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RESEARCH ARTICLE

The Role of Financial Technology in Improving the Profitability 0f Jordanian Banks: An Analytical Study for a Period (2019-2024)

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ABSTRACT

The study aimed to find the role of financial technology in improving the profitability of Jordanian banks for a sample of (10) banks for the period (2019-2024). The researcher analyzed banks data to identify the relationship between financial technology and bank profitability. (Return on equity(ROE) was used to measure profitability and financial performance, and (mobile banking services, online banking services, and number of ATMs) were used to measure financial technology. Some control variables were added, including (interest rate, exchange rate, and bank size), to clarify the relative importance of each variable in explaining the variance of other variables. The researcher used the generalized mean-of-moments (GMM) method to test the study hypothesis. The results showed that financial technology has a fundamental and positive role in improving the profitability of Jordanian banks.

INTRODUCTION

Banking sector is considered one of the key pillars that play a dynamic role in supporting the national economy, as this sector is characterized by the sensitivity of the commodity it deals with, which is money, and given the importance of this sector, banks have begun to focus on enhancing the use of financial technology in light of the technological revolution in the fields of information and communications, especially the Internet; In order to achieve success in the modern work environment and ensure sustainable profitability in the long term. Profitability is one of the basic things that investors seek, and it is an important indicator for creditors and a main instrument for evaluating the efficiency of management in exploiting its resources (Abdul Rahman and Al-Sobh, 2023, p. 15).

Finance technology, is the latest stage in the development of the banking sector; It combines the latest technologies that technology has reached in the financial field, which leads to the establishment of financial services in a new technological form characterized by elasticity, rapidity, accuracy and minimize cost (Attia, 2021, p. 364). These services include providing loans electronically and providing multiple electronic payment methods, which contributes to accelerating achievement and attracting new customers, thus enhancing the competitive advantage of banks and increasing profitability (Rashwan and Qasim, 2023, p. 83). Accordingly, Jordanian banks enjoy increasing interest in improving their profitability; to ensure their continuity and survival and enhance their financial position, in addition to ensuring growth, expansion and achieving an appropriate market value. Profitability is one of the basic elements of banks, as it contributes to increasing equity, which enhances their ability to face potential risks, and reflects the efficiency and effectiveness of management in exploiting available resources to achieve the highest level of profit (Al-Rayes, 2019, p. 17). Hence, this study came to explore the role of financial technology in enhancing the profitability of Jordanian banks.

Study Problem

Finance technology has become a powerful innovation for Jordanian banks, providing many benefits by offering fit and more appropriate banking services to clients. However, these banks face new challenges as a result of the emergence of other competitors, namely emerging financial technology companies that have entered the financial sector and started providing a variety of financial services, including contributing to economic development and the development of various sectors in the country and others. This situation has threatened banks' profits, as the Basel Committee expressed its concern in its report about the impact of these companies on banks' losses, and presented possible scenarios for the future of banks in the presence of financial technology companies. One study indicates the possibility of a decline in bank revenues over the next ten years by a rate ranging between 10% and 40%, in addition to a decline in banking sector profits related to individuals by a rate ranging between 20% and 60% (Abdul Rahim, Bin and Bin Qaddour, 2018, p. 11). Accordingly, the problem of the study is determined by trying to answer the main question: What is the role of financial technology in improving the profitability of Jordanian banks? What is the relationship between financial technology (such as mobile banking services, online banking services, and the number of ATMs) and the profitability of Jordanian banks (return on equity) in Jordanian banks? In light of some regulatory variables including: (interest rate, exchange rate, and bank size).

Importance of the Study

Development in the banking business environment, including extreme competition between banks themselves and with other financial firms, has led to the need for banks to improve their competitive advantages. These banks must improve the quality of e- banking services provided to customers; to ensure their existence in the market and attract the largest possible number of customers by providing new and innovative features, which contributes to achieving high growth rates. Improving profitability is the strategic goal that bank managements seek to achieve in light of these current competitive challenges. The importance of this study is evident in its vital role in improving the profitability of Jordanian banks, which contributes to improve economic growth. It also highlights the need to spread awareness about the importance of financial technology and its impact in banking industry, and its role on improving the services provided and increasing their efficiency and ability to meet requirements at all levels. Given the novelty of the topic, this study may contribute to enriching the scientific library and providing valuable results and recommendations for future researchers.

