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Can Digitizing Services Through Utilizing Fintech Improve Competitiveness and Performance of The Banking Sector? Empirical Evidence from Palestine.

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Abstract:- This study aims to investigate the effect of digitization of bank services on competitiveness and bank profitability. As the Palestinian banking sector operates within the region's unique socio-economic and geopolitical context, banks stand at the crossroads between traditional banking and technological innovation. Evidence suggests that FinTech has already exerted a financial influence on the performance of conventional banks. This research investigates whether digitizing banks' products and services improves banks' competitiveness and performance through sufficient empirical data to support these propositions, aiming to encourage bank managers to make more significant efforts toward applying new technologies and financial innovation. This study investigates the effect of digitization of products and services on competitiveness using panel data over twelve years (2011–2022), implementing the Herfindahl index (HHI) to measure competitiveness. Overall, the results indicate and answer the research question: can digitization of banks' products and services improve competition? The results of the study conclude that the competition-profitability and digitization-profitability relations are not significant yet positive in the Palestinian banks; however, bank size has a significant positive effect on profitability, and digitization has a significant positive impact on banks' competitiveness. The study suggests that bank managers should be encouraged to adopt financial innovation to achieve more competitiveness and efficiency, and regulators should encourage healthy competition among banks to mitigate competition's negative impact on banks' financial performance. In addition, regulators should motivate small banks to merge and benefit from economies of scale for higher profitability.

Keywords*: Palestine Bank, Competitiveness, Financial Performance, Digitization, ROA.*

1. Introduction

The term "digitizing" pertains to the procedure of transforming traditional information into a digital version. Within the field of banking, the process of digitization entails the conversion of conventional banking operations and products into electronic platforms and channels. This encompasses a variety of digital financial products and services, such as Internet banking, phone banking, digital payments, and additional associated offerings.

The impact of digitization on bank performance has been growing in importance due to that the development of this technology has significantly transformed the operations and procedures of the banks to the next level, resulting in enhanced operational efficiency, cost reduction, and improved client satisfaction. Adopting a digitization strategy enables banks to optimize their operating procedures, automate various jobs, and provide clients with convenient and tailored services. Furthermore, digitization empowers financial institutions by easing the collection and analysis of extensive volumes of data and enhancing their ability to make informed decisions and manage risks effectively.

Banks in Palestine play a prominent role in the growth of the Palestinian economy and development by offering finance to various production sectors. By the end of 2022, the total credit facilities granted by the banking sector amounted (11) million in 2022, comprising 70% of Palestine's GDP.

Palestine's monetary authority is responsible for ensuring the financial sector's stability and fostering economic growth. Compared to other economies, banks in Palestine face many challenges when doing business in the Palestinian economy, as they don't have a national currency. The banks operating in the Palestinian economy don't have a local currency and worked with the three major currencies, the Jordanian dinar, the shekels, and the USD, in 1995 as a result of the Oslo Accords, which included the Paris Economic Protocol that permitted the reopening of banks in Palestine, Banks have recently faced an increase in the amount of Israeli shekel currency being deposited physically; subsequently, banks have caused concerns regarding money laundering and terrorism financing. As a result, the two Israeli banks that used to provide correspondent services to banks operating in Palestine have stopped offering cash services. The Bank of Israel (BOI) has limited the number of physical money it accepts back from Palestinian banks, and the accumulation of physical shekels in the Palestinian banking system has become a financial stability concern (Coulibaly, 2022)Therefore, the Palestinian monetary authority is focusing all efforts on motivating Palestinian banks to adapt to digitalization. PMA has established a framework for online payments and tools, enabling cutting-edge technology integration and offering financial services to all sectors. (PMA, n.d.) also

In addition, the COVID-19 epidemic forced a speeding up of the transition to financial digital technologies. Thus, leading banks have prioritized digital transformation in the following years to remain competitive, attract consumers, and decrease expenses.

There were 13 banks that operate in Palestine, which are the sample of the study; six forieghn banks are commercial banks banks, four are local banks, and three are islamic banks see Table (1).

Table 1 The Palestinian Banks (PMA, 2022).

Commercial local banks	Date of establishment	Islamic local banks	Date of establishment	Foreign commercial banks	Date of establishment
1-Bank of Palestine P.L.C	1960	1-Arab Islamic Bank	1995	1-Cairo Amman bank	1986
2- Palestine Investment Bank	1995	2-Palestine Islamic Bank	1995	2--Housing Bank for Trade & Finance	1995
3- National Bank TNB	2005	3-Al Safaa bank	2016	3-Arab bank plc	1994
4-Quds Bank	1995			4-Bank of Jordan	1994
				5- Jordan Ahli Bank	
				6-Egyptian Arab Land Bank	1994

Banks in Palestine are the largest contributor to the size of the Palestinian economy. The service industry comprises 4% of the GDP, about USD 19.11 billion, including tourism and finance. The total banking industry deposits amounted to 15 billion USD in 2022.

Competitiveness is the art of managing a successful firm and how a firm manages the totality of its competencies to improve the financial services supplied to consumers at a lower cost to gain a competitive edge and increase efficiency and firms' profits, financial services, notably banks, are trying to keep up with technology innovation. Utilizing technology in financial services can benefit banks by speeding up the processing of transactions, facilitating data exchange, lowering costs, and advancing transactional finance (Chhaidar et al., 2022).

