

The role of banking technology in enhancing competitiveness

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Abstract : In view of the recent developments that occurred in all sectors in general and were reflected in the financial and banking sector in particular, which revolve mainly around technological developments through which many financial transactions and services have become carried out easily and flexibly after they used to take time and effort to complete. Therefore, banking technology is considered a new strategic direction that takes an effective role in shaping the future of financial transactions and services, which has affected all economic and financial sectors, which in turn has produced a number of financial tools that have contributed to the development of the banking industry, thanks to the widespread spread of technology at the global level, which has become an essential part. Of human life this matter prompted banks to take advantage of this feature to provide various banking services to their customers and meet their needs and desires, which was characterized by high flexibility in development compared to traditional means. In addition, the public's desire to deal with banks to acquire these electronic services helped banks accomplish their work.

First: methodology

1- Research problem: The process of using banking technology is one of the requirements of the current stage in the life of the Iraqi banking sector, as banks should consider it at the forefront of the strategies that they must adopt to confront challenges and threats and keep pace with technological developments taking place in the field of banking and technology, and also enable them to enhance or achieve... Competitiveness, and on this basis, the research problem is (Is there a role for banking technology in enhancing the competitiveness of the banking sector in the time period studied?), and several sub-questions branch out from the main question, which is as follows:

A - Is there a role for mobile banking services in enhancing the competitiveness of the banking sector in the time period studied?

B - Is there a role for banking services via ATMs in enhancing the competitiveness of the banking sector in the time period studied?

2- The importance of the research: The research gains its importance from the importance of the variables it discussed, which are considered modern variables in the field of financial and banking sciences. Banking technology is of special importance in modern banks, which are accelerating in providing various services in the era of technical progress in all fields, especially in the aspect of obtaining information. And using it in a way that enables it to achieve competitiveness in its work and in what it offers to customers. The importance of research can be determined by the following points:

A—Explaining the importance of the role that technology occupies in the field of the banking industry, which is a basic necessity in enhancing competitiveness in light of the challenges witnessed by the industrial world in this sector while paying attention to the element of banking technology as an important input for enhancing and improving the competitiveness of banks in the field of electronic banking.

B—Competitiveness contributes to creating a state of competition between the banks included in the banking sector, which prompts banks to improve their financial performance through increased use of banking technology and increased branches and their spread over a wide area within one country.

3— Research objective: The research seeks to achieve a set of objectives that complement each other to serve the main objective, which is to explain the role of banking technology in enhancing the competitiveness of the banking sector in the time series studied through its many innovations that contribute to carrying out transactions and services with the least effort and time possible, and can Determine these goals as follows :

1. Explaining the extent of the banking sector's commitment to developing its banking services by keeping pace with the technological development that the world is witnessing in banking services in a way that ensures the enhancement and improvement of competitiveness.

2. Analysis of the most widely used banking technology indicators in the sector, through which the level of competitiveness of the Iraqi banking sector can be measured for the time series studied.

3- The process of competing and surviving in the field of work has become a goal that every economic sector seeks to achieve after technology has become used in all areas of life. The sector may possess technology but is unable to achieve competitive advantage as it is the primary goal of competitiveness.

4- Research hypotheses :

1- Correlation hypotheses between the research variables, the most important of which is the main hypothesis: There is a significant correlation between banking technology and the competitiveness of the banking sector in the time period studied. Several sub-hypotheses branch out from the main hypothesis, as follows :

The first sub-hypothesis: There is a significant correlation between the mobile banking index and the competitiveness of the banking sector in the time period studied.

The second sub-hypothesis: There is a significant correlation between the banking services index via ATMs and the competitiveness of the banking sector in the time period studied.

2- The impact hypotheses among the research variables, the most important of which is the main hypothesis: There is a statistically significant effect of banking technology in enhancing the competitiveness of the banking sector in the time period studied. Several sub-hypotheses branch out from the main hypothesis, which are as follows:

The first sub-hypothesis: The mobile banking index has a statistically significant effect on enhancing the competitiveness of the banking sector in the time period studied.

