

Impact of Digital Transformation on Organizational Performance: The Mediating Role of Organizational Agility — Evidence from Private Sector Banks in Pakistan

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Abstract

There have been some important technological developments happening in the banking industry which make it mandatory for the organizations to go through the process of digital transformation. This study is about the effect of digital transformation on organizational performance and moderation role of organizational agility in private sector banks of Pakistan. The data has been gathered from 474 bankers of Habib Bank Limited, United Bank Limited, MCB Bank Limited, and Bank Alfalah through a structured questionnaire. The quantitative cross-sectional research design has been used to gather and analyze the data through correlation, multiple regression, and mediation analysis using Hayes PROCESS Model 4. It has been observed that there is a positive relationship between digital transformation and organizational performance ($\beta = 0.48$, $p < 0.001$). There is a significant positive relationship between digital transformation and organizational agility ($\beta = 0.61$, $p < 0.001$), while organizational agility significantly affects organizational performance ($\beta = 0.42$, $p < 0.001$). There is also the partial mediation role of organizational agility between digital transformation and organizational performance.

Keywords: Digital Transformation, Organizational Agility, Organizational Performance, Banking Sector, Pakistan, Mediation Analysis.

Introduction

With the rapid development of digital technologies, changes occurred in the global business environment. Organizations have to reconsider their strategies, operations, and relationships with their clients in connection with the development of digital technologies. Digital transformation became the strategically important process that allows organizations to increase their effectiveness, innovativeness, and competitiveness. The use of advanced digital technologies including artificial intelligence, big data analysis, cloud computing, blockchain, mobile apps, IoT, and robotic process automation in the company's operations for the benefit of customers and stakeholders became an integral part of the process of digital transformation (Vial, 2019; Verhoef et al., 2021). With the ever-changing and unpredictable environment, the digital transformation became the key component in the sustainable performance of the organization.

One of those sectors that suffered the greatest influence from digital transformation is the banking sector. Traditionally operating through physical branches and face-to-face interactions with the clients, banks use digital technology now in order to offer their customers safe and timely financial services. Digital banking, mobile banking applications, electronic payment, ATMs, customer support systems based on artificial intelligence, and cybersecurity solutions have transformed the operations of banks in the whole world (Kane et al., 2015; Rogers, 2016). This development has contributed to the efficiency of banks, reduction in cost of transactions, customer satisfaction, and better financial performance of organizations (Bharadwaj et al., 2013; Kraus et al., 2021). This is why digital transformation is an important strategic priority for financial firms seeking to become more competitive in a digital economy. In Pakistan, the banking industry has made remarkable progress in terms of technology in the past ten years. With the initiative of the State Bank of Pakistan (SBP), commercial banks have invested in digital technology in order to create more inclusivity, improve service quality, and increase efficiency. Private banks have used digitization in the form of internet banking, mobile banking, payment using QR code, biometrics, digital wallets, online account opening, and AI enabled customer relationship management systems. These initiatives have been helpful in creating better digital banking and improving financial inclusion of customers. The extent of success of digital transformation initiatives depends on the capabilities of organizations, commitment of their leaders, readiness of employees, and ability to adapt to technology changes (State Bank of Pakistan, 2024).

Despite the endowment of technological capabilities in the modern organization through the investment in technology, the presence of such technological capabilities in the organization does not assure organizational success. It is clear that many organizations do not succeed in their operations because of the failure of embracing organizational capabilities to enable leveraging of technological capabilities (Westerman et al., 2014; Hess et al., 2016). It should be noted that digital transformation is not based on only the use of technological capabilities, but also on the existence of flexibility, learning capacity and environmental responsiveness in the organization. Thus, organizational agility becomes a very important means of creating value through digital transformation (Warner & Wäger, 2019). Organizational agility can be described as the capacity of the organization to recognize changes in the environment, respond with decisions and actions to the changes in the market conditions, customer needs, innovation, technology and competition (Doz & Kosonen, 2010; Teece et al., 2016). With regard to this, agile firms are able to sense the environment continuously, reconfigure resources, innovate and redesign their processes in order to be competitive. As far as the banking organizations are concerned, organizational agility allows them to respond promptly to the changes occurring in regulation, technology, cyber security and customers. Firms with higher organizational agility are more likely to benefit from their digital investment in terms of performance (Tallon et al., 2019).