This study investigates how digitizing services through utilizing fintech improves the competitiveness and performance of the banking sector in Palestine. Since the COVID-19 pandemic, the banking sector has fostered the implementation of digital transformation as the Palestinian economy is fragile. There is an urgent need to boost the banking sector's competitiveness to support the Palestinian economy.

The advantages of implementing fintech to digitize banking services are widely recognized, but there is a significant lack of research in the specific context of Palestine. There exist Limited empirical studies, and there remains a lack of evidence as to whether a bank's digitization innovation currently impacts banks' in Palestine; therefore, this paper's stated objective is to investigate how the current digitization has affected the competitiveness of banks and how its affects banks' performance; limited empirical studies to evaluate the Quantifiable effect on Competitiveness empirical evidence is needed to quantify how digitization has affected the competitiveness of Palestinian banks. Through using market share and financial indicators such as return on assets collected from financial reports and PMA published reports, based on the above, the study questions are:

Question 1: How does implementing digitization affect competitiveness?

Question 2: Can digitizing services improve the competitiveness and performance of the banking sector?

Question 3: How does competitiveness affect Palestinian banks' performance?

2. Objectives

this paper's stated objective is to investigate how the current digitization has affected the competitiveness of banks and how its affects banks' performance; limited empirical studies to evaluate the Quantifiable effect on Competitiveness empirical evidence is needed to quantify how digitization has affected the competitiveness of Palestinian banks. Through using market share and financial indicators such as return on assets collected from financial reports and PMA published reports

3. literature review

The competitiveness Definition considers efficiency, choice, resources, and objectives. It is about how well entities utilize these resources to maximize profits (Garelli, 2012). Competitiveness is applied on all levels. At the macro level, it deals with issues at the national and country levels, and at the micro level, it deals with issues at the firm level (Waheeduzzaman, 2011). National Competitiveness is the degree to which a country creates favorable conditions for the growth of its businesses; by extension, its industries are a measure of that country's competitiveness. The goal is to boost national economic growth while contributing to value development and profit production (Bhawsar & Chattopadhyay, 2015). On the other hand, A company's competitiveness varies based on how well it can meet customer needs while turning a profit over the long term. A firm can deliver this potential through clients with products and services they value more than competitors; a company's competitive edge comes from its flexibility and capacity to generate sustainable profit.

Competitiveness requires "a mix of resources and processes, where resources are inherited (like country fortunes) or created (like machinery or buildings), and procedures that convert assets to produce economic gains from selling to customers. In the Asset-Process-Performance (APP) concept, outcomes can be attained through a competitive approach (Barney, 1991).

The theory of competitiveness is a relatively new field of research, starting with Adam Smith's (1776). We comprehend the evolution of the relevant theories and the factors contributing to competitiveness in below table (2):

Author	Theory	Competitiveness factors	Level
Smith's (1776)	absolute advantage theory	specialization of labor that produces a product with a competitive advantage between two firms.	National
Ricardo (1817)	comparative advantage theory	The author added competitiveness at the country level to the two firms and two product models and has the same advantage as the answer by Ricardo through a country advantage over the other country.	National
Heckscher (1919) &Ohlin (1933)	Heckscher-Ohlin theory	The theory concentrated on labor/capital endowment as a determinant of a country's competitiveness.	National
Leontief (1953)	Leontief paradox	Based on Heckscher-Ohlin's theory, variations in factor endowment lead to comparative advantage. The natural and factor characteristics differ among nations. Based on the notion, a nation should export the commodities that require a significant amount of the relatively plenty of resources it possesses..	National
Vernon (1966)	'product life cycle theory	Clarifies the process of technological dissemination from rich countries to developing nations	National
Porter (1990)	Diamond Model	The factors that influence a firm's competitiveness are factor conditions, demand circumstances, related and supporting industries, corporate strategy, structure and rivalry, the role of chance, and government intervention.	National
Rugman and D'Cruz (1993)	'Double diamond model'	This model considers the global environment of national competitiveness of the Porter model.	National
Moon et al. (1998),	generalized double diamond model.'	This paradigm regards the international competitiveness of a country as the external diamond, while the internal diamond reflects the home country's competitiveness. The distinction between the two diamonds symbolizes the inflow of foreign direct investment.	National
Moon and Cho (2000)	'nine-factor model'	The concept places significant emphasis on the crucial role of employees in attaining global competitiveness. Furthermore, apart from the initial four elements, an additional aspect includes politicians, bureaucrats, the workforce, entrepreneurs, professionals, and chance events as exogenous variables.	National
Cho, Moon and Kim (2009)	Dual double diamond.'	This model integrates the variables from the generalized double diamond model with the nine-factor model. The factors included include domestic physical factors, domestic human factors, international human factors, and international physical factors.	applicable national and industry-level

Momaya (1998); Abastha and Momaya (2004) and Fetscherin and Pillania (2012).	APP model*	the degree to which a given industry has an opportunity for expansion and achieving profits on invested capital through integrating skills and effective process	Industry
Hamel and Prahalad (1989) Prahalad and Hamel (1990) Grant, 1991	competency approach The role of foreign direct investment, human resource, and global elements	Competitiveness is a result of price/performance combinations in the short term, while in the long term, the company usage of its core competencies, skills, and technological resources to produce quality products at lower cost and in less time than its competitor	Firm-level
(Frain, 1992; Porter, 1998)	Allied organizations	reliance and networking between businesses and other organizations, such as the government, educational institutions, and training programs, are essential for regional competitiveness.	Firm-level

Source: Authors' composing.