The second sub-hypothesis:

There is a statistically significant effect of the banking services index via ATMs in enhancing the competitiveness of the banking sector in the time period studied. **Second: The theoretical aspect of the research**

1- **The concept of banking technology:** Technological progress has contributed to many changes and developments in the field of banking. The economic impact of new technology depends on the rate of increase of that technology and the extent of banks' ability to employ the tremendous progress in communications and information technology and manage it in a way that supports their competitive position. It improves it, thus increasing the efficiency of systems and methods for data processing and decision-making on the one hand and increasing competitive pressures on the other hand, Banking technology, as defined by (AlBahi, 2016: 13), is the process of providing banking operations in innovative and modern ways through electronic communication networks, whether the matter is related to traditional or new banking operations. Access powers to these services are limited to those participating in them in accordance with the conditions of proof determined by the bank and in this type. Among the services, the customer will not be forced to come to the bank, and from the researcher's point of view, she believes that the concept of banking technology is: (tools or means that help banks or institutions achieve their goals and maintain their position by contributing to meeting customers' requirements efficiently and with high speed).

2- **The importance of banking technology:** Due to the increase in the volume of banking activity and the expansion of its spread, bank management has paid increasing attention to introducing electronic technologies into banking work to keep pace with the increasing development in banking services by providing the latest advanced machines and computers. The banking sector is considered one of the most qualified sectors and is capable of adapting to developments. Thanks to the flexibility and special capabilities it possesses (Al-Rubaie, 1998: 25), banking technology is currently gaining great importance and can be limited to the following points: (Aqila, Sahihi, 2018: 93)

Promoting financial inclusion, inclusive growth, and diversification of economic activity through innovations that help provide financial services.

1- Facilitating the availability of alternative financing sources for small and medium enterprises. 3- Achieving financial stability through the use of technology to ensure compliance with regulatory rules and risk management.

2- **Objectives of banking technology:** A bank is a purposeful system that contains more than one subsystem, all of which share the general goal for which the system works as a whole, which is an ordered and organized assembly of separate components, each of which has a specific goal and is dependent on each other in order to achieve the general goals of the bank.

There are several goals that banking technology can achieve, whether at the government sector level or at the private sector level and in various fields and departments, including the following: (Muhammad, 1987: 25) (Jazia, Muhammad, 2019: 156)

1-Banking technology seeks to reduce current costs, thus allowing a greater number of users to access financial and private services for companies and unbanked individuals.

2- Transparency and reducing fraud and errors.

3- Providing accurate and updated information, meaning making the right decisions. 4- Spreading such that banking technology products and services can cross borders, as they can serve customers who do not belong to one geographical spot.

4- **Banking technology standards:** To identify the variables of banking technology, we must know the tools and indicators through which these variables are measured, and through reviewing sources and references, the most important of these standards were identified:

1- Mobile banking: (Ayswarya, et al, 2019:650) indicated that this type is considered a financial transaction that is conducted by logging in to the bank's website by using a mobile phone and completing the operations required by the customer electronically, and the financial equation that explains This dimension is as follows:

$$\text{Mobile banking} = \frac{(\text{mobile phone electronic payment})}{(\text{internet electronic transaction value})} \quad (\text{Mohammed, 2020}).....(1)$$

2-Banking services via automated teller machines (ATM): The ATM, according to what Taalou (2013:281)

$$\text{Banking services via ATMs} = \frac{\text{number of issued electronic cards}}{\text{total number of customers}}) / 100 \quad (\text{Peter, et al 2020})....(2)$$

sees, is one of the machines that can be deployed in various places, whether on the bank wall or independently. In this case, it is connected to the bank's computer network and its function is to complete some transactions. Financial (withdrawal) at

any time, and we can explain the mathematical equation for this measure as follows:

