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# **Investigating the Impact of Digital Transformation on the Financial Performance of Jordanian Commercial Banks Listed on the Amman Stock Exchange**

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## **Abstract**

This study examined the impact of digital transformation on the financial performance of Jordanian commercial banks over the period (2016 – 2023). It employed the fixed effect model and the results showed that digitalization has contributed to substantial efficiency in financial performance. The study recommended that Jordanian commercial banks should continue to make more efforts to activate the optimal financial transformation, and to keep pace with technological development because of its positive impact on financial performance. For future research, the current study suggests to measure financial performance through other financial measures (i.e., return on total equities or Tobin's Q).

**Keywords:** Digital transformation; Financial performance; Commercial banks; Jordan.

## **1. Introduction**

The banking sector plays an important role in the development of economy, as this sector is characterized by a great degree of competition and is also one of the sectors most affected by technological development. Therefore, the banking sector is one of the sectors most affected by the digital transformation revolution, as this transformation helps it to continue, grow, develop, and achieve its main goals. This requires banks to keep pace with these developments through digital transformation, as digital transformation contributes to increase the success of banking and achieving its goals, by developing a culture of change among the bank and customers, linking modern technologies to various economic activities and fields, enhancing the efficiency of banking operations, and providing services (Alrawashedh & Shubita, 2024).

Financial performance is an essential focus for banks and institutions, especially in light of the rapid changes that the world is witnessing. Therefore, many banks and major financial institutions seek to achieve their pre-set goals, amid a complex and dynamic economic and social climate, as these changes force banks to practice a set of activities that require combining various available resources, which may help or hinder it in achieving its goals. The aim of evaluating financial performance in banks is to measure the efficiency of using available resources and maximizing their profits. To achieve this, banks must recognize their current financial position and predict their financial future, which allows them to make rational decisions on how to benefit from prevailing technological developments and determine their competitive position at the sector level (Zhai et al., 2022).

Digital transformation of banking operations has become an urgent and indispensable necessity for banks, as this transformation represents a qualitative shift from the traditional system to the electronic system, which requires the provision of various material and human requirements. Digital transformation also aims to provide digital financial services and products that keep pace with various requirements of global markets and technological developments. The rapid growth,

as global technological openness and the increasing volume of competition helped stimulate the banking sector towards digital transformation in the banking sector. Therefore, the problem of the study is the intensity of competition that commercial banks face in Jordan through the prevailing digital transformation and the need for them to take decisions to improve their financial performance and benefit from digital transformation to increase customer satisfaction, improving its banking services, and increasing its market share.

The present paper is going into five sections. Section one presents the introduction. Section two discusses the literature review. Section three presents data and methodology. Section four provides the results analysis, and conclusions are given in Section five.

## **2. Literature review**

This section discusses the studies that conducted to examine the impact of digital transformation on the financial performance in different countries. Kolodiziev et al. (2021) investigated the impact of digital transformation on the financial performance of Ukrainian banks. The results showed that digital transformation positively affected financial performance. Latifi et al. (2021) examined the impact of financial innovation on the financial performance of commercial banks. The findings revealed that financial innovation positively influenced financial performance. Olalere et al. (2021) studied the effect of financial innovation on the financial performance of commercial banks in Nigeria and Malaysia over the period 2009 – 2019. The results showed that financial innovation had a significant positive effect on financial performance of commercial banks in Malaysia, while a significant negative effect on financial performance of commercial banks in Nigeria. Ouma and Ndede (2020) examined the effects of digital transformation on the financial performance of Kenyan commercial banks. The results showed that digital transformation had a positive effect on the financial performance. Shanmugam and Nigam (2020) examined the impact of technology on the financial performance of Indian commercial banks over the period 2011 – 2016. The results revealed that no impact of technology on financial performance. Wang and Xia (2024) examined the impact of digital transformation on the financial performance of utility firms in China. The results showed a positive relationship between digital transformation and financial performance of utility firms in China. Zhou et al. (2023) investigated the impact of digital transformation on the financial performance of firms. The findings showed a positive relationship between digital transformation and financial performance. Zuo et al. (2021) studied the impact of digital transformation on the financial performance of Chinese banking sector. The results showed that investment in digitalization increased the financial performance.

## **3. Data and methodology**

This study examined the impact of digital transformation on the financial performance of Jordanian commercial banks (Jordan Islamic Bank, Jordan Kuwait Bank, Jordan Commercial Bank, The Housing Bank for Trade and Finance, Arab Jordan Investment Bank, Safwa Islamic Bank, Bank Al Etihad, Arab Banking Corporation/ Jordan, Invest Bank, Capital Bank of Jordan, Cairo Amman Bank, Bank of Jordan, Jordan Ahli Bank, Arab Bank) over the period (2018 – 2023). Data were collected from annual reports available from the Association of Banks in Jordan (<https://abj.org.jo/ar>). The study used the following standard model to measure the impact of digital transformation on the financial performance of Jordanian commercial banks over the period (2018 – 2023):

$$\text{LROA}_{it} = \beta_0 + \beta_1 \text{LATM}_t + \beta_2 \text{LSC}_t + \beta_3 \text{LBA}_t + \varepsilon_{it} \quad (1)$$

Where, ROA represents the return on total assets; ATM represents the total number of automated teller machines; SC represents the total number of smart cards; BA represents the total number of banks accounts; L represents the natural logarithm;  $\beta_0$  denotes the intercept term;  $\beta_1, \beta_2, \beta_3$  denote the coefficients of independent variables;  $\varepsilon$  denotes the error term;  $i$  represents the bank;  $t$  denotes the time. The current study employs different steps of research methodology (i.e., Descriptive Statistics Analysis, Pearson Correlation Analysis, Panel Unit Root Tests, Breusch and Pagan Lagrange Multiplier Test, Hausman Test).

