The Relationship Between Fintech And Market Share

"An Applied Study On Banking Sector in Egypt"

submitted by

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ABSTRACT

The Egyptian banking sector is focused on promoting local innovations and enhancing reliance on digital financial solutions, services, and products to achieve greater financial inclusion. To meet the current needs for financial solutions in our modern era, the sector aims to establish a regulatory framework for new technical solutions, provide financing opportunities, and ensure effective market governance. Through fintech and innovation strategy, the sector is working towards these goals.

The purpose of this study is to identify the relationship between financial technology and market share, an applied study on the Egyptian banking sector. The researchers relied on the deductive approach, by using statistical analysis for data of time series during the period (2013- 2022).

The study found there is an impact of FinTech on market shares of the egyptian banks through existing and potential clients, by influencing the level of client satisfaction, on the other hand, FinTech is improving the perceived mental image of banks. As Well as financial technology affects positively on the performance of banks.

Keywords: Fintech, Market share, Market Stability, Alternative Financing, Digital Payments.

1. Introduction

Fintech has significantly transformed the world of financial transactions, significantly changing the traditional financial system (Harsono & Suprapti, 2022). Not so long ago, clients had to visit an institution or a bank to conduct any financial or business operation, but now, with the help of applications on a mobile phone, we can easily do all these operations without going to the bank (Ozili, 2018).

Technology disrupted the traditional financial system that was based on intermediaries and led to a shift to the so-called decentralization, so reducing time and costs were the results of these applications (OECD, 2022).

The spread of FinTech in the Egyptian banking sector is hindered by weak technological infrastructure and an aging staff. Additionally, FinTech firms pose a strong challenge to established banks in the sector. As a result, the banking sector in

Egypt still has a long way to go in ensuring financial inclusion for the majority of its population (Mostafa, 2021).

According to the Central Bank of Egypt (CBE), the leading five financial institutions held a significant share of deposits. The top 10 banks covered around 78% of the total deposits in the banking sector, while the top five alone had a share of just over 70%. Banks in Egypt need to catch up in terms of online solutions for example, online banking penetration in the country was only 11.65% in 2021 according to the Central Bank. These factors also challenge regulators: most bank's risk management systems and overall resilience remain untested in an economic downturn. Not only do FinTech firms take on more risks themselves, they also exert pressure on long-established industry rivals (CBE, 2021) .

2. Literature Review

2/1 Fintech

"Fintech" is a term used to describe the digitalization of the financial sector. Fintech refers to the use of advanced technology, mostly internet-based, in the financial sector. This term describes modern technology that enables or provides financial services such as internet-based technology in the fields of e-commerce, mobile payments, or early-stage crowd-based financing, which can also be referred to as crowdfunding and crowd investing (Boot et al., 2021).

In other words, Fintech is the application of technology in the financial industry to increase financial activities. (Schueffel, 2016).

The term "Fintech" is not limited to any specific industry, such as the financial industry, or any particular business models like peer-to-peer (P2P) lending. Instead, it encompasses all financial products and services that the financial industry has traditionally provided (Mello, 2018).

Financial technology is mainly defined as emerging business models, new technology applications, new product services, etc., which are driven by emerging technologies such as big data, blockchain, cloud computing, and artificial intelligence, which have a major impact on financial markets and financial services. The term was initially used to signify technological cooperation between new market entrants and incumbent firms, although, many now only discuss FinTech in terms of disruption. FinTech can generally be understood in terms of the electrification and digitalization of banking and financial record, bank accounts and ledgers, and their use in innovative and unconventional ways. FinTech can be defined either in terms of market function, market institutions, market technology, market structure, or market impact and disruption (Feyen et al., 2021)

Significant progress in financial technology and FinTech product models has opened up new growth opportunities for emerging internet finance companies. However, this progress has also given rise to significant threats, particularly in terms

of market and regulatory dislocation, division, depletion, and distraction (Li et al., 2019).

"Fintech" is a word used to refer to technological advancements that aim to enhance the provision of financial services. These advancements include mobile banking apps, cryptocurrencies, artificial intelligence, and machine learning. Fintech has transformed the banking industry by changing how financial services are delivered, how customers connect with their banking providers, and the overall competition in the industry (Hasan, 2023). Here are some of the most notable ways in which fintech has influenced banking services:

A. Faster and Easier Access to Financial Services:

Fintech has had a major impact on the banking industry by making services more accessible and faster. With the help of fintech innovations such as mobile banking apps and digital wallets, consumers can now access their bank accounts, pay bills, and transfer money in a matter of seconds. Moreover, fintech has replaced traditional banking processes that were once time-consuming and labor-intensive, such as lending and investing (Hasan, M, 2023).

B. Improved Security:

Fintech has significantly contributed to improving the security standards of the banking industry. This is majorly attributed to the implementation of advanced technologies like biometrics and blockchain. Biometrics, such as fingerprints

and facial recognition, have made it increasingly difficult for fraudsters to access consumer accounts. On the other hand, blockchain technology, which is a type of distributed ledger technology, has considerably enhanced the safety of payments and transactions (Baker, 2023).

C. Increased Competition:

The banking industry has faced increased competition with the emergence of fintech. Fintech startups have introduced innovative products and services that traditional banks are unable to offer, giving consumers more choices. This has put pressure on banks to innovate and keep up with the competition (Hasan, M, 2023).

2/2 Market share

The banking industry has witnessed a surge in competition due to the rise of fintech. Fintech startups have brought in a wave of innovative products and services which traditional banks are unable to offer. This has resulted in an increased number of options for customers and has put pressure on banks to keep up with the competition by innovating themselves (Asif & Alam, 2023).

Muzayyin & Darwanto (2022) suggest that market share analysis should be competitive, descriptive, and profit-oriented. Mauboussin & Callahan (2022) believes that Competitiveness emphasizes that any assessment must be in the

context of the position and decisions of competitors, including potential entrants, so it is important to study how changes in market share led to changes in profitability.