The recent research in competitiveness examines critical competencies at the corporate level, which is essential to the based-on-resources corporate model. Empirical research on competitiveness revealed that a firm needs to achieve customer satisfaction with cost-effectiveness, quality sensitivity, and less time than its rivals (Johnson, 1992). previous research focuses on advancing and adapting information technology and innovations to enhance Competitiveness (Ross et al., 1996), improving banks' efficiency, and thus motivating banks to adopt innovation (Mdoe, 2017).

In a study to investigate the proper model and the suitable approach to achieve strategic competitiveness and to gain superior performance, results show that the most commonly used model is performance measures using financial ratios; this model is considered the most suited and wide range of firms in the other hand, the assets process performance model (APP) is the best measure of performance and may offer the most effective means of connecting strategy and competition (Ambastha and Momaya,2004).

To define financial innovation, we start by defining first innovation, which is the process of creating new concepts, techniques, methods, and tools that are used to enhance an existing corporate operation and conditions(Błach,2011); from this definition, we infer that applying innovation to a company it provides it with a competitive advantage over it competitors, increases its competitiveness and increases firms performance and its value to firms owner (Dabic et al., 2011)any enhancement of business structure, products, processes, and marketing strategies are considered innovation (OECD, 2005)for financial innovations the definition it is more about new products, process innovation and risk transfer (Llewellyn, 2009)

The efficiency structure hypothesis states that more effective businesses will be better able to compete, advance, and expand in scale, leading to a rise in market concentration1. It also presumes that these businesses will continue to have significant market shares while achieving high profitability. According to the premise, a company's efficiency and performance are positively correlated, and this is because enterprises with low-cost structures profit by lowering prices and gaining market share due to competition, leading to market concentration.

In a study examining how the variables driving innovation affect competitiveness in a group of countries in the European Union and according to research findings, the output of knowledge and technology and creative output both have a favorable impact on Competitiveness (Ambastha & Momaya, 2004)

Innovation is considered the foundation of Competitiveness, and creativity is the secret to progress and improving society (Karsh, 2019). Utilizing new technologies and having the capacity to innovate have emerged as the most important aspects of competitiveness and have also become among the fundamental requirements for businesses to continue to exist in the global economy ((Mcgahan, 1999; Porter,1998). In a study about innovation in the services provided by banks, such as mobile banking, e-banking, process automation, and Agency banking, this study measured the effect of implementing fintech strategies on competitiveness in the Kenya banking sector. The findings revealed that mobile banking was the first factor that drives competitiveness, and process automation was the second-strongest factor driving competitiveness in commercial banks. In contrast, agency banking was the third most significant independent variable. On the other hand, Internet banking had the lowest impact on commercial banks' competitiveness.

In a study reviewing the literature about the banking industry concerning the relationship between competitiveness and banks' profitability, research results revealed mixed outputs between positive and negative relations(Akims, 2022). In studying the competitiveness of a sample of banks in Kenya and its effect on profitability, the results showed a positive impact of bank competitiveness on profitability in the long term and a negative effect in the short term. While another study on Zimbabwe banks showed a negative result (Abel & Roux, 2016), the study used a concentration index to measure competitiveness.

Also, a negative effect of competitiveness and profitability in relation to competition for the Nigerian banks for the study period from 2005-2014, the researcher used market concentration to measure Competitiveness (Osuagwu, 2014; Yahaya et al., 2015), In their study conducted in 1992, in a study investigated the profitability of the banking sector across 18 European countries between 1986 and 1989. Their findings revealed a significant positive correlation between the return on equity and many factors, including interest rates, bank concentration, and government ownership (Molyneux & Thornton, 1992).

In describing the vital role financial innovation plays in the economy through money creation and trade facilitation, It establishes a framework for transferring funds between diverse economic entities, including retail banking, corporations, governments, and banks. Innovation could respond to a demand of entity requirement or due to the appearance of innovations developed by the supply side and then implemented by firms (Blach, 2011).

Financial innovations are shown in three categories: product innovation, process innovation, and risk transfer innovation (Blach, 2011); each of the three innovation categories can be linked to the deposit side innovation or debt side innovation. For example, product innovation is in a new savings product or new lending financial instrument; an example of process innovation is the application of technological advancement in banking process payments methods or wealth management concerning risk transfer is either combining more than one product or introducing new product or instrument that transfer or lowering risk.

Various research has been carried out on the association between sources of competitiveness and firm performance, focusing on pricing, layout, advertising, quality, adaptation, and leadership (Cascio, 2011; Msci, 2021); results show the strong ability of financial innovation in firm performance prediction.

Previous studies investigating financial innovation competitiveness and performance outcomes are still in the investigation process as results are inconsistent. Still, to our knowledge, there are no studies conducted on Palestinian content.

Measuring technology advancement in the service sectors is relatively complicated compared to industries dealing with goods and products; measuring innovation in service industries such as insurance, banking, service, and finance is unclear. Therefore, this study attempts to investigate the connection between digitization, competitiveness, and performance in the Banks operating in Palestine.