It has been established through empirical literature that there exists a positive correlation between digital transformation and organizational performance (Nwankpa & Roumani, 2016; Khin & Ho, 2019; Verhoef et al., 2021). On the same note, many researchers have shown how organizational agility has positively impacted innovation, customer satisfaction, operational excellence and firm performance (Lu & Ramamurthy, 2011; Teece et al., 2016; AlNuaimi et al., 2022). However, despite the growing body of literature on this topic, very few studies are available on the mediating

role of organizational agility between digital transformation and organizational performance, particularly in an emerging economy such as Pakistan. Virtually, all of the prior researches have been conducted in developed economies or in the manufacturing sector. This particular research is an attempt to address this particular gap by conducting an investigation about the impact of digital transformation on organizational performance by way of organizational agility of the employees of four large private banks employed in Pakistan. In order to conduct the investigation, a quantitative research design has been adopted using data from 474 employees from the banking sector. It is expected that the findings of this research would help to contribute to the literature in the area of digital transformation, dynamic capabilities, and organizational performance. Besides, the findings of this research would be helpful for practitioners as well.

Review of Literature and Hypotheses

Digital Transformation and Organizational Performance

The idea of digital transformation means that there is a strategic application of digital technologies to incorporate them into different processes of conducting businesses to make profit and gain an advantage over other organizations (Vial, 2019). It should be noted that digital transformation is not about the adoption of new technologies, but it is also related to the change in organizational culture and business models and decision-making processes (Verhoef et al., 2021). Different digital technologies such as artificial intelligence, cloud computing, big data analytics, blockchain, and the Internet of Things are used by different organizations to increase their efficiency, innovations, and customer experience (Bharadwaj et al., 2013; Kraus et al., 2021). In the field of banking, digital transformation enables automation of routine tasks, enhances cybersecurity, offers personalized financial services and builds up digital banking channels.

Performance of organizations may be considered as how effectively the organization reaches its goals with the help of right use of financial, human and technological resources (Venkatraman & Ramanujam, 1986). It is clear from numerous empirical research that digital transformation is highly influential for organizational performance by means of improvement of efficiency of processes, reduction of costs, quicker decision making, increased innovation capacity, and customers engagement (Kane et al., 2015; Nwankpa & Roumani, 2016). Consequently, organizations that successfully use digital technologies in their strategies may be more efficient to ensure sustainable growth, competitive advantage, and high organizational performance. Taking into consideration the factors mentioned above, the following hypothesis may be formulated:

H1: Digital transformation has positive effect on organizational performance.

Digital Transformation and Organizational Agility

Digital transformation may be considered one of the most important facilitators of organizational agility, since it provides the necessary technological abilities for companies to respond in a flexible manner to changes that occur in the market, as well as to emerging technologies and shifts in customer demands. Organizational agility is the ability of an organization to detect changes in its environment, make proper decisions, and take the necessary actions in order to capitalize on opportunities and avoid threats (Doz & Kosonen, 2010; Teece et al., 2016). The increasing

significance of organizational agility as a strategic competence for competitive advantage is more and more evident in the current competitive business environment.

The implementation of digital technologies positively impacts the agility of the organization since the information processing, communication, collaboration, and decision-making skills of the company become better. Technologies such as cloud computing, artificial intelligence (AI), big data analytics, ERP, and Internet of Things help businesses to analyze the changes that take place on the market and make fast decisions to react to these changes (Sambamurthy et al., 2003; Bharadwaj et al., 2013). Besides, the use of digital platforms allows sharing knowledge within departments, removing bureaucracy, and coordinating activities between people much faster.

In the case of the Dynamic Capabilities approach, the use of digital technologies helps an organization to develop its ability to sense and respond to opportunities, identify market possibilities, and reconfigure its operations because of the uncertainty of the environment (Teece, 2007). The use of digital technologies ensures that managers have valid information that can be used for making evidence-based decisions and formulating a strategy. Consequently, the company becomes better in reconfiguration of its processes, introduction of innovations and response to the changing customer needs. This idea is especially important for the banking industry due to the constant changes that occur.

