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The Impact of Digital Transformation on Banking Performance: Case Study of Saudi Banks

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Abstract

Recent years have been marked by a great expansion of digital operations around the world. The aim is to satisfy customers, reduce costs, and achieve greater profitability. This paper examines the impact of digital transformation on Saudi banking performance. The Saudi Digital Transformation Index (**Qiyas**) was used as a proxy of digital transformation. The sample studied consists of 10 listed Saudi banks in Saudi Arabia over the period 2018-2024. The results show a positive correlation between digital transformation and banking performance. In fact, a high level of digital transformation is associated with increases in the performance of banks. Moreover, the results indicate that economic growth and size are positively correlated with performance for Saudi banks.

Keywords

Digital Transformation, Performance, Saudi Banks

1. Introduction

In a world characterized by strong competition, banks seek to improve their performance to ensure their sustainability. The level of digital financial services has expanded rapidly. Digital transformation brings advantages to commercial banks, such as increased efficiency, customer satisfaction, and reduced costs.

In recent years, Saudi Arabia has developed its own framework for defining and evaluating the country's digital transformation. This framework is primarily managed by the Digital Government Authority (DGA) through systems like Qiyas, which measures the performance of government agencies. Qiyas (Digital Transformation Measurement System) is the methodology and core system for as-

sessing Saudi government entities in terms of digital maturity, compliance, and service delivery. In 2024, this index is structured around 10 pillars (perspectives) and 23 axes, encompassing a total of 96 indicators (standards). These indicators include Strategy and Planning, Organization and Culture, Information Technology, Research and Innovation, etc.

The problem proposed in this study is to determine if digital transformation has influenced the performance of Saudi banks. The Digital Transformation Measurement Index (Qiyas) will be used to provide more answers to this question. It should be noted that Saudi banks are characterized by their large size, high turnover, and economic power. Furthermore, the Saudi economic sector has undergone significant digital transformation over the last decade.

The paper is organized as follows. Section 2 is a brief review of the literature about the analysis of the relationship between digital transformation and performance; Section 3 describes the methodology; Section 4 provides results. Concluding comments are set out in Section 5.

2. Literature Review

Studies focusing on digital finance have increased following the expansion of digital operations worldwide.

Many authors, such as Ozili (2017), indicate that digital finance through financial technology (Fintech) providers has positive effects on financial inclusion in emerging and advanced economies. However, the author highlighted the existence of some challenges that digital finance poses in terms of financial inclusion and financial stability.

Based on a dataset of Small and Medium-sized Enterprises (SMEs) in Tunisia, Bellakhal, Ben and Mouelhi (2020) indicate that digitalization is positively related to firms' performance. The authors attribute this positive relationship to the engagement of Tunisian firms within a global digitalization strategy, where digitalization is considered an integral part of their business and activities.

Using a sample of banks from developing countries over [2012-2019], Tran et al. (2023) underline the importance of flexible digital banking products and services, which offer many benefits with a high level of interaction, such as enhancing customer-bank relationships and improving operating revenues.

Studying banks from the Indonesian capital market, Coryanata et al. (2023) assert that the application of banking digitalization has a negative impact on financial performance. The authors indicated that the use of digital technology failed to improve the financial performance of Indonesian banks. The main raison of this finding is that Investors are especially careful when investing in companies that use digital technology.

Herath and Gamlath (2024) indicated the significant impact of digital transactions on financial performance in Sri Lanka, emphasizing that banks should focus on enhancing their digital transformations. Tomar (2024) found a direct correla-

tion between customer satisfaction and bank performance, as higher levels of customer satisfaction contribute significantly to enhanced bank performance.

Zhang (2024) investigated the impact of digital finance development on the credit structure and risk-taking of Chinese commercial banks. The author recommends that commercial banks continue adopting digital financial technologies to increase their credit volume and optimize their credit structure.

Chen et al. (2024) studied a sample of 60 Chinese commercial banks over the period 2015-2021, using Peking University's Digital Transformation Index in their model. They found that digital transformation is positively correlated with the banks' commercial performance; however, this impact varies depending on the size of the banks.

3. Methodology

This section will present hypotheses to be tested, the model to be estimated, the variables, and the data used.

3.1. Hypotheses

To address the objective proposed in this study, specifically the examination of the impact of digital transformation (explanatory variable) on bank performance, the first hypothesis (H1) will examine the impact of Digital transformation on Saudi bank performance.

Subsequently, a set of macro variables (which will serve as a control variable) will be tested. Hypothesis H2 will test the impact of economic growth on bank performance. Hypothesis H3 examines the relationship between bank performance and their total assets. As for Hypothesis H4, it will focus on studying the impact of inflation on banking performance.

H1	When digital transformation increases, the bank's performance increases.
H2	The performance of the bank is higher when the economic growth is in expansion.
H3	The profitability of the bank increases when total assets increase.
H4	The profitability of the bank is higher when the inflation rate is lower.