Farris et al., (2010) have defined market share as "The percentage of a market (defined in terms of either units or revenue) accounted for by a specific entity". Arguably, Market structure is defined by "the number and distribution of firms within an industry". Three aspects of market share **(stability, Market growth rate, and concentration)**, can provide insight into potential sustainable competitive advantage (Dranove et al., 2017; Edeling & Himme; 2018), the following sentences describe these aspects in some details:

A. Market Share Stability:

Instability in a market makes it difficult to create value over time, this instability can arise from various sources, such as new competitors, technological changes, changing consumer demands, and competitive actions. Market share instability provides information about the nature of competition and is a measure of mobility within the industry. There have been methods to measure market share stability for over half a century. Bruce Greenwald popularized an approach based on the average absolute value of market share change. To use this approach, you examine the market shares of each company in an industry over two periods, which are usually three to five years apart, and calculate the absolute value of the change for each (Mauboussin & Callahan, 2022)

B. Market Concentration:

Market concentration refers to the degree to which market shares are held by a small number of firms (Affeldt et al., 2021). To estimate the number of competitors and the potential concentration, we can consider the relationship between the Minimum Efficient Scale (MES) and the Total Addressable Market (TAM), MES is the output level at which a bank achieves its long-term average cost, to calculate MES, we take into account a bank's sales and fixed costs, which are the costs that do not vary with the output. If a company has not yet achieved MES, it will be at a disadvantage compared to larger competitors. Therefore, MES provides a useful indication of how much market share a company needs to be competitive (Knee, 2021).

C. Market Growth Rate:

The way an industry grows can affect the financial performance elasticities and market share of the firms. In markets where the primary demand is fixed and mature, firms can increase their sales only by growing their own market share at the expense of their competitors. This can lead to firms overprioritizing market share as a business objective and engaging in activities such as price wars, which can ultimately reduce profitability. On the other hand, firms competing in less mature markets can increase their market share by growing faster than their competitors, which does not necessarily require aggressive competitive behavior (Himme, 2018).

2/3 The Relationship Between Fintech And Market Share

FinTech's impact on banking is growing, as many products are information-based and can be purchased from various providers. Additionally, modern data analysis methods and IT allow for digital individualization of financial services (Gautam & Khare, 2014), making these services more customer-oriented. The financial experts believe that for traditional financial services companies (including banks, insurers and wealth and asset management companies) the risk of disruption is real.

According to (Wadea and Habib, 2023), there are five factors that influence how banking clients interact with FinTech banking services. These factors are client centricity, availability, security, acceptability, and transaction costs. Out of these, client centricity is the most important factor. If FinTech banking services do not cater to the customer's needs and preferences, they are unlikely to be successful. The level of competition between banks is also an important factor that affects the perception and behavior of bank clients. The model of interactive marketing with FinTech banking can support many aspects of bank client perception and behavior. A summarized relationship between fintech and market share is presented in the figure below.

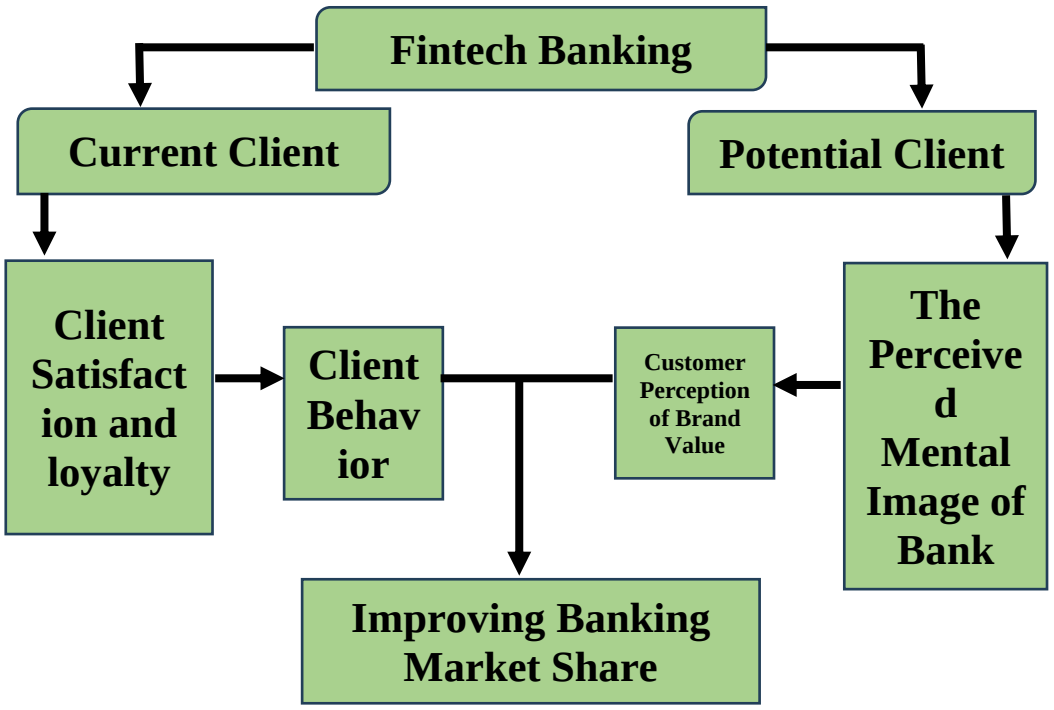


Figure (1) The Relationship between Fintech and Market share

Source: (Wadea and Habib, 2023)

3. Fintech Facts in Egypt

This part discusses the most important indicators regarding to fintech in Egypt, so we will divide it into four parts as below:

3-1 Fintech In Egypt compared to Arab world countries

We have identified more than 330 fintech solutions operating in the Arab world's 22 countries as of 2019. While fintech solutions have been identified in nearly every country in the region, 75% are concentrated in just a few countries. The following figure explains the facts.