4. Methods

literature developed a conceptual model of competitiveness at the bank level, the previous research used methodology to study competitiveness using a questionnaire survey to measure five main indicators: Financial strength, bank concentration as a measurement of banks' market share, banks' human resources, international finance, and foreign exchange activities, and information technology are the five constructs that comprise the competitiveness concept (Ibrahimi, 2010). the method used in this study is to measure competitiveness as the World Bank recommends. Included among these are the breakdown of interest spreads between debit interest rate and credit interest rate, "structure-conduct-performance" methodology, regulating indicators as a proxy of banks' Competitiveness, and of the banking sector's structure, business behavior, and performance all have a stable, causative relation. This finding may explain why banks with high market share perform monopolistic behaviors that are more prevalent among larger and more established banks. a concentration measures, such as the proportion of total assets held by the three or five largest banks or the Herfindahl index, are correlated negatively with competition."(Banking Competition, n.d.)

Therefore, the hypotheses of the research are as follows:
H1: Digitization positively affects the competitiveness of Palestinian banks.
H2: Digitization affects banking competitiveness and performance positively.
H3: Competitiveness affects banking performance positive.

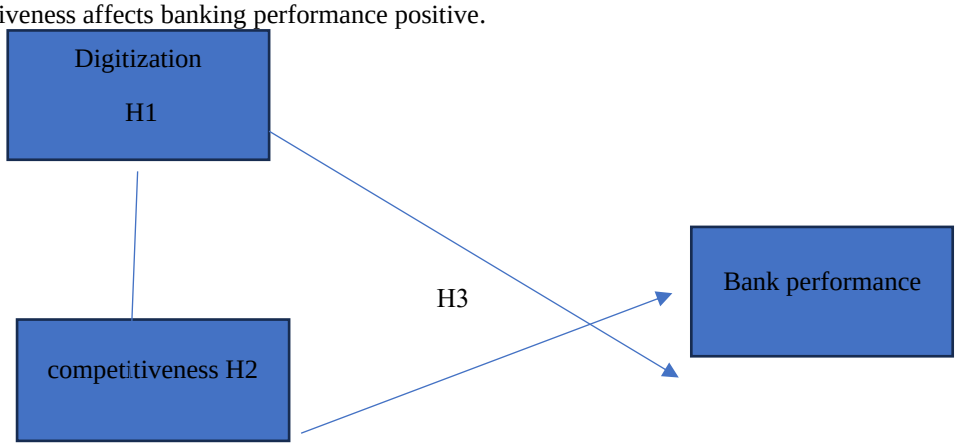

Figure (1) the research hypothesis of the relationship between variables

Methodology and measures of study variables

This study aims to test the adaption of digitization of services on the banks operating in Palestine effect on competitiveness and performance for the period from 2011 to 2022, as 2011 is the first time banks in Palestine introduced electronic banking or net banking (Bankers et.al, 2011): electronic banking is one result of the advancement of technology, it creates many possibilities for institutions and clients, in addition, Palestine monetary authority (PMA) joined the Alliance of financial inclusion in the year 2010; PMA is the authority that is responsible for regulating the banking industry in Palestine and insuring a stable sound banking system.

Data collection method

The method used is to collect data from financial reports published in PEX. In addition to collecting the financial innovation services and products that banks offer, we use the website and published reports of banks representing both commercial and Islamic banks.

This study used the Herfindahl index (HHI) to measure competitiveness. This approach suggested that the more bank concentration (market share), the more they use an anti-competition measure. This means the relationship is negatively associated with market share as measured by banks' market share to total assets. In contrast, the market share ratio ranges between 0 percent and 100 percent, the (HHI) index is up to ten thousand and as low as zero percent when a large number of banks with a market share of almost zero percentage; the market is considered as competitive when the Herfindahl-Hirschman Index (HHI) falls below 1,500. A moderately concentrated market is characterized by an HHI ranging from 1,500 to 2,500.

On the other hand, a highly concentrated market is indicated by an HHI equal to or over 2,500. (Banking Competition, n.d.). According to our study aim, bank performance is measured in this study using return on assets ROA which is the most commonly used measure of profitability (Osuagwu 2014), and digitization is the sum of financial innovative services and products that are offered by the banking market in Palestine, and for control variables log of total assets used as a proxy of bank size and log of GDP as a control variable.

The data is a mix of time series and cross-sectional data; therefore, panel data is the appropriate study method. The final used sample was eleven banks out of thirteen as we excluded two banks, as one of the banks' dates of establishment is 2016, and the other didn't publish a financial report for 2022; as a result, and due to the unavailability of data, the total number of sample observations is 132.

Empirical Models:

The used equation modeling is as follows

$$Compet_{it} = \alpha + Digitization^{+}_{it} + +\beta_3 NPL_{ti} + \beta_8 Log(GDP_t) + \beta_9 Log(TA_{it}) + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots 1$$

$$ROA_{it} = \alpha + Compet^{+}_{it} + +\beta_3 NPL_{ti} + \beta_8 Log(GDP_t) + \beta_9 Log(TA_t) + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

$$ROA_{it} = \alpha + \beta_1 Digitization^{+}_{it} + \beta_2 Compet^{+}_{ti} + \beta_3 NPL_{ti} + \beta_8 Log(GDP_t) + \beta_9 Log(TA_t) \ldots\ldots\ldots\ldots\ldots 3$$

Where:

(ROA_it): return on assets for bank I in year t

Digitization_it: the sum of financial innovation products (online services, digital applications, Machin learning, and AI) that bank I offered in time t, divided by the total number of services provided .