3.2. Model

The performance of banks will be approximated by the ratio of Return on Assets (ROA), which is often used as a dependent variable in models that estimate bank performance. The explanatory variables meet the hypotheses discussed previously. Four independent variables will be considered: Digital transformation, Economic growth, Size and Inflation.

The model can be written as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 DT_{i,t} + \beta_2 Eco_{i,t} + \beta_3 Size_{i,t} + \beta_4 Inf_{i,t} + \varepsilon_{i,t}$$

where:

ROA: Return on Assets, DT: Digital transformation, Eco: economic growth,

Size: total assets, Inf: Inflation, β_0, β_1, β_2, β_3 and β_4 are intercept terms of the model, **i,t** represents the data of the ith bank in year t, and $\varepsilon_{i,t}$: error term.

3.3. Variables

Table 1 shows the variables considered in this paper.

Table 1. Definition of variables.

Variable	Symbol	Definition
Return on Assets	ROA	The ratio Net Profit divided by total Assets (expressed as a percentage)
Digital transformation	DT	Digital Transformation Measurement Index (Qiyas) provided by the Saudi Digital Government (expressed as a percentage)
Economic growth	Eco	growth rate of Gross Domestic Product (GDP)
Total assets	Size	Total assets (expressed in logarithms)
Inflation	Inf	Inflation rate (expressed as a percentage)

Data are collected from the annual reports of Saudi banks selected in this study and the Saudi Stock Exchange reports. Table 2 presents a statistical description of all the variables used in the sample.

Table 2. Descriptive statistics of variables.

Variable	MIN	MAX	Mean	SD
ROA (%)	0.787037	7.139535	1.812715	0.94477
DT (%)	59.28	87.14	80.75	8.016
Eco (%)	0.5	12	5.2	5.21
Size (Ln)	25.35	27.726	26.643	1.189545712
Inf (%)	1.6	2.47	2.025	0.438

3.4. Sample and Estimation

The sample used in this study is composed of 10 Saudi banks listed on the Saudi Stock Exchange during the period from 2018 to 2024, the number of observations will be 70. This period was considered because it was marked by a strong expansion of digital operations in Saudi Arabia. The person correlation test shows that there is no high correlation between the variables, and multiple regression analysis can be conducted. According to the Hausman test results (*P*-value of the Hausman test is less than 0.01), a fixed effects model was used. The analysis tool used in this study is Eviews version 10.

4. Results

The results of regression model are provided in Table 3.

Table 3. Results of regression model.

	Coefficient	t-student	Prob
Constant	0.47	(0.86)	0.32
DT	0.32	(2.96***)	0.0045
Eco	0.58	(3.77***)	0.002
Size	0.44**	(2.3**)	0.027
Inf	−0.76	−1.08	0.44
Observations	70		
R^2	0.77	**F**	8.61***
Adj R^2	0.83	**DW**	2.17

The values in parentheses are t-values. *, **, *** indicate significance at 10%, 5%, and 1% respectively.

The results show that hypothesis H1 (main hypothesis) is accepted, indicating that Digital Transformation affects the performance of banks positively. The coefficient of DT is 0.32, and the t-value is 2.96 (significant at 1%). In other words, the digital revolution introduced by the Saudi Digital Government (DGA) has boosted Saudi banks to achieve greater performance.

As for the control group, hypothesis H2 was accepted, the coefficient is 0.58, and the t-value is 3.77 (significant at 1%), indicating that economic growth has a positive effect on bank performance. Hypothesis H3 is also accepted, the coefficient is 0.44, and the t-value is 2.3 (significant at 5%), showing that Size is positively correlated with performance, which means that Saudi large banks are more performant than small ones. Finally, hypothesis H4 was rejected, that the inflation rate has no impact on Saudi bank performance.

Based on the R-squared and the adjusted R-squared coefficient (0.77 and 0.83, respectively), the regression analysis argues that the model is well-designed. The results demonstrated that the independent variables explain more than 70% of the variation in ROA, indicating the explanatory power of the model. Furthermore, the F-statistic is greater than 4.5, which is statistically significant at 1%.

5. Conclusion

The objective of this paper was to study the impact of digital transformation on banking performance. The sample used is composed of 10 Saudi banks, and the data covers the period from 2018 to 2024, which was marked by a large expansion in digital transactions. The variable Return on Equity (ROA) is used as a proxy to measure a bank's performance, and the Saudi Digital Transformation Index (**Qiyas**) is used as the main explanatory variable. Then a group of control variables was tested: economic growth, size, and inflation. The results confirmed the positive relationship between digital transformation and performance; in other words, digital transformation has a positive effect on the performance of banks. Furthermore, the results indicated that economic growth and the size are positively cor-

related with performance.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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