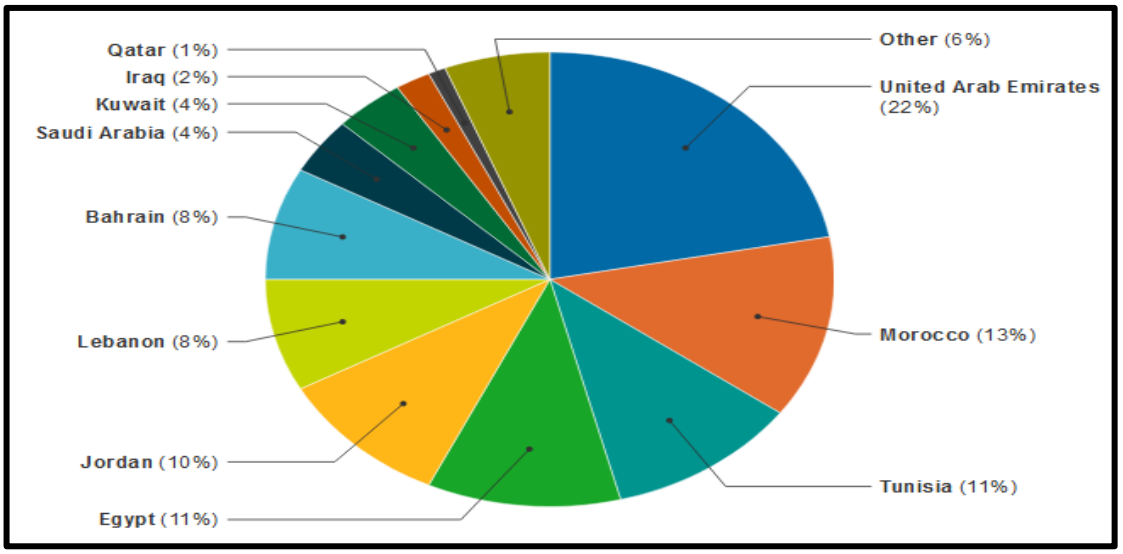


Figure (2): Fintech In The Arab World

Source: (Chehade. N, 2023) Mapping Fintech Innovations in the Arab World, [Online], Available at: https://www.cgap.org/blog/mapping-fintech-innovations-in-arab-world [Accessed October 2023].

The United Arab Emirates leads the region in fintech solutions, with 22%, followed by Morocco at 13%, Tunisia and Egypt at 11% each. In addition to, Central

Bank of Egypt Fintech Report 2022 stated that 14% increase in fintech companies numbers in Egypt in 2022. The number of fintech companies in Egypt increased from 155 in 2021 to 177 in 2022, an increase of 14%.

3-2 Fintech Transactions Indicators:

Many indicators should be mention during studying fintech transactions in Egypt. as following;

Table (1) Fintech Transactions Indicators

Item	Number or Value
INSTAPAY Registered customers	2.16 M
INSTAPAY Transactions Volume	20.3 M
INSTAPAY Transactions Value	112.7 B EGP
The Number of Cards	57.8 M
Mobile Wallets	30.4 M
Point of Sales	940 K

Source: Central Bank of Egypt, Egypt Fintech Landscape Report (2022)

The mentioned indicators witnessed a significant increase during the previous three years, according to reports from the Central Bank of Egypt. It is clear from the previous table that the number of people who have an Instagram account in Egypt amounts to 2.16 million, and the volume of transactions through Instagram reaches 20.3 million, with a transaction value amounting to 112.7 billion pounds. Egyptian, according to the statistics of the Central Bank of Egypt for the year 2022, and the total number of paid cards reached 57.8 million cards, while the number of

transactions performed on electronic wallets reached 30.4 million during the year 2022, and finally the number of points of sale reached 940 thousand points of sale.

3.3 Startups Indicators:

This section describes a set of data on fintech startups; specifically, this part deals with the number of startup companies in Egypt, their locations, and the sectors in which they operate, as follows:

3.3.1 The Number of Startups:

The indicator of the number of startup companies gives an impression of the extent of interest of individuals and institutions in investing in the field of financial technology in Egypt within 5 years, and the following figure shows these numbers.

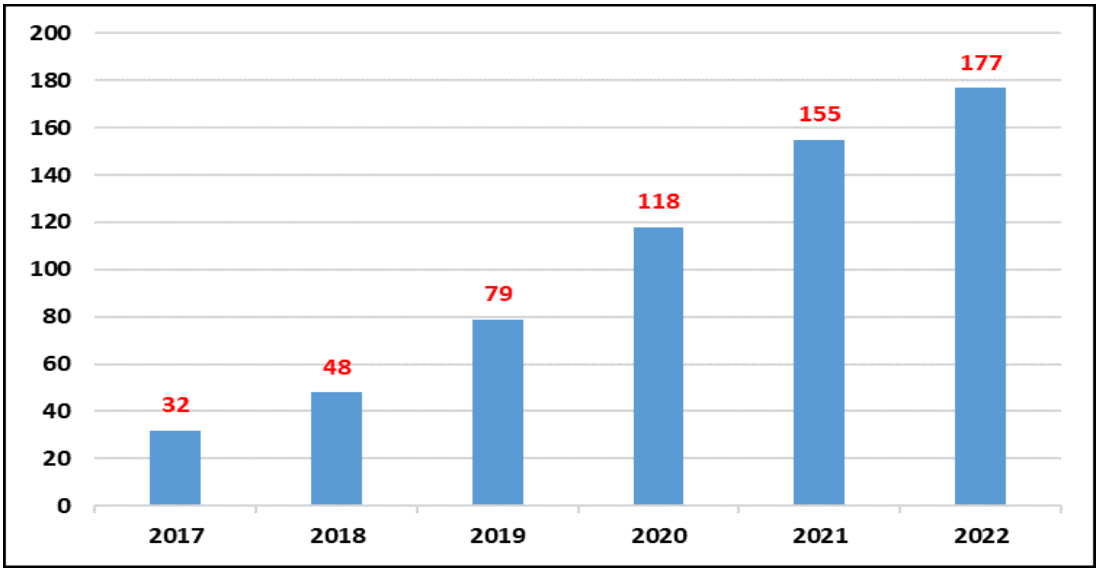


Figure (3) the Number of Startups in Egypt During the Period (2017-2022)

Source: Central Bank of Egypt, Egypt Fintech Landscape Report (2022)

The previous figure shows that the number of emerging companies in the fintech in Egypt has increased from 32 companies in 2017 to 177 companies in 2022, and 95% of these companies were established in Egypt, and only 5% were established outside Egypt, 139 startups provide pure FinTech solutions, while 38 provide technological solutions, which indicates that the numbers have multiplied 5.5 times in five years. due to the rising demand for FinTech & FinTech-enabled solutions in the Egyptian market.