#### 4. Results analysis

It is clear from the results in Table 1 that the arithmetic mean of the dependent variable, return on total assets (LROA), is 0.624375, the standard deviation is 0.302995, the lowest value is 0.113000, and the highest value is 1.315000.

**Table 1.** Results of descriptive statistical analysis.

Statistics	Variable			
	LROA	LATM	LSC	LBA
Mean	0.624375	18.38307	17.38919	17.38919
Median	0.495500	18.34340	17.18242	17.18242
Maximum	1.315000	18.73483	17.84595	17.84595
Minimum	0.113000	18.23852	14.84594	14.84594
Std. Dev.	0.302995	0.362382	0.645065	0.735065
Skewness	0.350216	0.016702	0.020602	0.110602
Kurtosis	2.161467	1.017697	1.090877	1.180877
Jarque-Bera	1.591622	4.969451	3.622198	3.622198
Probability	0.329209	0.157418	0.156318	0.156318
Observations	18	18	18	18

**Source:** EViews software Package.

The results in Table 2 show that all variables fall within the acceptable range of the correlation coefficient. In other words, there are no strong or relatively high correlations between the variables, which indicates the absence of an autocorrelation problem (Gujarati & Porter, 2009).

**Table 2.** Results of Pearson correlation analysis.

Variable	LROA	LATM	LSC	LBA
LROA	1			
LATM	0.390226	1		
LSC	0.371234	0.394561	1	
LBA	0.361234	0.381234	0.351234	1

**Source:** EViews software Package.

**Table 3.** Results of unit root tests.

Variable	I(0)	I(1)
LROA	-0.12347 (0.58)	-2.90322* (0.01)
LATM	-0.95326 (0.14)	-3.25432* (0.01)
LSC	-2.33456** (0.05)	-4.31345* (0.01)
LBA	-2.33456** (0.05)	-3.21345* (0.01)

**Notes:** (1) The unit root of the variables was tested using the Im et al. (2003). (2) The numbers in parentheses indicate the probability value of the unit root test. (3) The symbols \* and \*\* indicate significance at the level of 1% and 5%, respectively. (4) Source: EViews 13 statistical analysis software.

The results in Table 3 show that all variables for this study are stationary at the first difference and the significance level of 1%, which indicates that the data used in the study are stable.

**Table 4.** Lagrange multiplier test results.

Chi-Square Statistics	Probability
5.94312*	0.05
Series: LROA, LATM, LSC, LBA	
Sample: 2018 – 2023	
Number of observations: 18	

**Notes:** (1) The Lagrange multiplier was tested using Breusch and Pagan (1980) test. (2) The symbol \* indicates significance at the 5% level. (3) Source: EViews 13 statistical analysis software.

The results of the Lagrange multiplier test in Table 4 show that the value of Chi-Square Statistics = 5.94312 is significant at the level of 5%, and therefore it is optimal to use Generalized Least Square Models, which include the Random Effect Model and the Fixed Effect Model.

**Table 5.** The results of Hausman test.

Chi-Square Statistics	Probability
5.863825	0.05
Series: LROA, LATM, LSC, LBA	
Sample: 2018 – 2023	
Number of observations: 18	

**Source:** EViews software Package.

The results of the Hausman Test in Table 5 show that the value of Chi-Square Statistics = 5.8638 is significant, and therefore the best option is to use the Fixed Effect Model (Hausman, 1978). However, the results in Table 6 shows that there is a significant positive impact of the total number of automated teller machines, the total number of smart cards, and the total number of banks accounts on the financial performance of Jordanian Islamic banks. These results are in line with the results obtained by researchers (i.e., Kolodiziev et al., 2021; Latifi et al., 2021; Olalere et al.,

2021; Ouma & Ndede, 2020; Shanmugam & Nigam, 2020; Wang & Xia, 2024; Zhou et al., 2023; Zuo et al., 2021).

**Table 6.** Estimating the parameters of the Fixed Effect Model for the dependent variable LROA.

Variable	Coefficient	Std. Error	t-statistic	Probability
LATM	0.820515	0.160680	5.106516*	0.01
LSC	0.901345	0.094341	9.554117*	0.01
LBA	0.851345	0.096441	8.827625*	0.01
R-squared	0.83			
Adjusted R-squared	0.80			
F-statistics	4.790345			
Probability (F-statistics)	0.039313			
Durbin-Watson Statistics	1.861154			

**Notes:** (1) The symbol \* indicates significance at the 1% level. (2) Source: EViews 13 statistical analysis software.

## 5. Conclusions

The current study examined the impact of digital transformation on the financial performance of Jordanian Islamic banks over the period (2018 – 2023). It employed the fixed effect model and the results showed significant positive impact of the total number of automated teller machines, the total number of smart cards, and the total number of banks accounts on the financial performance of Jordanian Islamic banks. The study recommended that Jordanian Islamic banks should continue to make more efforts to activate the optimal financial transformation, and to keep pace with technological development because of its positive impact on financial performance. For future research, the researcher suggests to measure financial performance through other financial measures (i.e., return on total equities or Tobin's Q).

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