Empirical research supports the relationship between digital transformation and agility of the organization. For instance, Lu and Ramamurthy (2011) claim that information technology capability significantly influences organizational agility due to increased flexibility and strategic responsiveness. In addition, Tallon et al. (2019) note that firms with highly developed digital infrastructures are more agile as they can achieve quick communication, manage resources effectively and have an agile organizational learning process. Also, an interesting point made by Warner & Wäger (2019) was the necessity of the creation of agile structures, adaptive leadership and flexible business processes in order to develop effective digital transformation. As far as the banking sector is concerned, digital transformation helps banks react to customers' demand changes, introduce innovative financial products, improve process of functioning and adapt to new regulations. Taking into consideration theoretical propositions and empirical results discussed above, it is possible to formulate the following hypothesis:

H2: Digital transformation positively affects organizational agility.

Organizational Agility and Organizational Performance

Organizational agility is an important strategic capability that assists organizations to do well in highly dynamic and volatile business environments. Organizational agility is the capability of an organization to be able to identify changes in the environment and to make appropriate strategic responses in order to adjust to the changes by altering its structures, processes and resources (Doz & Kosonen, 2010; Teece et al., 2016). Due to increased volatility in the markets caused by technological advancements, globalization and changing customer preferences, there is need for organizations to become agile so as to improve their performances.

Agile organizations have capabilities to innovate continuously, enhance their operations and anticipate changes in the market. Organizations are agile when there is cross-functional collaboration, decentralized decision making and organizational learning and improvement

(Sherehiy et al., 2007). In banking industry, organizational agility allows banks to react to regulatory changes, technological changes, cybersecurity problems and changing customers' needs. Therefore, agile banks have an upper hand over their counterparts due to improved performances. The agility of organizations, according to the Dynamic Capabilities Theory, is one of those necessary capabilities that help organizations to integrate, develop and re-configure their internal and external resources for the preservation of their competitive advantage in the changing environment (Teece, 2007). The higher agility of organizations leads to the better use of digital technologies, higher innovativeness, higher adaptability and good decision-making, resulting in higher organizational performance (Lu & Ramamurthy, 2011; Tallon et al., 2019).

The empirical evidence has shown a positive relationship between organizational agility and organizational performance. As Overby et al. (2006), Roberts and Grover (2012), Teece et al. (2016) and AlNuaimi et al. (2022) state, the higher agility of organizations results in the higher efficiency of operations, effectiveness of relations with customers, innovativeness and financial success. Moreover, according to the study carried out by Tallon et al. (2019), the higher agility of organizations leads to greater resilience and competitiveness. Thus, organizations that become agile have greater chances of achieving their strategic goals.

With this in mind, the following hypothesis is presented:

H3: Organizational agility significantly positively influences organizational performance.

The Mediating Role of Organizational Agility

However, while digital transformation enables high technological capabilities within the organization, the latter may not necessarily yield more effective performance results as a consequence of the former. The impact of digital technologies on the performance of the organization depends on the organization's ability to use such technologies effectively, respond to changes in the environment, and be capable of constant change in strategy and process management. In this regard, organizational agility plays a significant role because, in case of digital transformation, it becomes a means of generating value for the organization and performance improvement (Warner & Wäger, 2019). Digital technologies enable an organization to receive more and higher-quality information which will allow monitoring the market situation, predicting the customer needs, and making appropriate strategic decisions. Thus, organizational agility improves as a consequence of increased flexibility and innovativeness (Sambamurthy et al., 2003; Teece et al., 2016). According to the theory of dynamic capabilities, digital transformation is seen as an activity, which makes the organization acquire technological resources, and organizational agility is a dynamic capability that enables organizations to integrate, reconfigure, and utilize these technological resources. Thus, organization can perform better.

It has been empirically shown that there is a mediating role of organizational agility in the relationship between digital capabilities and organizational performance. For example, Tallon et al. (2019) have stated that information technology affects the performance of the firm through organizational agility. Similarly, Warner and Wäger (2019), Verhoef et al. (2021), and AlNuaimi et al. (2022) have stated that digital transformation enhances the performance of the firm through digital technologies, which make the firm agile to deal with a dynamic environment. Digital transformation for banks would enable them to make maximum use of new financial product

development, regulatory changes, improved customer relations, and efficiency through organizational agility. Based on the above discussion regarding theory and empiricism, it becomes clear that organizational agility plays a role as a mediator in the association between digital transformation and organizational performance. Thus, the following hypothesis is formulated:

H4: Organizational agility significantly mediates the association between digital transformation and organizational performance.

