (Teece, 2018). David Teece in 1997 identified learning as one of the activities that forms dynamic capabilities (Gremme & Wohlgemuth, 2017). To maintain responsiveness and fit to external changes, digital transformation could impact knowledge-based dynamic capability development, use, and effectiveness. One of the knowledge-based dynamic capabilities is organizational learning, which is an iterative process that promotes change and interaction. Mahmood et al. (2015) suggest that organizational learning is consistent with organizational transformational interventions, which underscores the unfolding of practical change through continuous improvement.

The strategic activation of organizational learning could help firms learn how to combine and use digital capabilities in ways that bring profound change to value-creating activities. Consequently, firms can develop or transform baseline digital capabilities into core capabilities to establish a sustainable competitive advantage. Organizational learning facilitates strategic renewal and resource alignment to meet the evolving externalities in the competitive landscape. Organizational learning aims to create more value and benefits for customers and the organization by making digital transformation capabilities more agile (Kapoor & Aggarwal, 2020; Teece, 2018). An agile digital strategy could foster improved firm performance as a result of a better strategy-environment fit. Thus, we anticipate that the effectiveness of the digital transformation lies in its ability to stimulate knowledge-based dynamic capabilities, which makes the transformation process well positioned to perceive and respond to changes and learn from experience. This, in turn, could lead to better performance.

3. Research Objectives

3.1 To study digital transformation influences on firm performance.

3.2 To study organizational learning effects on firm performance.

3.3 To demonstrate whether the digital transformation effect on firm performance is mediated by organizational learning.

4. Research Methodology

4.1 Research Design and Procedure

The study performed a cross-sectional survey to collect data from mid-level management employees, sampled from commercial banks operating in Delta State, Nigeria. The census sampling approach was applied to the population of 308. The sample was located in the four major cities in Delta State, which include Asaba, Agbor, Ughelli, and Warri. The study selected mid-level management employees due to their involvement in strategy formulation and implementation, placing them in a central position to understand the practicalities of digital transformation strategies in the banks. Their mediating role in driving organizational transformation and change could provide a unique perspective on the linkages among the constructs. The data collection instrument was a well-structured questionnaire, divided into two sections: bio-data and questions on latent constructs. The survey was conducted for three months and five days, from November 25, 2023, to January 30, 2024. Before administering the questionnaire to the target respondents, permissions were obtained from the banks for participation in the survey. Thereafter, the respondents were contacted to obtain informed consent for voluntary participation. Out of the 308, 293 agreed to participate in the survey. The researchers dropped an envelope to enclose the questionnaire for collection. Text messages were sent to the respondents every two weeks as reminders to improve the response rate. The researchers considered 284 of the 293 administered questionnaires suitable for analysis, while they excluded the remaining 9 due to improper filling. The demographic characteristics of the respondents revealed that there is a slight difference between male and female respondents in that females constituted 49.80 percent of the respondents, while males constituted 50.2 percent of the respondents. The respondents aged 30–39, 40–49, and 50–59 constituted 49.65 percent, 27.82 percent, and 22.54 percent, respectively. In terms of educational background, 44.37 percent are graduates, and 55.63 percent possess a postgraduate degree. The distribution of the

respondents' employment experiences is as follows: 6–10 years (25.70%), 11–15 years (3063%), 16–20 years (31.34%), and 21 years (12.32%).

Table 1: Respondents' biographical profile

Profile	Distribution	Frequency	Percentages
Age	30-39	141	49.65
	40-49	79	27.82
	50-59	64	22.54
Gender	Females	141	49.80
	Males	143	50.20
Academic degree	Graduate	126	44.37
	Postgraduate	158	55.63
Work experience	6–10	73	25.70
	11–15	87	30.63
	16–20	89	31.34
	21– above	35	12.32
Cadre	Senior Bank Officer	129	45.42
	Assistant Manager	97	34.15
	Deputy Manager	43	15.14
	Manager	15	5.28

4.2 Measurement

The measurement items presented in the questionnaire were collected and adapted from validated research instruments from previous research. The constructs' questions were placed on a scale of 1–5, with 5 representing complete agreement and 1 representing complete disagreement.