The concept of competitiveness: Banks operate in a banking environment in which competition has intensified, especially with progress in the field of information technology, which has prompted banks to search for ways to attract customers and expand their market share. The continuity of the activity of any organization depends on its ability to compete in the environment in which it is established and to keep up with it. The development that occurs in this environment, and the concepts of competitive ability have multiplied to include (Qasim, Nassour, et al., 2014: 83) according to Macmillan & Mahan, that competitive ability is a characteristic, a set of characteristics, or an element of superiority for the organization that is unique to it and enables it to maintain it for a long period of time due to the difficulty of imitating it. This period brings benefits to them and enables them to outperform competitors. They also confirm that organizations seek to excel in their business environment by possessing and maintaining competitiveness. As it is the means through which the organization can win over its competitors, and competitiveness is established once the organization reaches to employ new methods that are more effective than those that were used by competitors. From the above, the researcher believes that competitiveness is (a dynamic process that constantly changes with its internal components, which include technical and human resources, systems, and results, and that building the bank's competitiveness goes beyond looking at the individual manifestations of some of the bank's capabilities in specific areas).

5- **The importance of competitive ability:** Competitive ability is of particular importance to enterprises because it has a major role in achieving the enterprises' strategies and goals, the most prominent of which is sustainability in achieving profit. This is because competitive ability contributes to achieving the following: (Jabr et al., 2008: 185)

1. Achieving market power by controlling the market share of the goods or brands that it offers in the target markets.

2. Developing new goods or services.

3. Finding and developing new technology that leads to reducing costs for the product or brand.

7- Objectives of competitiveness: Competitive policy aims to encourage competition as well as create the appropriate competitive

environment in local and global markets by enhancing the level of market competition and achieving effectiveness in employing resources and fair entry into and exit from markets, in addition to protecting the consumer from monopoly, and these objectives are achieved. Through many elements, which are summarized as follows: (Hassan and Marzouk, 2020:3)

1. Providing a market environment in which price and marginal cost of production are equal.
2. Preventing excessive concentration and discouraging inflexible production structures.
3. Protecting the consumer from monopoly (which causes increased prices and reduced supply).

8- The theoretical relationship between banking technology and competitiveness: Banking technology is a set of important tools that make the bank more efficient and helps it understand opportunities and challenges better. Therefore, it is important for any bank to know how to use the technological tools available to it, and to determine the type of technology appropriate to the nature of its business. And consistent with its objectives, because technology is one of the most prominent advantages and challenges facing banking in general. (Haag et al, 2007:10), and (Marzuk, 2004: 25-26) believes that competition is an outcome of contemporary technological developments and is a result of liberalization and openness to the outside world, All organizations are currently facing intense competitive force, such that it has become difficult to find an organization active in the market on its own without the presence of another organization that confronts or competes with it, whether these organizations produce the same type of products or alternative products to the organization's products. Therefore, any organization that desires to achieve success and continuity within a specific market must be fully aware of competitors and the market in which it is active by collecting information and conducting studies and research in order to achieve its long-term goals. Competition means the presence of a number of organizations that meet the same needs, desires and tastes of consumers through the products they provide. And services, and these companies compete in the markets through the products they provide that satisfy what the consumer needs and desires.

Third: The practical aspect of research

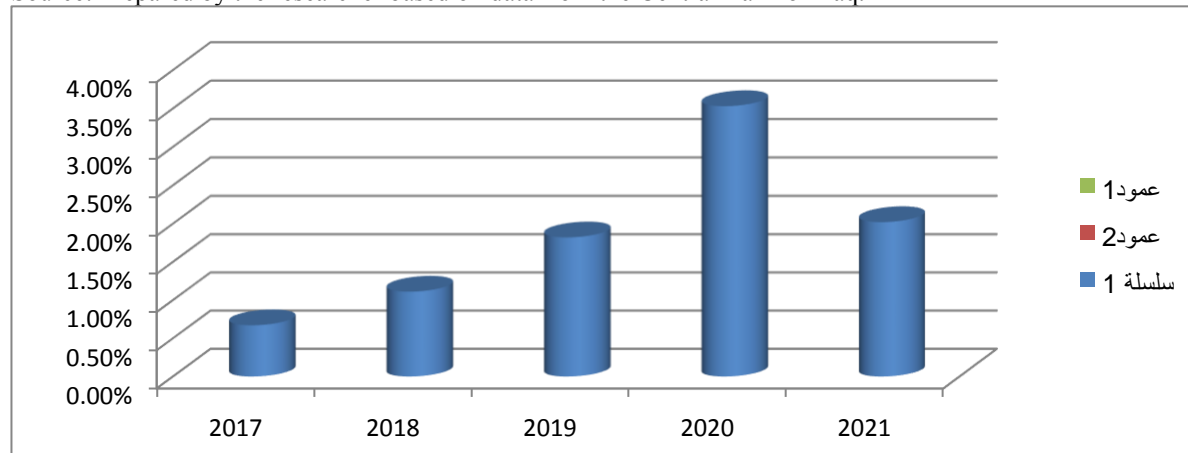
1- Financial analysis of banking technology indicators:

A - Financial analysis of the mobile banking services indicator: The mobile phone service is a financial transaction that is conducted by logging into the bank's website and using the mobile phone. The operations required by the customer are performed, and the data is obtained from the financial stability website of the Central Bank and from the application. Financial Equation The financial ratios for the index were obtained, and the quality and development of this service in the banking sector were obtained for the period studied, as shown in Table No. (1):

Table 1) Mobile banking service index for the banking sector for the period (2017-2021)

The years	2017	2018	2019	2020	2021
Mobile service	0.67%	1.11%	1.82%	3.53%	2.02%

Source: Prepared by the researcher based on data from the Central Bank of Iraq.



Source: Prepared by the researcher based on data from the Central Bank of Iraq.

Figure (1) Mobile banking index for the banking sector for the period 2017-2021

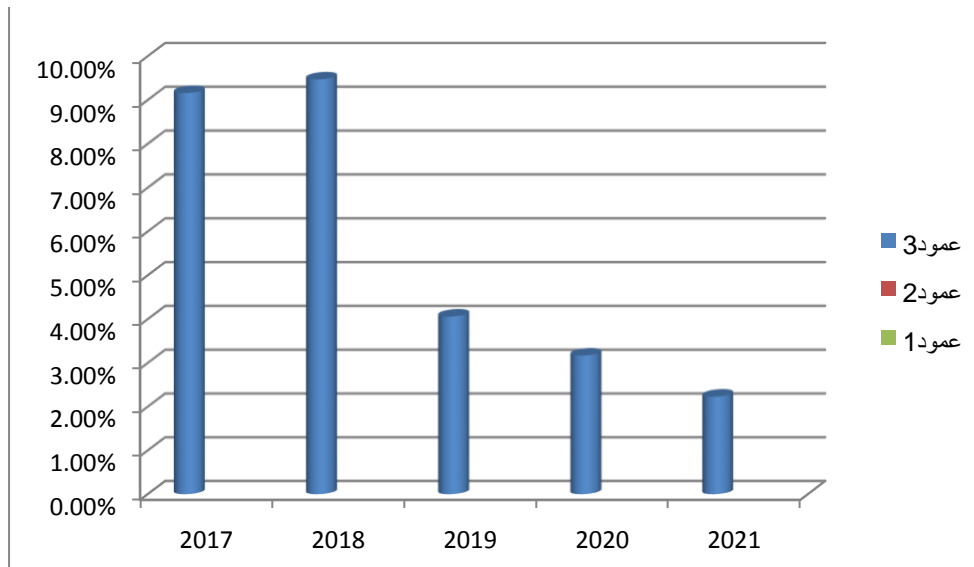
We note from the increase in the financial ratios for the year (2020), and as shown in Figure (1), that the percentage of use of the mobile banking service reached (3.53%) and declined in the following year and became (2.02%), despite the decline in the year. However, it is higher than the first three years, and when reviewing the level of technology use in all Iraqi banks, we notice that the year (2017) was the beginning of the move towards the real electronic trend, which then developed in the two years ((2018, 2019)).