On the other hand, the practical importance of this study is highlighted by providing a set of recommendations for decision-makers in Jordanian banks, which explain how to improve profitability by taking advantage of financial technology. This includes providing new services in line with technological developments, and providing modern payment mechanisms via mobile phones, which contributes to increasing the number of customers using financial technology in Jordanian banks. It also requires developing employees' skills and providing them with continuous training on the latest technological developments, in addition to organizing training courses that ensure that the service is provided in the required manner.

Study Objectives

This study aimed to find the role of financial technology in improving the profitability of Jordanian banks as a primary objective, specifically to demonstrate the relationship between financial technology (mobile banking services, online banking services, and the number of ATMs) and bank profitability and financial performance through the return on equity in Jordanian banks in light of some regulatory variables, including: (interest rate, exchange rate, and bank size).

Theoretical Framework

Financial Technology

The financial sector has recently witnessed the emergence of many innovations and fields that provide financial services in new ways that differ from the known traditional methods. Financial technology has been distinguished by integrating the latest technological developments and exploiting them to serve this sector. the term financial technology includes the technological aspect with the financial aspect, which means harnessing technology and technology in the field of financial

services, and it has been merged and abbreviated to: (Fin Tech), which is any technological innovation that is employed to improve financial services (Bukhari, 2022, p. 109).

The importance of financial technology as a feature comes from the fact that it will affect front and back office operations, and disrupt the traditional product and operations model used by most financial institutions. It will provide new alternatives for providing advice to customers, processing transactions, analyzing data, helping customer's access better options, managing product portfolios, and benefiting from mobile technology, etc. The net effect of all these changes is to enhance efficiency and operational capabilities and significantly reduce costs (Attia, 2021, p. 380). In light of the progress in financial technology, banks seek to achieve a set of goals, the most prominent of which are: increasing speed by providing electronic services that contribute to accelerating and completing transactions more easily. This development has led to accelerating the operational cycle of banks and reducing costs, as financial technology has helped reduce costs resulting from human errors. In addition, enhancing banking security, privacy and transparency are considered essential characteristics that customers look for in banking services. Financial technology has also helped banks expand their customer base. Finally, it allows comparison between different bank services, their methods of delivery, and feedback available online, which facilitates comparing these services with other competitors (Jaber, 2023, pp. 17-19). The Basel Committee classified banks into five scenarios regarding the financial technology challenges they face, which are (Attia, 2021, pp. 379-380):

Scenario 1: Banks benefit from technological techniques by updating and digitizing their services, which helps them retain their customers and provide basic services better. Banks also seek to improve their position and develop their capabilities by leveraging their knowledge and experience in the market and their investment capabilities. In this way, they can develop their services and provide products that are in line with modern technologies, with a special focus on innovations such as artificial intelligence. This scenario was called the "best bank".

Scenario 2: According to this scenario, traditional banks will not be able to update themselves or benefit from modern technologies, which requires the emergence of new banks to replace them. These new banks will rely mainly on advanced technology to provide more modern, effective and efficient services, at lower costs through smart applications and Internet-based platforms, which makes them go beyond the old traditional model. This scenario was called the "new bank".

Scenario 3: It is about partnership and cooperation between technology companies and banks, where services are divided between the parties involved, as this cooperation contributes to maintaining customers, allowing them to use a variety of financial service providers instead of relying on just one financial partner, examples of which include: innovative mobile payment services, in addition to providing investment advice. This model has been called the "distributed bank".

Scenario 4: It is expected that banks will be able to survive thanks to their expertise, as some of the basic services they provide will remain unsurpassable. However, the problem is that this expertise will come under the control of major financial technology companies and online companies, which will take on the role of the interface in interacting with customers and users in the field of financial technology, which will enhance their competitiveness at the expense of banks. In contrast, traditional banks will become practically invisible, as their role will turn into a mere provider and recipient of services related to the treasury, matching operations and ensuring compliance with regulatory rules. This scenario has been called the "falling bank".Scenario Five: This is considered the worst scenario, as modern technologies are supposed to completely replace traditional banks, eliminating the need for them, because these technologies will be more capable of meeting customer needs, as financial transactions are conducted online and on different platforms without the need for an intermediary. Examples of this are operations that are conducted without relying on banks. This scenario is called "undeveloped banks".