3.3.2 Startups Local Geographical Representation:

The following figure shows how startups distribute among geographical areas in Egypt according to data in 2022.

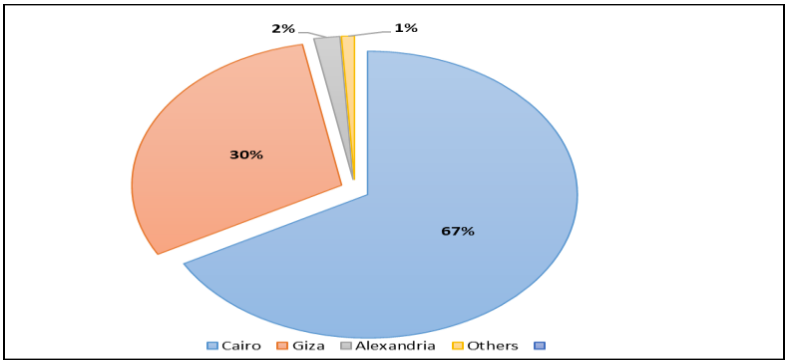


Figure (4) Startups Local Geographical Representation

Source: Central Bank of Egypt, Egypt Fintech Landscape Report (2022)

Around 67% (113) of 168 headquartered in Egypt are based in Cairo, while 30% (50) in Giza, and the rest of the 3% (5) are distributed across other governorates. Additionally, out of 113 startups & PSPs who are based in Cairo, 17 have additional offices in other governorates. The figure below explains how to startups locate in Egypt.

The researchers explain the presence of the majority of companies in the governorates of Cairo, Giza and Alexandria by saying that this is self-evident; Due to the increase in the volume of economic activities and population in those governorates.

3.3.3 Startups in The Economic Sectors:

It is important to know the economic sectors in which startups operating in the field of financial technology operate. The following figure shows the percentage of companies operating in each sector in Egypt according to statistics from the Central Bank of Egypt for the year 2022.

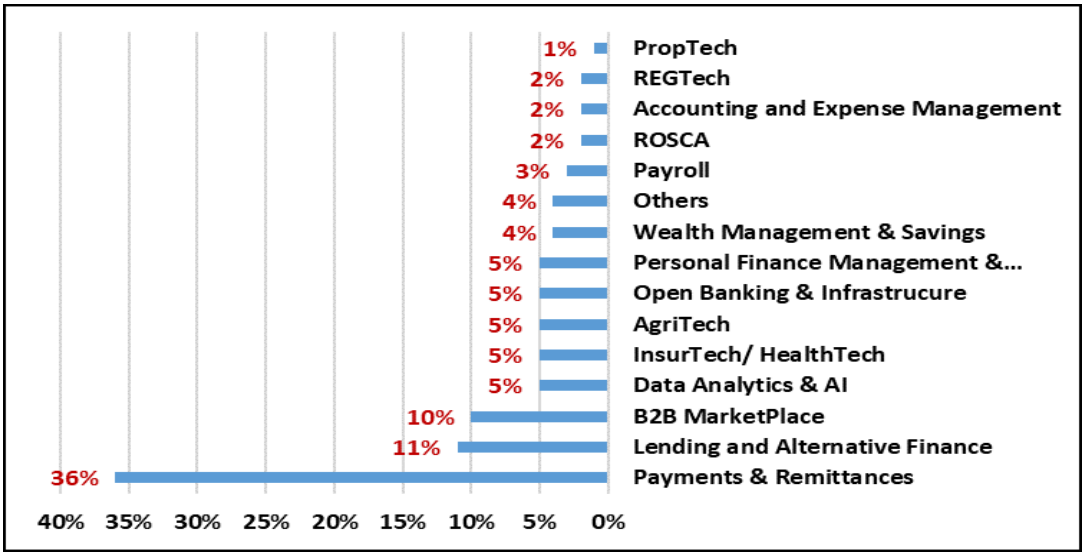


Figure (5) Startups in The Economic Sectors

Source: Central Bank of Egypt, Egypt Fintech Landscape Report (2022)

To date, 3 sub-sectors are dominating the FinTech industry in Egypt by nearly 60% of the 177 startups & PSPs. To elaborate, Payments & Remittance are representing 36% of the FinTech scene, followed by Lending & Alternative Finance and B2B Marketplace solutions, with 11% and 10% consecutively.

It should be noted that addressing the division of economic sectors and the presence of companies in them is an important matter. This enables the economic decision maker to know which sectors are most attractive to emerging companies working in the field of financial technology, and how these companies can be motivated to enter specific sectors in which they need more investment.