B - Financial analysis of the banking services index via ATMs: The ATM is considered the means of accessing the banking service at the required speed and with the lowest cost, and the data obtained from the financial stability website of the Central Bank and from applying the financial equation for the index, financial ratios were obtained and the degree of development was known. The quality of this service in the banking sector for the period of time studied is shown in Table No. (2)

Table (2) Banking service index via ATMs for the banking sector for the period (2017-2021)

The years	2017	2018	2019	2020	2021
Service via ATM machines	9.16%	9.47%	4.06%	3.17%	2.23%

Source: Prepared by the researcher based on data from the Central Bank of Iraq .



Source: Prepared by the researcher based on data from the Central Bank of Iraq.

Figure (2) Banking services index via ATMs for the banking sector for the period 2017-2021

We note that this service has witnessed a remarkable development and increase in the year (2017), reaching (9.16%), and its increase increased in the year (2018) to reach (9.47%), as shown in Figure (2), and in the last three years it declined to reach the year (2019).) to (4.06%) and in (2020) to (3.17%) until it reached (2.23%) in (2021).

2-Descriptive statistics of banking technology indicators for the banking sector Table(3) The general average of banking technology indicators for the banking sector for the period (2017-2021)

Indicator	Mean	Maximum	Minimum	Std. Dev.		Bera	Jarque-Probability
Mobile banking			1.83	0.67	1.09	0.45	0.80
Banking services via ATMs			5.62	2.23	3.44	0.73	0.69
			3.72		3.51		

General Average						
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Source: Prepared by the researcher based on the results of the statistical program .

A-Description and analysis of the mobile banking index: Table (3) displays the results of describing and analyzing this index by determining the arithmetic mean and standard deviation and using the statistical program (Eviews10). We notice that the index has reached (1.83), which is a low rate compared to the general average of the average. The arithmetic rate reached (3.72), and the standard deviation rate reached (1.09), which is also a low rate compared to the general standard deviation rate, which amounts to (3.). This means a decrease in the level of banking service provided to customers via mobile phone for the time series studied in the Iraqi banking sector due to the decrease in online transactions, and to test the normal distribution of the data of the mobile banking service variable, the Jarque-Bera test was used, and it is clear from Table (14) that the data Normally distributed because the probability value for this service, which is equal to (0.45), is greater than the value of the level of significance, which is equal to (0.05).

B- Description and analysis of the banking services index via ATMs: Based on the data available for the banking services index via ATMs, Table (14) displays the results of the description and analysis of this indicator by determining the arithmetic mean and standard deviation and using the statistical program (Eviews10). We note from the table Above, the arithmetic mean obtained by the sector for the variable reached (5.62), which is a low rate compared to the general average of the arithmetic mean, which reached (26.22), and the standard deviation rate reached (3.44), which is also a low rate compared to the general standard deviation rate, which amounts to (24.76).), This means a decrease in the level of banking service provided to customers via ATMs for the time series studied in the Iraqi banking sector due to the decrease in the number of electronic cards issued and the total number of customers as well as the number of electronic transactions. To test the normal distribution of the data for this variable, the Jarque-Bera test was used, and it is clear from Table (14) The data is normally distributed because the probability value for this service, which is equal to (0.73), is greater than the value of the level of significance, which is equal to (0.05 .)

3-Analyzing the correlations and influence between the research variables 1- Analyzing the correlation between the research variables

In this section, the results of analytical statistics will be discussed, represented by analyzing the correlation between the research variables based on Pearson's R. Table (4), which represents the correlation matrix between the research variables, is as follows :

Table No. (4) Correlation matrix between the research variables

Search variables	Competitiveness	X1	X2
Competitiveness	1.00	0.27	0.37
X1	0.27	1.00	0.23
X2	0.37	0.23	1.00

(*-Correlation is significant at the 0.01 level (2-tailed)) (**-Correlation is significant at the 0.05 level (2-tailed))

Source: Prepared by the researcher based on the statistical program (Eviews10).