Compet_it: Competitiveness is the market share of a bank calculated by the bank's total assets to the sum of total assets of Palestinian banks

NPL Ratio: non-performing loans Ratio

Log GDP: natural logarithm of Gross Domestic Product in time t(〖 GDP〗_t)

Log TA: natural logarithm of total assets of a bank i in time t(〖 GDP〗_t)

Banks digitization measurement:

Due to the lack of information on Palestine banking fintech, we use the digitization of services and products banks provide as a proxy for banks applying digitization to their products and services. The research data source is the websites and annual published financial reports of the eleven commercial and Islamic banks, and we also used the same approach used by (Meng & Wang,2020); we counted twenty tow innovative financial services & products. The innovative financial services provided by the sample of eleven banks have increased annually, Especially after 2015.

Digital services are personal internet banking, mobile banking, digital banking, and mobile payment; EKYC, AI, Machin learning, NEO Bank, e FAWATEER service, internet banking, mobile banking, and electronic payment; online payment, mobile payment, Third-party services (western union, insurance services, payment QR code payment, Network payment, internet loan, ATM Network, Business Technology and Center of Excellence, customer service management, SMS, AI & Machin learning, Fingerprint identification Face recognition, Voice

recognition, Mobile banking, loan processing, NEO Bank, point of sale (POS)). The NPL ratio assesses a bank's ability to collect loan repayments. Panel data analysis is the best approach to analyze the role of digitization in improving competitiveness and the performance of banks. The researchers recommend using SPSS Version 26 for statistical analysis for this study. The study used a log for some variables to get closer to a normal distribution and reduce heteroskedasticity issues (Lazarides, Drimpetas, & Dimitrios, 2009).

5. Results

Findings using statistical outcomes

Table 2 summarizes statistical information for all of the study's variables; descriptive statistics for the study are shown in Table 3, which contains the number of observations (132), average values (mean), range (minimum, maximum), and standard deviation (s.d.) ROA in the banking sector during the year from 2011-2022 about 1% with a maximum of 2% and minimum value of 0.03% of the measured variables of 11 quoted banks profitability for 12 years. Return on Asset (ROA) is relatively low.

Table 3: statistical results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Competition	132	1547.54	1924.41	1667.9466	107.42617
ROA	132	0.03%	2.05%	0.9899%	0.41951%
LOGTA	132	9.92	10.34	10.1555	.14712
LOGGDP	132	6.09	7.22	7.0091	.30766
Digitization	132	.00	1.00	.3413	.19419
NPL%	132	0.45%	15.68%	4.48%	2.82512%
Valid N (listwise)	132				

This result may affect investors' reactions towards banks with low returns generated by banks' assets as it is an indication of poor efficiency management of banks' assets.

In addition, in the total number of digitized products and services offered by the banking sector, there are still banks that don't apply any digitization to their products and services, while there are banks that 82% of the 22 are offered in the Palestinian banking sector. A mean of non-performing loans Ratio of 4.74 % is considered an acceptable ratio considering the high-risk market of Palestine.

The minimum of bank competition measured by HHI is 1547, a maximum of 1924, and a mean of 1667. An HHI of 1,500 to 2,500 is considered a moderately concentrated market, using R square to assess whether the variation of digitization of services and competitiveness affects the variation of banks' performance and interpret the relation, the model fit see table (5), and to explore the causality relation between time series through panel granger causality test using Eview, the results are summarized as in table (8)

Table 4 displays the variable correlation matrix results, which show no severe correlation between variables. The correlation result shows no high or perfect correlation ranges between 0.6 and 0.8, while the correlation between(0 .4-0.6) is also acceptable.

Table 4: correlation matrix

Correlations	LGDP	LTA	ROA	Competition L(HHI)	NPL%	Digitization

LGDP	1					
LTotal Assets	. 625**	1				
ROA	-.121	-. 210*	1			
Competition L(HHI)	-.482**	-.658**	. 147	1		
NPL%	-.041	.043	. 016	. 051	1	
Digitization	.481**	. 667**	-. 056	-.510**	-.084	1

The correlation matrix shows a significant positive correlation between GDP and both bank size (0.625) and digitization of banks' products and services (0.481) and a negative significant correlation with bank competition (-0.842) in addition to a nonsignificant negative correlation between GDP and NPL (-0.041) and ROA (-0.121), while bank size had a significant positive correlation between bank size (and digitization of banks products and services 0.667). Digitization had a significant negative correlation with bank competition (0.510), and the non-performing loans ratio shows no correlation between all variables

Table 5:Model fit results of hypothesis number 1:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.656[a]	.430	.412	82.34	.430	23.987	4	127	.000

a. Predictors: (Constant), LOGGDP, NPL% , LOGTA, digitization

b. Dependent Variable: HHI

The result shows a good model fit and that the model explains Digitization accounts for 41.2% variance of competition.

The regression model results show that competitiveness is significantly predicted by products and services that have been digitized by banks (P = 0.00 <~ 0.05).also, it shows that competitiveness has a significant negative relation with digitization and GDP (P = 0.04 <~ 0.05) while having a nonsignificant negative relation with bank size and a positive non-significant relationship with NPL %(Table 6).