3.3.4 Investment In Fintech:

The following figure shows the numbers of investors in financial technology in Egypt during the period (2010-2022), and this indicator gives an impression of the extent of development and increase of investments in this field. The following figure illustrates this clearly:

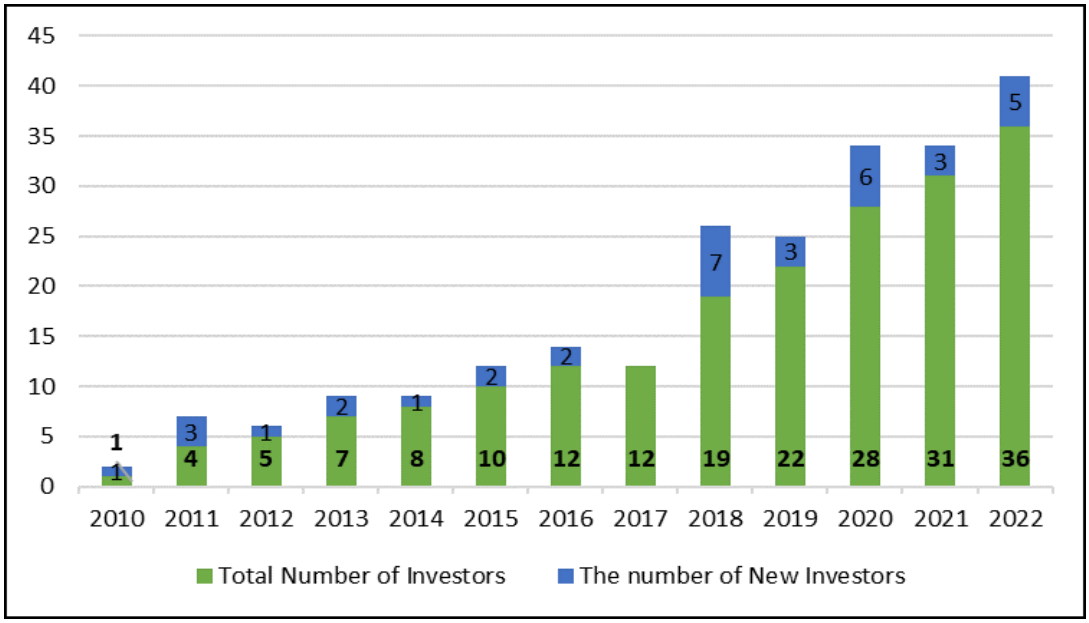


Figure (6): The Number of Investors in Fintech in Egypt

Source: Central Bank of Egypt, Egypt Fintech Landscape Report (2022)

The previous figure explained how number of investors in the financial technology sector increased from only one investor in 2010 to 36 investors in 2022. It is also clear that the rates of these increases have increased since 2018. This is mainly due to the trend towards cashless transactions due to the Corona pandemic.

4 Research Methodology

4.1Research philosophy

The researchers relied on the deductive approach, by using statistical analysis for time series data during the period (2013- 2022). And focuses on constructed theories and their application in the field, both for the independent variable (FinTech), or for the dependent variable (Market share), as positivist philosophy is concerned with focusing on quantifiable observations that are analyzed statistically.

4.2 The Research population

This study has been applied to the entire banking sector in Egypt, so the sample equals population; the researchers' interpretation backs this to the availability of data, specifically, Fin tec data are available for the entire sector, and at the same time, banks are not forced to disclose their data relevant to digital investments and digital payments in their financial statements, so it preferred to apply to the entire sector.

4.3 Research Hypotheses

According to the literature review, the hypotheses can be formulated as below:

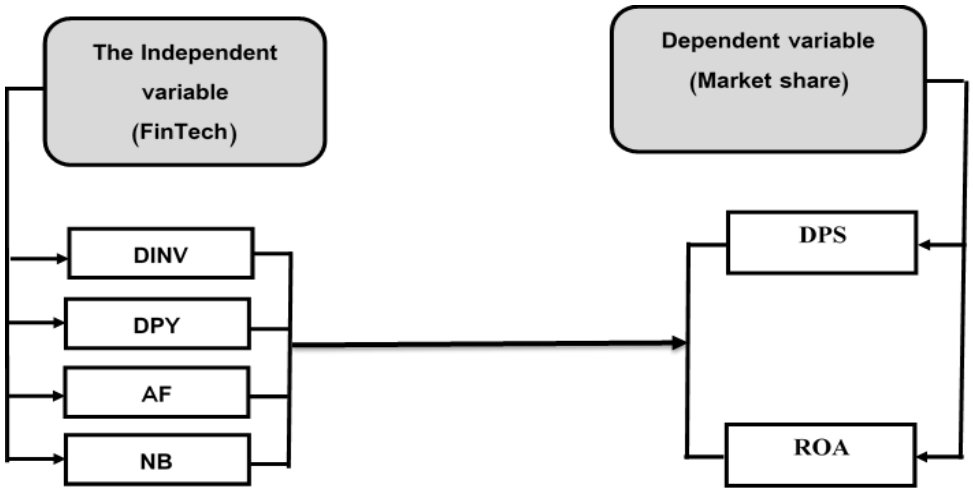
H: "There is no statistically significant impact of FinTech on the Market share in the Egyptian banking sector".

H_1: "There is no statistically significant impact of FinTech on the bank deposits in the Egyptian banking sector"

H_2: "There is no statistically significant impact of FinTech on the return on assets in the Egyptian banking sector"

4.4 Research Model:

It Can explain the model for the research variables and the extent of "The Impact of FinTech on the Market share", as follows:



This study depended on two econometric models, the first is to test the main hypothesis, so it measures the impact of Fintech on the bank's market share. The second model tested the impact of Fintech on the performance of banks; the models were formulated as below:

$$DPS = \alpha_0 + \alpha_1 GDPG + \alpha_2 BC + \alpha_3 DINV + \alpha_4 DPY + \alpha_5 AF + \mu \quad (1)$$

Where:

DPS: Bank Deposits (Dependent Variable)

GDPG: Gross Domestic Product Growth

BC: Bank Concentration

DINV: Digital Investments

DPY: Digital Payments

AF: Alternative Financing

a_0:...,5: parameters

μ: stochastic error

$$ROA = \alpha_0 + \alpha_1 GDPG + \alpha 2\ BC + \alpha 3\ DP + \alpha 4\ NB + \alpha 5\ ASG + \alpha 6\ LQR + \alpha 7\ LTA + \alpha 8\ AF + \mu \quad (2)$$

Where:

ROA: Return on Assets (Dependent Variable)

GDPG: Gross Domestic Product Growth

BC: Bank Concentration

AF: Alternative Financing

DP: Digital Payments

NB: neobank

LQR: Liquidity Ratio

LTA: Total loans/ total assets

ASG: Asset Growth

$a_{0,...,8}$: parameters

μ: stochastic error

4.5 Variables and Measurement

- **Bank Deposits (DPs):** The researchers use bank deposits as a proxy variable for a bank's market share because the banking sector has a unique nature compared to the other sectors, the market share in other sectors can be measured by sales but in the banking sector, it is impossible.
- **Gross Domestic Product Growth (GDPG):** The economic growth rate expresses the positive or negative developments that have occurred for the entire economic activity within the country. It is measured by changes in the gross domestic product.
- **Bank Concentration (BC):** Market concentration generally can be measured by many techniques, such as Herfindahl-Hirschman Index (HHI), but they depend mainly on sales, so most literature that addressed the bank's market share used percent of bank assets held by the top five banks, the World Bank itself uses this methodology to estimate Bank Concentration.
- **Digital Investment (DINV):** This variable is the most expressive indicator of financial technology because it gives an image of financial technology within the country.