Table 2: Questionnaire Development

Construct	Items	Source
IT Infrastructure	7	Ravichandran and Lertwongsatien (2005)
IT Integration	5	Moqaddamerad and Ali (2024)
IT Knowledge	6	Ross *et al*. (1996)
Organizational learning	5	Thomas *et al*. (2017)
Firm performance	5	Udofia *et al*. (2021)

The questionnaire was pre-tested to confirm its validity and reliability. Content validity was established using previously validated research instruments. Two management experts at Delta State University, Nigeria, and three top professional bankers ascertained the face validity of the questionnaire. Their comments were used to refine the questionnaire's wording and enhance its comprehension. The questionnaire was further administered to 15 respondents to ensure its internal consistency. The measurement scales of IT infrastructure ($\alpha = 0.788$), IT integration ($\alpha = 0.791$), IT knowledge ($\alpha = 0.779$), organizational learning ($\alpha = 0.810$), and

firm performance (α = 0.750) reported Cronbach Alpha coefficients above the recommended cutoff point of 0.70. The composite construct of digital transformation, comprising IT infrastructure, IT integration, and IT knowledge (α = 0.793), also showed acceptable construct reliability.

4.3 Data Analysis Method

The analytical technique employed for data analysis was the partial least squares [PLS] approach to structural equation modeling. We followed a two-step procedure to estimate the outer (or measurement) model and, subsequently, the inner (or structural) framework (Anderson & Gerbing, 1998). The SmartPLS 4 software aided this test. The rule of thumb in Hair *et al*. (2017) was used to interpret the PLS results. Two preliminary tests—the Kaiser-Meyer-Olkin [KMO] measure of sampling adequacy and Bartlett's test of sphericity [BTS]—were conducted to establish the factorability of the dataset before performing the PLS analysis. The rule of thumb for accepting the preliminary results is that a KMO value above 0.60 is considered adequate, while a BTS value above 5% is considered desirable. The SPSS 23.0 software aided this test.

5. Research Results

5.1 Presentation of the Preliminary Results to Determine the Factorability of the Dataset

Table 3 captures the KMO and BTS values from the two preliminary tests. The table revealed that IT infrastructure, IT integration, IT knowledge, organizational learning, and bank performance have KMO values of 0.781, 0.810, 0.702, 0.890, and 0.704, respectively. The KMO values exceed the minimum cutoff of 0.60, and their corresponding BTS values demonstrate significance at 5%. These findings confirmed the factorability of the dataset. It is on this premise that the study proceeds with two-step PLS analytical procedures: the outer model (measurement model) and the inner model (structural model).

Table 3: Preliminary Tests

Latent Constructs	KMO	BTS
IT infrastructure	0.781	0.000
IT integration	0.702	0.000
IT knowledge	0.790	0.000
Organizational learning	0.810	0.000
Firm performance	0.704	0.000

Source: The Researchers' SPSS Computational Output (2024)

5.2 Presentation of the Measurement Model Results

We estimated the outer model, or measurement model, to assess the constructs' reliability and validity. Five quality criteria were used for this estimation: standardized factor loading [FL] to test item reliability, composite reliability [CR] to test construct reliability, average variance extracted [AVE] to test convergent validity, variance inflation factor [VIF] to test

redundancy and multicollinearity problems, and discriminant validity to test the distinctiveness of the constructs.

Table 4: Measurement Model Estimates

Constructs	FL Range >0.707	CR >0.70	AVE > 0.50	VIF
IT infrastructure	0.720–0.801	0.768	0.629	1.457
IT integration	0.772–0.827	0.819	0.712	1.144
IT knowledge	0.789–0.895	0.802	0.709	2.711
Organizational learning	0.797–0.881	0.770	0.744	2.313
Firm performance	0.827–0.880	0.840	0.612	

Source: The Researchers' PLS Computational Output (2024)