Table 6: Anova

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10251.836	1462.241		7.011	.000
	LOGTA	-.478	22.882	-.002	-.021	.983
	LOGGDP	-840.244	146.075	-.513	-5.752	.000
	NPL%	1.619	2.561	.043	.632	.528
	digitization	-113.368	55.310	-.190	-2.050	.042

a.Dependent Variable: HHI

Table 7: Testing Granger causality

Pairwise Granger Causality Tests

Digitization Granger causes competition and GDP since the P value is equal /less than 0.05, but competition doesn't Granger cause digitization, so there is a unidirectional relationship. Also, Digitization Granger causes competition NPL % at the 10% level.Competition granger causes economic growth measured by GDP and vice versa since the P value is less than 0.05; therefore, the relation is bidirectional for both sides. GDP granger causes Both total assets and NPL % since the P value is less than 0.05; there is a unidirectional relationship.
Finally, the NPL % granger causes bank size to be measured by total assets since the P value is less than 0.05, so, there is a unidirectional relationship see Table 7.

Table 8:testing multicollinearity

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collineari
		B	Std. Error	Beta			Tolerance
1	(Constant)	10251.836	1462.241		7.011	.000	
	LOGTA	-.478	22.882	-.002	-.021	.983	.762
	LOGGDP	-840.244	146.075	-.513	-5.752	.000	.564
	NPL%	1.619	2.561	.043	.632	.528	.989
	Digitization	-113.368	55.310	-.190	-2.050	.042	.522

a. Dependent Variable: (HHI)

Lags: 2

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
HHI does not Granger Cause Digitization	110	0.33188	0.7183
Digitization does not Granger Cause HHI		3.06749	0.0500
LGDP does not Granger Cause Digitization	110	0.5206	0.5957
Digitization does not Granger Cause LGDP		3.94878	0.0222
LTOTAL_ASSETS does not Granger Cause Digitization	110	0.73854	0.4803
Digitization does not Granger Cause LTOTAL_ASSETS		1.37605	0.2571
NPL_ does not Granger Cause FINTECH	110	0.14972	0.8611
Digitization does not Granger Cause NPL_		2.7234	0.0703
LGDP does not Granger Cause HHI	110	61.6838	2.00E-18
HHI does not Granger Cause LGDP		37.5684	5.00E-13
LTOTAL_ASSETS does not Granger Cause HHI	110	1.17744	0.3121
HHI does not Granger Cause LTOTAL_ASSETS		0.74132	0.479

NPL_ does not Granger Cause HHI	110	0.84039	0.4344
HHI does not Granger Cause NPL_		1.5785	0.2111
LTOTAL_ASSETS does not Granger Cause LGDP	110	0.72942	0.4846
LGDP does not Granger Cause LTOTAL_ASSETS		3.23197	0.0434
NPL_ does not Granger Cause LGDP	110	0.4337	0.6493
LGDP does not Granger Cause NPL_		4.23093	0.0171
NPL_ does not Granger Cause LTOTAL_ASSETS	110	13.6932	0.000005
LTOTAL_ASSETS does not Granger Cause NPL_		4.93484	0.0089

Table 8 shows the results of testing multiclonality as variable VIF is less than (10), so we have no multicollinearity issues. Also, results show that there is a negative relation between banks' market share measures by banks' concentration.

Table (9): Model fit results of hypothesis number 1:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.410[a]	.168	.135	0.39014%

a. Predictors: (Constant), Competition, NPL% , LOGTA, Digitization, LOGGDP

Table (10): regression results of hypothesis number 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.876	5	.775	5.093	.000[b]
	Residual	19.178	126	.152		
	Total	23.054	131			

a. Dependent Variable: ROA

b. Predictors: (Constant), Competition, NPL% , LOGTA, Digitization, LOGGDP

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
	(Constant)	7.764	8.159		.952	.343
	LOGTA	.483	.108	.415	4.457	.000
	LOGGDP	-1.194	.777	-.187	-1.537	.127
	NPL%	.007	.012	.049	.596	.552
	Digitization	.034	.266	.015	.129	.898

HHI	.001	.000	.154	1.428	.156

a. Dependent Variable: ROA

Results show that digitization and competitiveness had a positive non-significant effect on banks' performance measured by ROA, while bank size significantly affected ROA. This result is in accordance with research results investigating the determinants of Palestinian banking profitability(Gaber H, 2018); this suggests that the Palestinian banking industry has economies of scale; also, Observing shifts in the market concentration as measured by HHI may require a significant period to materialize its effect on banks' performance and fully comprehend the enduring impact on return on assets (ROA). The potential consequences of digitalization and shifts in market concentration might not be apparent during the study period. They could necessitate a longer duration to show a significant effect, which Is not available as most banks are newly applying digitization to their services and products

Table (11): Model fit results of hypothesis number 2:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.410[a]	.168	.142	0.38862%

a. Predictors: (Constant), HHI, NPL% , LOGTA, LOGGDP

Table (11): regression results of hypothesis number (3):

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.874	4	.968	6.412	.000[b]
	Residual	19.181	127	.151		
	Total	23.054	131			

a. Dependent Variable: ROA

b. Predictors: (Constant), HHI, NPL% , LOGTA, LOGGDP

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.323	7.374		.993	.323
	LOGTA	.487	.103	.418	4.722	.000
	LOGGDP	-1.152	.701	-.180	-1.644	.103
	NPL%	.007	.012	.049	.603	.547
	HHI	.001	.000	.151	1.434	.154

a. Dependent Variable: ROA

Competitiveness has a positive non-significant effect on ROA, The Herfindahl-Hirschman Index is a non-structural measure of competitiveness. Empirical analysis shows that higher competition levels lead to higher profitability levels. This implies that banks should consider improving their competitiveness to enhance their performance and profitability