- **Digital Payments (DPY) :** Digital Payments reflect the application of financial technology in the country and consider a tool for financial inclusion.

- **Alternative Financing (AF):** Alternative Investment Funds (AIFs) have successfully filled the void left by traditional banks and their stringent due diligence measures. By pooling resources from multiple investors, AIFs offer flexible, accessible capital-raising routes. This innovation fosters small enterprise growth and democratizes investments, enabling everyday individuals to participate in exciting, high-potential ventures.

- **Neobank (NB):** These are new-age banks without any physical location, present *entirely online*. They provide digital, mobile-first financial solutions for money transfers, payments, and lending. They allow customers to withdraw and deposit money. They offer many services, such as investment facilities and debit cards. They even provide credit and lending services. However, most neobanks do not have a license and cannot operate stand-alone, so most neobanks partner with licensed banks to provide financial services.

- **Return on Assets (ROA):** is an indicator of the company's profitability to its total assets. This rate gives an impression of effective management in using the organization's assets to generate profits. The rate of return on assets is calculated by dividing the annual profits by its total assets. ROA is often called the return on total assets; Hence, it is considered the profitability ratio that measures the net

income resulting from the total assets during a certain time. The lower rate of return on assets indicates ineffective management of the organization.

- **Liquidity Ratio (LQR):** The liquidity Coverage Ratio ensures that banks hold a sufficient reserve of high-quality liquid assets (HQLA) to allow them to survive a period of significant liquidity stress lasting 30 calendar days. The 30-calendar-day stress period is the minimum period deemed necessary for corrective actions to be taken by the bank's management or supervisors.

- **Total loans/ total assets (LTA):** According to, Central Bank of Egypt statistical monthly Reports, the period (2013- 2022), where the ratio reached 27.82% in 2022 compared to 26.22% in 2013. This indicates that the ratio of loans granted to assets has not increased due to the attempt to adhere to risk management on the part of banks in a manner that does not involve high risks.

- **Assets Growth (ASG):** This variable measures the size and growth of assets in the Egyptian banking sector. It was calculated by taking the natural logarithm of the size of assets. In addition to Central Bank of Egypt, statistical monthly Reports, Different Issues that assets increased by 0.59% in 2016, and the lowest percentage was 0.06% in 2018. The greater the assets of the banks, the greater the ability of the banks to grow and achieve greater profits.

5. Results of Estimated Models:

5.1 Descriptive Statistics:

The following table summarizes the descriptive statistics of measuring variables during the period (2013- 2022).

Table (2) Descriptive Statistics

	ROA	LTA	LQR	ASG	AF	DPY	DINV	BC	GDPG	DPS
Mean	1.41	27.286	51.68	0.228	6.78	22.32	19.19	4.39	4.01	26.36
Median	1.35	26.705	50.45	0.207	6.90	22.22	18.87	4.43	4.26	26.52
Maximum	2	34.13	62	0.594	8.12	23.24	22.04	4.49	5.56	27.37
Minimum	1	24.02	40.3	0.061	4.75	21.51	17.21	4.22	2.19	25.05
Std. Dev.	0.303	2.737	7.869	0.142	1.15	0.56	1.70	0.089	1.037	0.74
Skewness	0.704	1.574	0.096	1.773	-0.4	0.32	0.47	-1.22	-0.19	-0.42
Kurtosis	2.600	5.124	1.554	5.731	1.92	1.96	1.92	3.00	2.29	2.05
Jarque-Bera	0.894	6.008	0.886	8.347	0.76	0.62	0.85	2.49	0.27	0.67

Probability	0.640	0.050	0.642	0.015	0.68	0.73	0.65	0.28	0.87	0.72
Sum	14.1	272.86	516.8	2.276	67.78	223.19	191.94	43.99	40.11	263.68
Sum Sq. Dev.	0.829	67.428	557.34	0.182	11.92	2.87	26.07	0.07	9.68	4.98
Observations	10	10	10	10	10	10	10	10	10	10

Source: e-views output.

Table (2) shows that the mean for ROA is 1.41, its lowest value is 1, and its maximum value is 2, with a standard deviation of 0.303; This indicates that the value of this variable changed highly during the mentioned period; this is evident from the increasing in the value of the standard deviation, in addition to the increase in the range in which the data is moved.

The mean of loans to assets ratio is 27.286, while the lowest value is 24.02, and the highest value is 34.13; this reflects the fluctuation in data relevant to this variable. Therefore, the standard deviation value is 2.737; this indicates that the value is away 2.737 from its mean on average.

Regarding liquidity coverage ratio, Its mean value is 51.68, while its lowest value is 40.3 and its highest value is 62; this means values move in a high range over the study period. Therefore, the standard deviation of this variable is relatively high. As its value amounted to 7.869.

The mean of the Asset Growth variable is 0.228, while its lowest value is 0.061 and its highest value is 0.594; this rate has witnessed a narrow range, so standard deviation is 0.142.

Concerning the Alternative financing variable, its mean is 6.78, while the lowest value for this variable is 4.75, while the highest value is 8.12; this indicates that the mean is closer to the upper bound than the lower bound.