Table 5: Fornell-Larcker Criterion Estimates

No.	Constructs	1	2	3	4	5
1	IT infrastructure	0.747				
2	IT integration	0.057	0.785			
3	IT knowledge	0.013	0.106	0.784		
4	Organizational learning	0.024	0.009	0.120	0.803	
5	Firm performance	0.079	0.025	0.223	0.146	0.740

Source: The Researchers' PLS Computational Output (2024)

Table 4 showed that the item correlations exceeded the recommended threshold of 0.707, suggesting the items for each construct are reliable. The constructs' CR values exceeded the minimum permissible value of 0.707, indicating that they are highly reliable. The AVE for each construct was more than 0.50, indicating that the level of convergent validity was adequate. Furthermore, the VIF values were within the acceptable threshold of ≤ 5.0, indicating no multicollinearity problems exist in the model (Hair et al., 2017). Following the suggestion of Koch (2015), VIF values ≤ 3.3 indicate that the issue of common method bias does not present a challenge in this model. Any inference(s) drawn from the measurement model can be considered reliable.

In Table 5, the Fornell-Larcker criterion [FLC] assessment of discriminant validity demonstrated the distinctness of the constructs from each other. Consequently, discriminant validity was achieved. Overall, the quality criteria's results confirmed the measurement model's quality and appropriateness.

5.3 Presentation of Structural Model Results

The study proceeded to the second step, which is the estimation of the structural model for testing the direct and indirect relationships. The structural model was estimated with the standardized path coefficients (β), p-value, and coefficient of determination (R^2), standardized root mean square residual (SRMR), and normed fit index (NFI). The bootstrapping procedure with 5000 subsamples was used to test the significance of the paths. While the path's nature

and significance were determined by the β and p-value, the structural model's predictive quality was determined by R^2, SRMR, and NFI.

Table 6 revealed that IT infrastructure (β = 0.503, p = 0.000), IT integration (β = 0.472, p = 0.000), and IT knowledge (β = 0.486, p = 0.000) are significantly and positively associated with digital transformation. Arguably, digital transformation is a higher-order construct made up of IT infrastructure, IT integration, and IT knowledge-related capabilities. This concurs with Tippins and Sohi (2003) and Pérez-Aróstegui *et al*. (2015), who stated that digital transformation is a multidimensional and second-order construct. Regarding the predictive quality and relevance of these IT capabilities, IT infrastructure, IT integration, and IT knowledge account for 76.2 percent of the variance in digital transformation. This is considered substantial. The SRMR (0.077) is below 0.08, and the NFI (0.784) is close to 1. This indicates a satisfactory fit (Kline, 2014).

Table 6: Digital Transformation as a Second-Order Construct

No.	Paths	*β* coefficients (*p* value < 0.05)	Decision
1	IT infrastructure → digital transformation	0.503 (0.000)	Supported
2	IT integration → digital transformation	0.472 (0.000)	Supported
3	IT knowledge → digital transformation	0.486 (0.000)	Supported
R^2 = 0.762; SRMR = 0.077; NFI = 0.784			

Source: The Researchers' PLS Computational Output (2024)

Table 7: Structural Model Estimates

No.	Paths	*β* coefficients (*p* value < 0.05) Model 1	*β* coefficients (*p* value < 0.05) Model 2	Decision
1	DT → FP	0.105	0.103 (0.037)	Supported
2	OL → FP	0.390	0.394 (0.000)	Supported
3	DT → OL		0.199 (0.000)	Supported
4	DT → OL → FP		0.094 (0.000)	Supported
R^2		0.403	0.507	Moderate
SRMR		0.082	0.079	Good fit
NFI		0.791	0.802	Good fit

Source: The Researchers' PLS Computational Output (2024)

*DT = digital transformation; OL = organizational learning' FP = Firm performance.

Table 7 presents the PLS estimates, which were used to test the nature and significance of the hypothesized paths. The first hypothesis proposes that digital transformation is significantly and positively related to firm performance. The PLS results revealed that digital transformation had a positive and significant influence on firm performance (β = 0.105, p = 0.037); thus, H1 was supported. The second hypothesis contends that organizational learning is significantly and positively related to firm performance. The PLS results revealed that organizational learning affects firm performance positively and significantly (β = 0.390, p =

0.000); thus, H2 was accepted. The predictive quality results showed that organizational learning and digital transformation accounted for 40.3 percent of firm performance's variance, which is considered low. The SRMR did not establish a good fit because the value exceeded the recommended threshold of 0.08. However, the NFI value showed a good fit, as it was above the acceptable point of 0.05 (Henseler et al., 2016).