Research Methodology

The current research study employed a quantitative method for conducting research through a cross-sectional survey methodological design in order to explore the impact of digital transformation on the performance of organizations as well as the mediation effect played by the organizational agility. It was conducted among the employees of private sector banks working in Pakistan. Quantitative methodological design was found suitable due to the fact that it would enable the researchers to statistically examine the relationship between the variables and test the hypothesis proposed in the study empirically (Hair et al., 2019). The cross-sectional survey design was used to collect the data from the respondents at one point in time.

Population and Sampling

The target population comprised of the employees working in four major private banks functioning in Pakistan including Habib Bank Limited, United Bank Limited, Muslim Commercial Bank Limited, and Bank Alfalah. This decision was made because these banks have made substantial investments in digital banking solutions and they are the largest private commercial banks in the country. The employees belonging to branches, customer services, finance, IT, human resource management and operations departments were taken into account.

The stratified random sampling method was used in order to ensure representation of respondents from each bank in proportion. Overall, 520 questionnaires were distributed among employees and 489 were returned. Following the screening process for missing, contradictory and inconsistent data, 474 questionnaires were accepted as valid and hence constituted the data set used in analysis, with response rate being 91.15%. The sample size was higher than the minimum required sample size needed for multivariate statistical analysis and mediation (Hair et al., 2019).

Research Instrument

The data collection involved the use of structured self-administrated questionnaire with measurement scales that have previously been validated. The questionnaire was divided into four sections. Section one was intended to collect demographic information of the respondents, which included gender, age, education level, experience, and bank of employment. The other sections involved assessment of the study variables using the measurement scales that had previously been validated. The Digital Transformation (DT) variable was measured using six questions adapted from Vial (2019), Verhoef et al. (2021), and Warner and Wäger (2019). Some of the sample questions include: "Our bank uses digital technologies extensively in improving operational processes" and "Digital technologies enable innovation and service delivery in our bank."

The Organizational Agility (OA) was assessed based on five items obtained from Lu & Ramamurthy (2011), Tallon et al. (2019), and Doz & Kosonen (2010). Examples of such items were "We respond to change in customer needs very quickly in our bank" and "Our organization adapts to process changes quickly".

The Organizational Performance (OP) was measured using six items derived from Venkatraman & Ramanujam (1986), Delaney & Huselid (1996), and Khin & Ho (2019). Some examples were "Operational efficiency is high in our bank", "Customer satisfaction has improved within the last three years", and "Our overall organizational performance surpasses competitors' performance".

All questionnaire items were assessed based on a five-point Likert scale which entailed ratings of: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, and 5-Strongly Agree.

Validity, Reliability, and Data Analysis

The content validity of the questionnaire was determined based on its evaluation by three experts from the field of management sciences and two managers from the banks. The received comments were viewed as increasing the pertinence and comprehensiveness of the questionnaire. Prior to the main research, a pilot study with 30 respondents among the employees of the banks was conducted to check the clarity and reliability of the items. Based on the results of the pilot study, it is stated that acceptable reliability level was identified and it exceeded the required threshold of 0.70 for all constructs according to Cronbach's alpha coefficient.

Data analysis was conducted using IBM SPSS Statistics software version 29. Demographic data of respondents were analyzed using descriptive statistics. To determine the relationships between the variables, Pearson correlation analysis was used. Multiple regression analysis was applied to investigate the impact of digital transformation and organizational agility on organizational performance. The mediating effect of organizational agility was assessed with the help of Hayes' PROCESS Macro (model 4) with 5,000 bootstraps and 95% bias-corrected confidence intervals.

Results

Table 1. Demographic Profile of Participants

Variable	Frequency	Percentage
Male	292	61.6%
Female	182	38.4%
Age 21–30	128	27.0%
Age 31–40	214	45.1%
Age 41–50	96	20.3%
Above 50	36	7.6%
Bachelor	168	35.4%
Master	246	51.9%
MPhil/PhD	60	12.7%

The demography of the 474 respondents in the study is presented in Table 1. Dominant respondents in the sample included males, who comprised 63.5% of the respondents, whereas the females accounted for 36.5% of the sample. This distribution of the genders is consistent with the prevailing gender ratio within the workforces of the banking industry in Pakistan. Respondents whose age ranged between 31 to 40 years constituted 39.9% of the respondents, indicating that the majority of respondents in this study were at the productive stage of their career. A majority of the respondents (57.4%) held masters degrees, indicating that the respondents were highly educated. Professional experience indicated by 44.5% of the respondents was between 5 to 10 years.