The main hypothesis: There is a significant correlation between banking technology and the competitiveness of the banking sector in the time series studied, and sub-hypotheses emerged from it, which are as follows:

The first sub-hypothesis: There is a significant correlation between the mobile banking index and the competitiveness of the banking sector in the time period studied.

The second sub-hypothesis: There is a significant correlation between the banking services index via ATMs and the competitiveness of the banking sector in the time period studied.

According to the results of Table (4), which presented the results of the correlation coefficient between banking technology (X) and competitiveness (Y), we begin with the first sub-hypothesis related to the mobile banking services index (X1). The correlation coefficient with competitiveness (Y) amounted to (0.27) It was found that there is a

significant (weak positive) relationship between the mobile banking services index (X1) and competitiveness (Y), which is significant at the significance level (0.05), and according to these results, the first hypothesis is accepted at the level of the current research.

As for the second hypothesis, which is related to the indicator of banking services via ATMs (X2), the correlation coefficient with competitive ability (Y) amounted to (0.37), and it was found that there is a significant (weak positive) relationship between the indicator of banking services via ATMs (X2) and competitive ability. Y is significant at the level of significance (0.05), and according to these results, the second hypothesis is accepted at the level of the current research.

2- Analyzing the relationship of influence between research variables

In this section, the results of analytical statistics for the research hypotheses will be discussed for the purpose of diagnosing their acceptance or rejection based on the statistical program (Eviews 10), and through discussing the results of testing and analyzing the influence between the research variables based on simple regression analysis, we learn about the effect of the independent variable on the dependent variable, as it was compared The calculated level of significance is combined with the approved level of significance (0.05). The effect is morally significant if the calculated level of significance is smaller than the approved level of significance and vice versa. The researcher assumes the main hypothesis and a number of sub-hypotheses, relying on the simple linear regression equation, which is as follows:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Main hypothesis: Banking technology has a statistically significant effect on enhancing the competitiveness of the banking sector in the time series studied. In order to test this hypothesis, two sub-hypotheses are derived from it, which are as follows:

The first sub-hypothesis: The mobile banking index has a statistically significant effect on enhancing the competitiveness of the banking sector in the time period studied. This means that competitiveness (Y) is a real function of the mobile banking index (X1) according to the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Table (5) shows the results of testing the impact of the mobile banking index on the competitiveness of the banking sector for the period 2017-2021:

Table (5) Results of testing the impact of the mobile banking index on the competitiveness of the banking sector for the period 2017-2021.

the decision	Prob.	t-Statistic	Std.Error	B(Coefficient)	Dependent	Independent variable
admissions	0.000	0.89	0.49	0.60	Y	X1
Cross-sectional least squares method					1.45	constant (c)
Method : Pooled least Squares $Y = (1.45) + 0.60X_1$					0.07	Coefficient of determination (R^2)
					0.80	F-statistic
					0.4	(F) Significant level

Source: Prepared by the researcher based on the statistical program Eviews10.

It is clear from Table No. (5) that the coefficient of determination (R^2) indicates a coefficient of (0.07), which means that the mobile banking services index explains 7% of the variance in the competitiveness of the banking sector and that (0.93) of the unexplained variance is due to variables. It was not included in the regression model, which is an acceptable percentage based on the level of significance (T) of (0.000), which is smaller than the level of significance

(0.05) that the researcher assumed. This is confirmed by the calculated value of (F) which is (0.4), which is smaller than the level of significance (0.05), which the researcher assumed.

In light of the regression equation, the constant indicates ($\beta_0=1.45$). This means that there is a competitive ability of (1.45) when the indicator is zero. The value of the marginal slope or influence factor for the mobile banking indicator has reached ($\beta_1=0.60$). It is acceptable based on the level of significance (0.05) assumed by the researcher, which indicates that changing one unit of NPAS leads to a change of (0.06) in competitive ability (Y).

Based on the above results, the first sub-hypothesis is accepted, which states (there is a statistically significant effect of the mobile banking index (X1) in enhancing the competitiveness (Y) of the banking sector in the time period studied).