The third hypothesis suggests that organizational learning mediates the significant and positive relationship between digital transformation and firm performance. The PLS results showed that digital transformation and organizational learning are closely related in a positive and significant way (β = 0.199, p = 0.000). Furthermore, the introduction of organizational learning as a mediation variable reduced the direct effect coefficient of digital transformation and firm performance by 0.002 points. The positive and significant effect remained unchanged. However, after its introduction as a mediator, the direct effect coefficient of organizational learning and firm performance improved by 0.004 points. The specific indirect results showed that organizational learning mediates the significant and positive influence of digital transformation on firm performance (β = 0.094, p = 0.000). The mediational effect was complementary in nature, as digital transformation affected firm performance directly and indirectly. However, due to the greater impact of organizational learning on firm performance, firms can optimize the effect of digital transformation on their performance indirectly. This means leveraging complementary knowledge-based dynamic capabilities to get the most out of digital transformation. Reinforcing this argument, the R2 in model 2, which improved by 0.104 points, suggests a shift from weak to moderate predictive power. The SRMR and NFI values also suggest a good fit. The findings are captured in the research framework in figure 1.

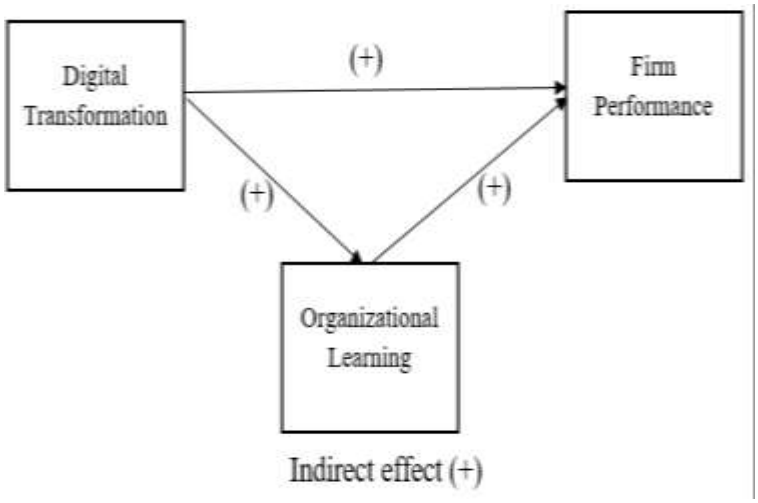

Figure 1: The Research Model

6. Discussion

The first research objective revealed that digital transformation has an effect on the firm performance of commercial banks in Delta State, Nigeria. This finding agrees with Wang et al. (2022) and Zhai et al. (2022), who reported a close association between the constructs. It is also in line with other recent studies (Jardak & Ben Hamad, 2022; Gun et al., 2024) that focused on the effect of digital transformation on a specific performance parameter, financial performance in particular. This positive result stems from the conception of digital

transformation as capabilities that direct IT resources rather than mere IT implementation or adoption (Pérez-Aróstegui et al., 2015). Focusing on IT capabilities could be more financially rewarding to banks in terms of leveraging existing and emerging technologies for value-creating activities. Technology is readily available and accessible to competing commercial banks; however, banks can differentiate themselves from others by developing unique or distinctive technological capabilities. In other words, banks can maintain their technology-based competitive advantage through IT capabilities. This is in accordance with Barba-Sánchez et al. (2024), who found a positive association between IT capabilities and firm performance. However, there is no conclusion on the relationship between digital transformation and firm performance, as opposing views (e.g., Jardak & Hamad, 2022; Nguyen-Thi-Huong et al., 2023) exist and amplify the debate. The study takes an affirmative position on this debate by providing empirical evidence. Therefore, IT infrastructure, IT integration, and IT knowledge, which comprise digital transformation, impact firm performance of commercial banks in Delta State, Nigeria.