Based on the above the use of technology related to financial sector in banks may participatein provide financial services in easier, more effective and less costly ways, which enhances the development of their performance and helps in reaching wider segments of the public, which in turn improves profitability and positively affects their competitiveness.

Improving Profitability

The concept of profitability has become essential for any bank seeking to achieve growth and sustainability. Achieving sustainable profits contributes to the bank's ability to manage its resources efficiently and make appropriate investment decisions (Al-Alwan, 2023, p. 27). Profitability is defined as: "The net increase in the actual financial value that can be distributed to the bank's shareholders at the end of a certain period of time, without being negatively affected by the institution's own resources" (Al-Shaloul, 2021, p. 7).

Profitability in banks is considered one of the basic goals that financial institutions seek to achieve, as it contributes to maintaining the sustainability of their activity and continuity and enhancing their financial position. Profitability also enhances banks' equity and increases their ability to improve their solvency and liquidity, which helps them face banking risks and meet their obligations (Awinat, 2017, p. 23). In addition, profitability is an important source of capital generation, plays a role in building the confidence of depositors and attracting new investors, that can increase in the value of bank shares in the financial market as a result of the increasing demand for them (Al-Alwan, 2023, p. 31). Lending and investment operations are among the most prominent sources of profitability and revenues for banks, as bank revenues, which include interest and creditor commissions, are mainly formed from loans and advances, and these elements are considered essential factors that enhance bank revenues, as the total amounts granted as loans and advances are affected by marketing policies and competitive interest rates between banks, in addition to the increased demand for these financial services; This is positively reflected in the level of banks' profitability. In addition, the diversity of banking services can improve demand for their services, as this diversity contributes to the distinction of banks and positively affects their attractiveness, which directly enhances their level of profitability (Ben Shanna, 2017, p. 41).

Jordanian banks have adopted financial technology in recent years, realizing the potential of technology to enhance their services and improve customer experiences (Chinnasamy et al., 2021, P 137). Many banks in Jordan have also adopted financial technology solutions to simplify operations, offer innovative products, and meet the evolving desires of their clients in order to maintain their continuity and improve their profitability (Al-Nawayseh, 2020, P 153). Financial technology contributes to changing the way financial service providers operate, which fundamentally affects the nature of banks' work. This change is reflected in banking services and how they are provided to customers, which helps enhance competition in the digital landscape. Therefore, banks must adapt to the use of financial technology to achieve a competitive advantage, as they are funded with much larger shares compared to traditional banks (Rashwan and Qasim, 2013, p 70).

Previous Studies

Abu Arabi (2023) identified the effect of adopting the use of financial technology in its dimensions (technological context, regulatory context, and environmental context) on the performance of Jordanian banks. The study found that there is effect for adopting financial technology in its dimensions (technological context, regulatory context, and environmental context) on the Jordanian banks performance.

The study (Abdel Rahman and Sobh, 2023) designed to identify the effect of financial technology on the profitability of Egyptian banks for a sample of (10) banks for the period (2015-2021). The research analyzed previous studies in terms of the relationship between financial technology and profitability. ROE was used to measure profitability. The study concluded that financial technology positive effect on bank profitability.

In another study by (Guo& Yuan, 2021), the determinants of profitability in banks were discussed with a focus on financial technology, through a study that included six public commercial banks in China during the period (2014-2019). The return on equity rate was relied upon as a dependent variable and both the size of third-party payments (payment through a tool issued from a bank account other than the first-party account), the size of the market related to cloud computing, and the number of Internet finance users as independent variables expressing financial technology. The study concluded that the financial technology had aninverseeffect on the profitability. (Marlina, 2020) conducted a study that aimed to identify the impact of financial technology on the banks

profits, before and after cooperation with financial technology companies during the period (2014-2018). The study concluded that there

Were no changes in the profitability of banks levels, due to the short-term nature of the experiment and the lack of results in the short term. However, banks benefited from cooperative relationships with fintech startups and avoided the impact of these companies' competitive entry into the electronic payment sector and its impact on the net interest margin.On other hand Abu Orabi(2024) mentioned the importance of designing fintech products tailored to Jordanian Millennial needs and thus affect the banks performance.