The second sub-hypothesis: There is a statistically significant effect of the banking services index via ATMs in enhancing the competitiveness of the banking sector in the time period studied. According to the least squares method (Panel Data), the hypothesis will be tested. This means that competitiveness (Y) is a real function of the banking services index via ATMs (X2), according to the following equation :

$$Y = \beta_0 + \beta_1 X_2 + \epsilon$$

Table (6) shows the results of testing the impact of the banking services index via ATMs on the competitiveness of the banking sector for the period 2017-2021 :

Table (6) Results of testing the impact of the banking services index via ATMs on the competitiveness of the banking sector for the period 2017-2021.

the decision	Prob.	t-Statistic	Std. Error	B(Coefficient	Dependent	Independent variable
admissions	0.000	-0.40	1.54	0.78	Y	X1
Cross-sectional least squares method Method : Pooled least Squares $Y = (2.23) + 0.78 X_2$					2.23	constant (c)
					0.13	R^2 Coefficient of determination
					2.16	F-statistic
					0.02	F(Significant level

Source: Prepared by the researcher based on the statistical program Eviews10.

It is clear from Table No. (6) that the coefficient of determination (R^2) indicates a factor of (0.13), which means that the indicator of banking services via ATMs explains 13% of the variance in the competitiveness of the banking sector, and (0.87) of the unexplained variance is due to variables that were not included in the regression model, which is acceptable based on the level of significance (T) of (0.000), which is smaller than the level of significance. (0.05), which the researcher assumed, and what confirms this is the calculated (F) value (0.02), which is smaller than the significance level (0.05), that the researcher assumed.

In light of the regression equation, the constant indicates (2.23 $[(\beta_0=)]$) and this means that there is a competitive ability of (2.23) when the indicator is zero. Either the value of the marginal slope or the influence factor for the banking services indicator via ATMs has reached (0.78 $\beta_1=$), which is acceptable based on the level of significance (0.05) assumed by the researcher, which indicates that changing one unit of NPAS leads to a change of (0.78) in competitive ability (Y).

Based on the above results, the second sub-hypothesis is accepted, which states (there is a statistically significant effect of the banking services indicator via ATMs (X2) in enhancing the competitiveness (Y) of the banking sector in the time period studied).

Conclusions :

- 1- Mobile banking services increased slightly after their decline at the beginning of the research period. This is a result of the Central Bank's real direction towards developing electronic banking services.
- 2- Banking services via ATMs increased at first but then decreased. We conclude from this that banks' orientation and reliance on them in the banking sector decreased, which resulted in their decline.
- 3- The results of the financial analysis of competitiveness indicators show the ability of the banking sector to provide innovative banking services at competitive prices, which is reflected in an increase in attracting the largest number of customers.
- 4- Banking technology contributes significantly to improving the quality of banking service and helps raise its level by paying attention to the speed of access to electronic banking services produced by this technology.
- 5- There is a significant correlation between banking technology (the independent variable) and competitiveness (the dependent variable) of the banking sector for the period 2017-2021 .
- 6- There is a statistically significant effect between banking technology (the independent variable) and competitiveness (the dependent variable) of the banking sector for the period 2017-2021 .

Recommendations :

- 1- The banking sector needs to increase interest in mobile banking services and ensure that supervisory and regulatory authorities adopt such modern standards and indicators and strive to develop them.
- 2- The banking sector must pay attention to developing its banking business as well as providing advanced means and methods that help improve modern electronic payment methods.
- 3- The research recommends the need to pay attention to banking technology by providing better banking services that satisfy the needs and desires of customers while at the same time relieving the burden on banks because of its positive effects on the future of the banking sector.
- 4- Giving great importance to the sector when designing its banking services in the future in light of banking technology and taking into account the ease of access and use of these services because these two standards have demonstrated a significant impact within the dimensions of banking technology.
- 5- The necessary attention to increasing public confidence in the banking system, as well as urging them to deposit their savings in banks and educating them on the importance of banking.
- 6- It is imperative for the entire banking sector to keep pace with modern developments in banking technology standards, as the rise in these standards helps to develop the sector in all its banking activities.

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