The result of the second research objective revealed that organizational learning has an effect on the firm performance of commercial banks in Delta State, Nigeria. This finding supports previous studies (Mollah et al., 2023; Seok-young & Hyeong-seok, 2020; Tripathi & Kalia, 2024) that arrived at the same conclusion. Thus, the study supported the effect of organizational learning on firm performance. Additionally, the results showed that the effect of organizational learning on firm performance was higher than that of digital transformation by 0.285 points, suggesting that organizational learning is a stronger predictor than digital transformation. Organizational learning embeds practical changes aligned with the knowledge obtained from changing exogenous variables, which ensures stable organizational functioning and development. Learning arguably establishes a strong organization-environment fit, enabling financial resilience and stability for commercial banks.

The result of the third research objective revealed that organizational learning mediated the effect of digital transformation on the firm performance of commercial banks in Delta State, Nigeria. Arguably, high levels of digital transformation trigger organizational learning capability as a means to identify and rethink opportunities for intervention to make the transformation process more successful and beneficial to banks in terms of better financial results. Without learning, firms can miss or overlook opportunities for learning and organizational development in the turbulent digital landscape, thereby eroding the performance gains from digital transformation. Learning enables them to better manage the risk associated with the digital transformation process, which may be both disruptive and unpredictable. Additionally, firms can use organizational learning to build superior digital capabilities, potentially leading to positive performance implications. Prior studies (Mollah et al., 2023; Seok-young & Hyeong-seok, 2020) found that organizational learning plays a significant role in influencing organizational-related antecedents and firm performance. The study's finding on the mediating role of organizational learning is consistent with the findings of these studies. The finding somewhat agrees with Otioma (2023), who reported that organizational learning mediated the relationship between IT capabilities and innovation, given that innovation is one of the antecedents of firm performance. It also aligns with the dynamic capability theory, which states that digital transformation enhances firm performance when it stimulates knowledge-based dynamic capabilities, like organizational learning. This ensures that the digital

transformation process effectively responds to change and delivers value while learning from interactions and experiences. By activating digital transformation processes, firms can gain incremental knowledge from organizational learning, which helps them achieve optimal performance.

7. Conclusion and Recommendations

The study's main objective was to determine the extent to which digital transformation affects firm performance by accounting for the mediating role of organizational learning. Digital transformation was limited to IT capabilities, such as IT infrastructure, IT integration, and IT knowledge, firm performance was limited to financial performance. Data from 284 mid-level management staff at commercial banks operating in Delta State, Nigeria, were subjected to the two-step procedure of the partial least squares method. Based on the dynamic capability theory, the study revealed that the positive and significant effect of digital transformation on firm performance is achieved directly and indirectly through organizational learning. We concluded that incorporating organizational learning can maximize the performance benefits derived by banks from digital transformation.

The study recommends that firms, especially banks, move beyond mere IT adoption to active development and deployment of IT capabilities, which helps leverage IT resources to support a firm's strategy, practices, and performance. Commercial banks should fully recognize the roles of IT capabilities in the digital transformation process. Therefore, they should commit resources to its development, maintenance, and use. Second, banks should invest, develop, and maintain organizational learning activities, given their centrality in and optimization of the digital transformation and firm performance link. These organizational learning practices allow firms to continuously create, acquire, share, and apply useful knowledge for repositioning and building superior digital capabilities. Firms should utilize the knowledge they cultivated through learning to optimize the digital transformation experience. Third, managers should identify other closely related knowledge-based dynamic capabilities (e.g., knowledge absorptive capability, innovation capability, and knowledge management capabilities) in order to achieve a more holistic result, given that digital transformation partially requires the complementarity of organizational learning. Future research should pay close attention to these complementary capabilities to make digital transformation more effective and value-driven. To develop a more comprehensive research framework that firms can use, researchers may decide to compare the relationship between digital transformation, organizational learning, and firm performance in another industry and investigate other contextual factors at play.

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