It is clear from the above-mentioned studies that fintech may positively or negatively or don't changes affect the profitability and performance of banks, so this study came to identify the role of fintech in improving the profitability and performance of Jordanian banks.

METHODOLOGICAL PROCEDURES OF THE STUDY

STUDY METHODOLOGY

The study relied on the analytical approach; for its suitability to the study purposes related to the role of financial technology in improving the profitability of Jordanian banks, as this approach aims to analyze a research phenomenon, phenomenon factors, and explore the links between these factors.

Study community and sample:

The study community consisted of Jordanian banks, numbering (21) banks, and the researcher selected (Jordan Commercial Bank, Cairo Amman Bank, Arab International Islamic Bank, Union Bank, Safwa Islamic Bank, Arab Jordan Investment Bank, Jordan Islamic Bank, Housing Bank for Trade and Finance, Arab Bank, Jordan Ahli Bank), where the annual financial data used in measuring data and analyzing financial technology and financial performance were extracted through: financial reports, annual reports, and sustainability reports, for these banks during the period (2019-2024).

Study Variables:

Independent variable: Financial technology

To measure financial technology, the study relied on (the value of mobile phone transactions (MB), online financial services (IB), agency banking services (AB), and ATMs), as the value of mobile phone transactions reflects the provision and use of banking and financial services through mobile communication devices, in addition to online financial services, which contribute to facilitating access to these services and saving time and effort. The use of the Internet is also considered an effective means of collecting, storing, transferring and processing banking information quickly and efficiently. As for agency banking services, they provide banks with the ability to provide banking and financial services to their clients in various locations and in multiple ways, through a wide network of agents spread across different regions, which helps banks increase the number of customers and improve the quality of service provided to them. As for ATMs, they are devices that provide a range of financial services such as deposits, money transfers, withdrawals, and getting information without the need to go to the branch, as customers use an electronic card.

Dependent Variable: Profitability

To measure the relationship between financial technology and bank profitability, the study used the return on equity (ROE), which is defined as net profit as a percentage of shareholders' equity.

Control Variables: Interest Rate, Exchange Rate, and Bank Size

To measure the relationship between financial technology and the profitability of Jordanian banks, the study used (interest rate (IR), exchange rate (ER), and bank size (S)). The interest rate affects profitability positively or negatively depending on its direction. When the interest rate decreases, depositors' deposits of savings decrease, while an increase in the interest rate has aninverse impact on investment. while, exchange rates play an important role in financial performance. When the currency exchange rate increases, spending increases as a result of rising prices (inflation), which leads to a decrease in savings, and vice versa when the currency exchange rate decreases. As for the bank size, it refers to the total assets owned by the bank, as large banks have a greater ability to

differentiate between products and services compared to small banks. Therefore, the bank's large size allows it to gain a larger market share and increase profits.

STUDY RESULTS

Table No. (1) Indicate the analytical statistics for the study variables.

Table No 1. Analytical Statistics for Variables

Variable	Average	Median	Lowest Value	Highest Value	Standard Deviation
Value of Mobile Phone Transactions	5.499	5.431	0	8.988	1.336
Online Financial Services	5.968	5.876	0	8.987	1.623
Agency Banking Services	6.34	6.88	8.153	2.681	1.343
Automated Teller Machines	2.76	2.678	2.041	3.737	0.446
Rate of Return on Equity	223	177	3	2.061	0.368
Interest Rate	1.164	1.1967	0.942	1.264	0.104
Exchange Rate	1.137	1.208	0.877	1.257	0.1463
Bank Size	1.145	1.216	0.995	1.239	0.1487

This research relied on Pearson Correlation analysis to determine which of these variables is most closely related to return on equity.