The mean of digital payments is 22.32, its lowest value is 21.51, and its highest value is 23.24; this means relative stability in data relevant to the variable has existed, so the standard deviation is relatively low, reaching 0.56.

Regarding the digital investments, the mena is 19.19, while its highest value is 22.04 and its lowest value is 17.21, which indicates the mean is closer to the minimum. The standard deviation value came to 1.70, which is approximately the difference between the value of this variable and its distance from the mean.

While the mean of the bank concentartion is 4.39, its minimum at 4.22, and the upper limit at 4.49, which indicates that the variable is highly stable, so standard deviation is 0.089. The mean of the gross domestic product growth came at 4.01. The minimum value is 2.19, and the upper limit value is 5.56.

Finally, the mean of the deposits variable came to 26.36, while the minimum was 25.05, and the maximum at 27.37. The standard deviation was 0.74; this indicates that the values far away were 0.74 from the mean.

5.2 Testing Hypothesis:

5.2.1 Testing The First Sub hypothesis:

To test the main hypothesis: "There is no statistically significant impact of FinTech on the bank deposits in the Egyptian banking sector", we used the first model as below:

$$DPS = \alpha 0 + \alpha 1\ GDPG + \alpha 2\ BC + \alpha 3\ DINV + \alpha 4\ DPY + \alpha 5\ AF + \mu \quad (3)$$

Before estimating the model, the correlation matrix and stationary test are necessary to illustrate.

5.2.1.1 Correlation Matrix:

The following Table shows the corrleation Matrix between the variables of model.

Table (3): Correlation Matrix

Probability	LDPS	LGDPG	LBC	LDINV	LDPY	LAF
LDPS	1.000					
LGDPG	0.64589	1.000				
LBC	0.83135	0.65235	1.000			
LDINV	0.80687	0.28918	0.62182	1.000		
LDPY	0.78766	0.21511	0.72697	0.93386	1.000	
LAF	0.94628	0.51479	0.82198	0.93191	0.93159	1.000

Source: Results of the statistical analysis of the data.

5.2.1.2 Stationary Test:

Studying the stability of time series is the first step; it paves the way to estimate the econometric model parameters. The main objective of this step is to identify the characteristics of time series to avoid false regression, and the Augmented Dickey-Fuller (ADF) to test the stability of the time series of the model variables. The following table shows ADF's results.

Table (4): Unit Root Test

Variable	Value at level	Value at the first difference	Value at the second Difference	Case
DBS	0.2240	0.1060	0.0333	Stable at the second difference
GDPG	0.0729	0.0491	-	Stable at the first difference
BC	0.1291	0.0852	0.0332	Stable at the second difference
DINV	0.09995	0.0246	-	Stable at the first difference
DPY	0.7317	0.0478	-	Stable at the first difference
AF	0.0221	-	-	Stable at the Level

Source: e- Views Outputs

Table (4) shows that alternative financing is the sole variable that came stable at the level because it came lower than 5%, while GDPG, DINV, and DPY came stable at the first difference, while DPS and DBS came stable at the second difference.

5.2.1.3 Significance of Model:

Adjusted R^2 was 91.6%; this indicates that 91.6% of the changes in the dependent variable are due to changes in the independent variables. All model

variables were significant at the 5% level except (AF) was at 10%, while (GDPD) was insignificant.

Regarding the significance of the model, the calculated F- Statistic value was more than the tabulated value, and the Durbin-Watson coefficient value was 2.35; this indicates an absence of autocorrelation.

5.2.1.4 The Estimated Model:

LDPS = 37.995 + 0.0448 LGDPG - 7.303 LBC + 1.575LDINV - 2.674 LDPY - 0.9654 LAF

The estimated model illustrates that there is a positive correlation between the deposits variable (DPS) and the variable (GDPG) in spite of GDPG insignificance, and the banking concentration (BC) variable was in an inverse relationship with the dependent variable; As an increase in the banking concentration variable by one unit leads to a decrease of 7.3 in the deposits variable, while the digital investment variable has a positive relationship with the volume of deposits; Increasing the digital investment variable by one unit leads to an increase of 1.57 in the deposits variable, while the digital payments variable (DPY) has an inverse relationship with the bank deposits variable, which is logical; Because the increase in digital payments leads to a decrease in the interaction of individuals and companies with traditional banks, while the variable (AF) came in an inverse relationship with bank deposits; Where an increase in alternative financing by one unit leads to a decrease of 0.965 in the

deposit variable, which is logical; Because the tendency of companies and individuals to alternative financing leads to a decrease in dealing with traditional banks.

5.2.1.5 Quality Tests of the Estimation Model:

a. Normality Test:

It is necessary after estimating the econometric model to know whether the residuals follow a normal distribution; the Jarque-Bera test for the normal distribution of residuals shows this; the following figure show the results of the test.

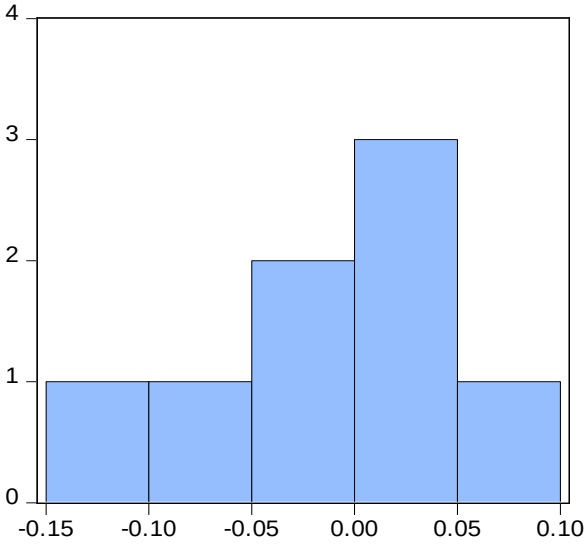


Figure (7): Histogram Normality Test

Source: e-views Output

P-value is estimated by 0.80, Which means p- value is more than 5%, which means that the residuals follow a normal distribution and the model is valid.