Table (12): ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	650609.291	4	162652.323	23.987	.000[b]
	Residual	861180.720	127	6780.951		
	Total	1511790.011	131			

a. Dependent Variable: HHI

b. Predictors: (Constant), digitiz, NPL% , LOGTA, LOGGDP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10251.836	1462.241		7.011	.000
	LOGTA	-.478	22.882	-.002	-.021	.983
	LOGGDP	-840.244	146.075	-.513	-5.752	.000
	NPL%	1.619	2.561	.043	.632	.528
	Digitization	-113.368	55.310	-.190	-2.050	.042

a. Dependent Variable: Competition

The regression analysis results of the effects of digitization of banks' products and services revealed a negative significant effect on market concentration (positive effect on competitvness)as predicted by hypothesis . As Palestinian banks undergo a progressive expansion through digitization competitive pressures that emerged within each bank's products and services, also, digitization has improved banks' ability to differentiate their products and services by offering innovative digital services, and this can attract a broader range of customers, making it harder for banks to dominate the market, for these reasons may lead to a reduction in the Herfindahl-Hirschman Index (HHI), fosters competition and diminishes market concentration.

Discussion

This research investigated how digitization affects competition and the profitability of Palestinian banks to provide recommendations to policymakers. The analysis results showed that the competition-digitization relation is significant and positive for the Palestinian banks; however, bank size has a direct significant positive effect on profitability; one explanation of this result is according to Northcott's (2004) working paper indicated that both the number of banks and the level of concentration alone do not serve as adequate markers of contestability. Additional factors exert significant influence, including regulatory measures that encourage competition, a well-established banking system, the impact of branching, and the influence and adoption of technological progress.

Digitization of banks' products and services revealed in this study a negative significant effect on concentration; the more banks digitize, the less concentration, “the higher competition. “The results of the study indicate several policy implications, including bank managers should be encouraged to adopt financial innovation to achieve more competitiveness and efficiency, the result of the study concludes more likely as Northcott(2004). Research has shown that Palestinian banks can display both competitive behavior by applying digitization. If this is the case, it may be possible to benefit from both digitization and economies of scale to enhance banks' profitability as banks can boost their profitability by increasing their size through acquisitions or mergers, which can lead to economies of scale. Bank managers need not be concerned about the level of concentration in the industry and instead focus on asset market share. Therefore, regulators should motivate small banks to merge and benefit from economies of scale for high profitability. Finally, more research is needed into what should be done about how banks can benefit

from economies of scale, and additional variables of competitiveness that affect financial performance should be put in the research as a further research gap that can be investigated for the banking sector in Palestine.

Refrences

[1] Abel, S., & Roux, P. Le. (2016). Determinants of banking sector profitability in Zimbabwe. International Journal of Economics and Financial Issues, 6(3), 845–854.

[2] Banker, T., Crash, W. S., Banker, T., Banker, T., Banker, T., Treasurers, C., & Governors, C. B. (2011). Media information 2011. 8.

[3] Akims, M. A. (2022). Bank Competitiveness and Profitability in the Banking Sector : A Review of Literature (Vol. 13, Issue 1). https://doi.org/10.9790/5933-1301015153

[4] Ambastha, A., & Momaya, K. (2004). Competitiveness of Firms : Review of theory , frameworks and models. Management, 26(1), 45–61.

[5] Banking competition. (n.d.). Global Financial Development Report. https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/banking-competition.

[6] Barney, J. (1991). Firm Reources ad Sustained Competitive Advantege. In *Journal of Management* (Vol. 17, Issue 1, pp. 99–120). https://doi.org/https://doi.org/10.1177/014920639101700108

[7] Bhawsar, P., & Chattopadhyay, U. (2015). Competitiveness: Review, Reflections and Directions. *Global Business Review*, *16*(4), 665–679. https://doi.org/10.1177/0972150915581115

[8] Blach, J. (University of E. in K. (2011). Financial Innovations and Their Role in the Modern Financial System – Identification and Systematization of the Problem. Financial Internet Quarterly, 7(3), 13–26.

[9] Cascio, R. P. (2011). Marketing Innovation And Firm Performance Research Model, Research Hypotheses, And Managerial Implications. 2011, 169.

[10] Chhaidar, A., Abdelhedi, M., & Abdelkafi, I. (2022). The Effect of Financial Technology Investment Level on European Banks' Profitability. Journal of the Knowledge Economy, 0123456789. https://doi.org/10.1007/s13132-022-00992-1.

[11] Cho, D.S., Moon, H.C., & Kim, M.Y. (2009). Does one size fit all?: A dual double diamond approach to country- specific advantages. Asian Business and Management, 8(1), 83–102

[12] Coulibaly, K. (2022). West Bank and Gaza Strip. In Comparative Studies in Special Education. https://doi.org/10.2307/j.ctv2rh29m1.10

[13] Dabic, M., Cvijanović, V., & González-Loureiro, M. (2011). Keynesian, post-Keynesian versus Schumpeterian, neo-Schumpeterian. Management Decision, 49(2), 195–207. https://doi.org/10.1108/00251741111109115

[14] Frain, M. (1992). The Japanese enterprise system. Oxford: Clarendon Press

[15] Gaber H, A. (2018). Determinants of Bank Profitability : Empirical Evidence from Palestine. Munich Personal RePEc Archive, 89424, 1–19.