Table No. (2) shows this:

Table No 2. Pearson Correlation Analysis

Variables	Transactios Mobile Money Services	Online Financial Services	Agency Financial Services	ATM Machines	Returnn Equity	Interest Rate	Exchange Rate	Bank Size
Transactions Mobile Money Services	1	-	-	-	0.87	-	-	-
Online Financial Services	-	1	-	-	0.78	-	-	-
Agency Financial Services	-	-	1	-	0.72	-	-	-
ATM Machines	-	-	-	1	0.84	-	-	-
Return on Equity	-	-	-	-	1	-	-	-
Interest Rate	-	-	-	-	0.77	1	-	-
Exchange Rate	-	-	-	-	0.87	0.94	1	-
Bank Size	-	-	-	-	0.79	0.81	0.93	1

Table No. (2) shows the value of the correlation coefficient between variables, as all values of the correlation coefficients for the study variables are strongly directly related, and all values are

statistically significant at a significance level of 1%, as interest rate variable and the return on equity variable have a correlation coefficient of (0.77), while the exchange rate variable and the return on equity variable have a correlation coefficient of (0.87), while the bank size variable and the return on equity variable have a correlation coefficient of (0.79). The previous table shows that the value of the correlation coefficient between the interest rate variable and the exchange rate variable is (0.94), meaning that there is a strong direct correlation, and it is also statistically significant at a significance level of 1%, while the value of the correlation between the bank size variable and the interest rate variable is (0.81), meaning that there is a strong direct correlation, and it is also statistically significant at a significance level of 1%, while the value of the correlation between the bank size variable and the exchange rate variable is (0.93), meaning that there is a strong direct correlation, and it is also statistically significant at a significance level of 1%.

This research found, based on what was mentioned above, that the control variables (interest rate, exchange rate, and bank size) play a vital role in influencing ROE. Therefore, it becomes difficult to use these variables to measure the relationship between ROE and FinTech services within a single model. Therefore, the study developed three models: the first includes the interest rate variable, the second focuses on the exchange rate variable, while the third deals with the bank size variable, based on the Generalized Method of Moments (GMM) as follows:

ROEit: Dependent variable

- $\alpha 1 ROEit-1$: Dependent variable with one lag

- Xkit: Independent variable

- αi: Impact coefficient of the independent variable

- Ui: Random error

The statistical analysis was done using the outputs of the E-Views 12 program, and Table No. (3) Shows that.

Table No 3. Study Models

First Model		**Second Model**		**Third Model**	
Variable	**Coefficient**	**Variable**	**Coefficient**	**Variable**	**Coefficient**
Value of Mobile Phone Transactions	0.881258	Value of Mobile Phone Transactions	0.8473	Value of Mobile Phone Transactions	0.7738
Online Financial Services	0.641	Online Financial Services	0.7375	Online Financial Services	0.6297
Agency Banking Services	0.0611	Agency Banking Services	0.6134	Agency Banking Services	0.7194
Automated Teller Machines	0.78	Automated Teller Machines	0.5904	Automated Teller Machines	0.8627
Rate of Return on Equity	0.403614	Rate of Return on Equity	0.8354	Rate of Return on Equity	0.6222
Interest Rate	0.841	Exchange Rate	0.4656	Bank Size	0.78026
Prob (J-statistic)	0	Prob (J-statistic)	0	Prob (J-statistic)	0

The previous table indicates that the first model showed that the statistical value of J reached 0.00000, which is less than 0.05. Therefore, the null hypothesis cannot be rejected at a significance level of 5% according to the Sargan test, which indicates that the model is significant. The first model can be expressed as follows:

ROE=0.403 ROEit-1+0.881 MB+0.780 ATM+0.841 IR+0.641 IB

The significance of four variables was proven: mobile banking, online banking, ATMs, and interest rate, with the role of each of them differing from the other. The results indicate that ATMs play a fundamental and significant role at a significance level of 5%; as increasing the number of ATMs by 1% leads to an increase in profitability by 0.780%, with other factors affecting profitability being constant. Interest rate also has a major and significant role at a significance level of 10%, which means that increasing interest rate by 1% leads to an increase in profitability by 0.841%, with other factors constant. As for mobile banking, it plays a major and significant role at a significance level of 5%, as increasing mobile banking transactions by 1% increases profitability by 0.81%, with other factors constant. As for online banking, it also plays a major and significant role at a significance level of 5%, as increasing online transactions by 1% leads to an increase in profitability by 0.641%, with other factors affecting profitability constant.