b. Breusch-Godfrey Serial Correlation LM Test:

Tests for the error term are critical when estimating the econometric model; The error term is correlated serially when error terms of different time periods are correlated, this problem occurs in time-series data when the errors carry over into future time periods. Serial correlation will not affect the unbiasedness or consistency of OLS estimators, but it does affect their efficiency. With positive serial correlation, the OLS estimates of the standard errors will be smaller than the true standard errors. After looking to Breusch-Godfrey Serial Correlation LM Test results, P-value is more than 5%; it reached 0.510, so there is no Serial Correlation problem.

c. Heteroskedasticity:

In social sciences, Ordinary Least Squares (OLS) is one of the most popular techniques for data analysis, several assumptions must be satisfied to ensure the inferences from the use of this method are appropriate, including the one of constant error variance (homoskedasticity), so Heteroskedasticity is usually defined as some variation of the phrase “non-constant error variance”, or the idea that, once the predictors have been included in the regression model, the remaining residual variability changes as a function of something that is not in the model. Heteroskedasticity results indicate that P-value is more than 5%; it reached 0.9987, which leads to the rejection of the alternative hypothesis: "There is a difference in the

variance between the residuals" and the acceptance of the null hypothesis: "There is no difference for the variance between the residuals".

d. Variance of Inflation Factor (VIF):

Multicollinearity happen when the multiple linear regression includes many variables that are significantly correlated to each other not only with the dependent variable. Multicollinearity makes some of the significant variables to be statistically insignificant, VIF is used to measure how much the variance of the estimated regression coefficient is inflated if the independent variables are correlated. VIF is calculated by the formula: 1/ (1- R2). After conducting VIF test, the results came as shown below:

Table (5): VIF Results

Variable	VIF
GDPG	2.83
BC	2.18
DINV	1.77
DPY	2.43
AF	1.88

Source: e – views Outputs

Table (5) shows that VIF less than 10%, which means that there is no multicollinearity, This can be confirmed by looking at the significance of the variables within the model, which were all significant except for one variable only.

After estimating the first model, we can reject the hypothesis: "There is no significant impact of financial technology on Deposits"

5.2.2 Testing the Second Hypothesis:

To test the sub hypothesis: "**There is no statistically significant impact of FinTech on the return on assets in the Egyptian banking sector**", we will use the following model:

$$ROA = \alpha 0 + \alpha 1\ GDPG + \alpha 2\ BC + \alpha 3\ DP + \alpha 4\ NB + \alpha 5\ ASG + \alpha 6\ LQR + \alpha 7\ LTA + \alpha 8\ AF + \mu \quad (4)$$

5.2.2.1 Significance of Model:

Adjusted R^2 was 98.77%; this indicates that 98.77% of the changes in the dependent variable are due to changes in the independent variables. All model variables were significant at the 5% level. Regarding the significance of the model, the calculated F- Statistic value was more than the tabulated value, and the Durbin-Watson coefficient value was 2.32; this indicates an absence of autocorrelation.

5.2.2.2 The Estimated Model:

$$ROA = 30.84 + 0.102\ GDPG - 0.947\ DPY - 0.108\ NB + 0.129\ ASG - 0.655\ LQR + 2.985\ LTA - 5.44\ BC + 0.971\ AF \quad (5)$$

It is clear from the estimated model that the growth rate (GDPG) positively affects the (ROA); Increasing the variable (GDPG) by one unit increases the rate of return on assets by 0.102, but digital payments DPY negatively affects the rate of return on assets; Increasing digital payments by one unit decreases the ROA by 0.974, increasing the NB variable by one unit decreases the ROA by 0.108, while increasing the growth rate of ASG by one unit increases the ROA by 0.129 At the same time, the liquidity coverage rate negatively affects the rate of return on assets, and the same applies to banking concentration, while the variable rate of loans to assets and alternative investments positively affects the rate of return on assets.

After estimating the second model, we can reject the hypothesis: "There is no significant impact of financial technology on return on assets"

6. Conclusion

Fintech led to a revolution in the field of financial transactions in recent years. These technologies have changed the way you shop, transfer money, invest and borrow. In general aspects, the goal of these technologies is to provide faster and without an intermediary access to financial resources and their management or transfer. Despite the bank's size, investment in information technology (IT) has become an important component of the banking industry. Large banks tend to concentrate on efficiency and operational excellence, whereas small banks typically use a service-oriented business model that concentrates on intimate client contacts. In both instances, IT plays an important role in the banking industry

In Egypt, the central bank has taken good steps towards "sandbox", launching the Regulatory Laboratory for fintech applications "sandbox" in 2019, to help banks and fintech companies cooperate more flexibly. But so far, the central bank has not set binding regulations for banks to implement an open API "banking Open API" that helps integrate banks ' systems with those of fintech companies.

According to qualitative analysis, the study found the reflection of FinTech on the market shares of banks through existing and potential clients, by influencing the level of client satisfaction, On the other hand, FinTech is improving the perceived mental image of banks. Financial technology affects the performance of banks, but it is noted that this effect differs. Some factors related to financial technology, such as investment in financial technology, positively affect banks, their performance and market share, while other variables of financial technology negatively affect banks, such as alternative investments and new banks.

7. Research Recommendations

A. The banks should invest in FinTech banking, innovation, training staff, and clients, which will improve the bank's image with potential clients and give existing clients quality and ease of use to increase client satisfaction. New technologies will also be able to build digital banks with creative solutions driven by design and technology: branches with cash less, smart ATMs, app counselling based on Information Technology, databases, big data analysis

B. The Central Bank of Egypt must enhance and invest in FinTech banking services, as they are considered drivers of growth for the Egyptian economy and banks. This can be achieved by encouraging scientific research, in addition to funding and supporting research centers that may be involved in future decision-making and policymaking.

C. Egyptian banks can achieve leadership and sustainability when expanding their scope of work in Africa. Egyptian banks have the necessary expertise and resources to lead financial technology in Africa. This can be done through a strategic alliance or the acquisition of banks in host countries.

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