[16] Garelli, S. (2012). IMD world competitiveness yearbook. Retrieved 25 April 2013, from http://www.imd.org/ research/centers/wcc/upload/Fundamentals.pdf,

[17] Grant, R. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. California Management Review, 33(3), 114–135

[18] Hamel, G., & Prahalad, C.K. (1989). Strategic intent. Harvard Business Review, 3, 63–76

[19] Heckscher, E. (1919). The effects of foreign trade on the distribution of income. Ekonomisk Tidskrift, 21, 497–512.

[20] Ibrahimi, G. (2010). Ibrahimi2010,providing competitiviness assessment for state and private banks of iran.pdf. 4(4), 202–2019.

[21] IMF. (2022). West Bank and Gaza. IMF Staff Country Reports, 2022(299), 1. https://doi.org/10.5089/9798400220166.002

[22] Karsh, S. M. A. (2019). Corporate Social Responsibility and Its Relation to Profitability: Evidence from Banks Operating in Palestine. Journal of Management Research, 11(1), 45–60. https://doi.org/10.5296/jmr.v11i1.14214

[23] Leontief, W. (1953). Domestic production and foreign trade: The American capital position re-examined. Proceedings of the American Philosophical Society, 97, 331–34

[24] Llewellyn, D. T. (2009). Financial Innovation and the Economics of Banking and the Financial System. In: L. Anderloni, D. T. Llewellyn, R. H. Schmidt, Financial Innovation in Retail and Corporate Banking. Cheltenham: Edward Elgar.

[25] Meng, F., & Wang, W. (2020). Research on the Mechanism of Digitalization to the improvement of Manufacturing Enterprises Performance Based on Mediating Effect. 2020 6th IEEE International Conference on Information Management, ICIM 2020, 122–126. https://doi.org/10.1109/ICIM49319.2020.244683

[26] Mcgahan, A. M. (1999). Competition, Strategy, and Business Performance. CALIFORNIA MANAGEMENT REVIEW, 41(3), 74–101. https://doi.org/doi:10.2307/41165998
Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. Journal of Banking and Finance, 16(6): Journal of Banking & Finance, 16(6), 1173–1178.

[27] Moon, H.C., Rugman, A., & Verbeke, A. (1998). A generalized double diamond approach to the competitiveness of Korea and Singapore. International Business Review, 7, 135–150.

[28] Moon, H.C., & Cho, D.S. (2000). National competitiveness: A nine factor approach and its empirical application. Journal of International Business and Economy. Fall, 17–38.

[29] Momaya, K. (1998). Evaluating international competitiveness at the industry level. Vikalpa, 23(2), 39–46. ———. (2008). Evaluating country competitiveness in emerging industries: Learning from a case of nanotechno- logy. Journal of international Business and Economy, 9(1), 37–58

[30] Msci. (2021). MSCI KLD 400 Social Index - MSCI. Domini 400 Social Index. https://www.msci.com/msci-kld-400-social-index.

[31] Northcott, C. (2004). Competition in Banking: A Review of the Literature.Working Paper 2004-24 / Document de travail 2004-24. In Bank of Canada. https://ideas.repec.org/p/bca/bocawp/04-24.html

[32] OECD. (2005). OECD Annual report. Herzschrittmachertherapie & Elektrophysiologie (Vol. 18, pp. 0–147).

[33] Ohlin, B. (1933). Interregional and international trade. Cambridge: Harvard University Press

[34] Osuagwu, E. S. (2014). Determinants of Bank Profitability in Nigeria. International Journal of Economics and Finance, 6(12). https://doi.org/10.5539/ijef.v6n12p46

[35] PMA. (n.d.). Despite the Crises Experienced by the Economy in 2020 Palestine Monetary Authority: Banking Sector has Maintained Strength and Growth of Deposits and Banking Facilities. https://www.pma.ps/en/Media/Press-Releases/despite-the-crises-experienced-by-the-economy-in-2020-palestine-monetary-authority-banking-sector-has-maintained-strength-and-growth-of-deposits-and-banking-facilities#:~:text=The banking sector has played a key.

[36] Porter(1998). Clusters and the new economics of competition. Harvard Business Review, 76(6), 77–90

[37] Porter (1990) ,The competitive advantage of nations. London: MacMillan.

[38] Ricardo, D. (1817). On the Principles of Political Economy and Taxation. London: John Murray.

[39] Rugman, A.M., & D'Cruz, J.R. (1993). The 'double diamond' model of international competitiveness: The Canadian experience. Management International Review, 33, 17–39

[40] Smith, Adam (1776). The Wealth of Nations. Edited by Edwin Cannan, 1904. Reprint edition 1937. New York, Modern Library

[41] Vernon, R. (1966). International investment and international trade in the product cycle. Quarterly Journal of Economics, 80, 190–207.

[42] Waheeduzzaman, A.N.M. (2011). Competitiveness and convergence in G7 and emerging markets. Competitiveness Review, 21(2), 110–128.

[43] Yahaya, O. A., Farouk, B. K. U., Yahaya, L. S., Yusuf, M. J., & Dania, I. S. (2015). Impact of Competition on the Financial Performance of Listed Deposit Money Banks in Nigeria. Journal of Economics and Sustainable Development, 6(18), 52–62. www.iiardpub.org

[44] Five Important Facts about the competitiveness of the U.S. Banking Industry https://bpi.com/five-important-facts-about-the-competitiveness-of-the-u-s-banking-industry/