The previous table also indicates that the second model showed that the statistical value of J reached 0.00000, which is less than 0.05. Therefore, the null hypothesis cannot be rejected at a significance level of 5% according to the Sargan test, which indicates that the model is significant. The first model can be expressed as follows:

ROE=0.835 ROEit-1+0.847 MB+0.590 ATM-0.465 ER 0.737 IB+ 0.613 AB

The significance of all variables was proven, with the difference in the role of each one. The results indicate that ATMs play a fundamental and significant role at a significance level of 5%; as increasing the number of ATMs by 1% leads to an increase in profitability by 0.590%, with other factors affecting profitability constant. The exchange rate also has a negative significant role at a significance level of 10%, which means that increasing the exchange rate by 1% leads to a decrease in profitability by 0.465% with other factors constant.

As for mobile banking, it plays a major and significant role at a significance level of 5%, as increasing mobile banking transactions by 1% increases profitability by 0.847%, with other factors constant. As for online banking, it also plays a major and significant role at a significance level of 5%, as increasing online transactions by 1% leads to an increase in profitability by 0.737%, with other factors affecting profitability constant. While the results indicate that banking agencies have a major and significant role at a significance level of 5%, as increasing agency banking services by 1% leads to an increase in profitability by 0.613%, with other factors constant. The previous table also indicates that the third model showed that the statistical value of J reached 0.00000, which is less than 0.05. Therefore, the null hypothesis cannot be rejected at a significance level of 5% according to the Sargan test, indicating that the model is significant. The first model can be expressed as follows:

ROE=0.622 ROEit-1+0.773 MB+0.862 ATM+0.780 S+ 0.629 IB+ 0.719 AB

The significance of all variables was proven, with the role of each one differing from the other.

The results indicate that ATMs play a major and significant role at a significance level of 5%; as increasing the number of ATMs by 1% leads to an increase in profitability by 0.862%, with other factors affecting profitability being constant. Also, the size of the bank has a major and significant role at a significance level of 5%, which means that increasing the size of the bank by 1% leads to an increase in profitability by 0.880% with other factors being constant. As for mobile banking, it plays a significant and fundamental role at a significance level of 5%, as a 1% increase in mobile banking transactions increases profitability by 0.773%, ceteris paribus. As for online banking, it also plays a significant and fundamental role at a significance level of 5%, as a 1% increase in online transactions leads to a 0.629% increase in profitability, ceteris paribus. While the results indicate that banking agencies have a fundamental and significant role at a significance level of 5%, as increasing banking services by agency by 1% leads to an increase in profitability by 0.719%, with other factors constant. Based on what has been mentioned, the research finds that financial technology plays a vital role in improving profitability in the Jordanian banking sector. ATMs, mobile banking, and online banking have shown a positive and significant role on return on equity. Interest rate, exchange rate, and bank size are also important factors, but they have less impact compared to digital banking services.

CONCLUSION AND RECOMMENDATIONS

The study aimed to analyze the relationship between financial technology and improving profitability in Jordanian banks for the period (2019-2024) using the Generalized Method of Moments (GMM). The study used return on equity (ROE) to measure profitability, and used mobile banking (MB), internet banking (IB), number of automated teller machines (ATMs), and agency banking (AB) to measure financial technology, in addition to using some control variables including: interest rate (IR), exchange rate (ER), and bank size (S) to illustrate the relative importance of each variable in explaining the variance of other variables. The results showed that the increased financial technology plays a vital role in improving profitability in the Jordanian banking sector. ATMs, mobile banking, and online banking have shown a positive and significant role on return on equity. Interest rate, exchange rate, and bank size are also important factors, but they have less impact compared to digital banking services. In addition, many banks in Jordan have concluded strategic partnerships with telecommunications companies, which contributed to enhancing the spread of these services and facilitating their use.

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