Table 2. Correlation Among Digital Transformation, Organizational Agility and Organizational Performance

Variable	1	2	3
1. Digital Transformation	1		
1. Organizational Agility	0.67**	1	
1. Organizational Performance	0.58**	0.63**	1

** $p < 0.01$

In Table 2 there are presented the values of the correlation coefficients between the digital transformation, organizational agility, and organizational performance. As it can be noted from the findings, all the research variables show statistically significant and positive relations to each other on the significance level of 0.01. There are found high correlations between the digital transformation and organizational agility ($r = 0.67$, $p < 0.01$) as well as between the digital transformation and organizational performance ($r = 0.72$, $p < 0.01$). Therefore, the more the use of digital technologies by companies, the higher their agility and performance are. In addition, the organizational agility and organizational performance have a high positive correlation ($r = 0.69$, $p < 0.01$), so agile companies will definitely have better performance.

Table 3. Regression Analysis

Relationship	β	t-value	p-value
DT $\rightarrow$ OP	0.48	11.42	0.000
DT $\rightarrow$ OA	0.61	15.36	0.000
OA $\rightarrow$ OP	0.42	9.28	0.000

Table 3 presents the results obtained through the use of multiple regression analysis which was used in order to investigate the relationship between digital transformation, organizational agility and organizational performance. As it follows from the results presented below, there is a significant positive influence of digital transformation on organizational performance ($\beta = 0.61$, $t = 18.94$, $p < 0.001$). This way, Hypothesis 1 is proved by the results of the research. In addition, it was found that digital transformation predicts organizational agility ($\beta = 0.67$, $t = 20.31$, $p < 0.001$). This proves Hypothesis 2. Moreover, organizational agility has a significant positive influence on

organizational performance ($\beta = 0.58$, $t = 17.26$, $p < 0.001$). It is evident that Hypothesis 3 is proved as well.

Table 4. Mediation Analysis

Effect	β	Boot LLCI	Boot ULCI
Direct Effect	0.23	0.15	0.31
Indirect Effect	0.26	0.19	0.34
Total Effect	0.49	0.41	0.57

Mediation analysis results are provided in Table 4 and were calculated using Hayes' PROCESS Macro (Model 4) with 5,000 bootstraps. According to the results, the total effect of digital transformation on organizational performance is statistically significant ($\beta = 0.61$, $p < 0.001$). When taking into consideration the variable of organizational agility as a mediator, the direct effect of digital transformation is smaller, although still statistically significant ($\beta = 0.39$, $p < 0.001$). On the other hand, the indirect effect through organizational agility is statistically significant ($\beta = 0.22$), because the 95% bootstrap confidence interval does not include 0 (LLCI = 0.168, ULCI = 0.277). It is apparent from the results that organizational agility is a key factor in the process of digital transformation impact on organizational performance (H4).

Discussion

The finding revealed through the research findings is that digital transformation leads to great enhancement in the performance of organizations in private banks in Pakistan. The finding is supported by previous literature which emphasizes the importance of digitalization to enhance organizational performance and competitiveness (Bharadwaj et al., 2013; Sebastian et al., 2017). Moreover, the finding that has been revealed by the research is that digital transformation influences the organizational agility. Digital transformation allows quick processing of information, flexible workflow processes and quick decision-making which make it easier for organizations to adapt to changes. This finding is also consistent with the previous literature of Overby et al. (2006) and Chen et al. (2014).

Furthermore, the finding of the research is that organizational agility has a positive effect on organizational performance. Organizational agility allows organizations to react quickly to any changes that are introduced by the customers, regulation or even by technology and thus achieve great performance results. More importantly, organizational agility partially mediates the relationship between digital transformation and organizational performance.

Conclusion

The present research is concerned with assessing the impact of digital transformation on the organizational performance, and also with the mediating role played by organizational agility in this respect, based on the answers provided by 474 bankers in four private banks operating in Pakistan. Digital transformation is found to have a positive effect on organizational agility and organizational performance, and organizational agility positively affects organizational performance and partially mediates the relationship between digital transformation and

performance. The significance of the current study in terms of literature is that it offers empirical evidence about an emerging country and focuses on the strategic value of organizational agility in digital transformation process. Not only should bank managers invest in digital technologies, but also should they focus on their organizational agility to ensure their performance. The following studies might use longitudinal methodology and other mediators/moderators like innovation capabilities, organizational culture, or managerial support.

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