International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Assessing the Impact of Financial Technology (Fintech) on Financial Inclusion in Egypt: An Applied Study

https://www.doi.org/10.56830/IJAMS07202410

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Abstract

Financial technology (Fintech) has emerged as a transformative force in the global financial landscape, offering innovative solutions to longstanding challenges. This study delves into the Egyptian context to assess the profound impact of fintech on financial inclusion—a crucial factor for economic development and social equity. Through empirical analysis, this research endeavors to unveil the multifaceted ways in which fintech is reshaping the financial landscape in Egypt, particularly regarding expanding access to financial services for underserved and unbanked populations. The data was collected from financial statements of banks over the period of 2018 – 2022, with keywords identified in annual reports to create dummy variables for analysis and analyzing it by STATA through logistic regression to determine whether there is a significant impact or not. The results reveal that the research supports the hypothesis that fintech has a significant effect on financial inclusion, as well as on reliability, availability, accessibility, and efficiency of electronic government services. Thus, this study contributes valuable insights for the Egyptian government to develop electronic payment systems and regulations that maximize the availability, accessibility, efficiency, and responsiveness of electronic government services, ultimately improving the lives of the nation's residents.

Keywords: Fintech, E-payment bills, Modes of payment, E-government system, Financial Inclusion

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1. Introduction:

1.1. Background

In recent years, Egypt has seen a growing number of challenges regarding the availability and accessibility of government services. The citizens are subjected to lengthy wait periods and varying levels of service from the various government departments. This has resulted in a public outcry over the necessity for the government to modernise its services and improve citizens' access to digital platforms (Elkadi, 2013).

The purpose of this study is to evaluate how the availability, accessibility, efficiency, and responsiveness of electronic government services in Egypt may be affected by increasing the number of electronic payment and transaction options. It is crucial to understand how different aspects of electronic governance (e-government) influence the citizen experience and level of satisfaction as the government strives to increase its online presence and online products. This is especially important as the government seeks to grow its digital presence and online offerings (Agur et al. 2020).

The secondary e-payment and transactional elements, which each represent a distinct facet of the government's digital financial infrastructure, are the independent variables that are investigated during the course of this study. The capacity to access bank accounts that are linked to the e-government system is one of these factors. Others include the availability of bill payment services, general e-payment options for services, the diversity of payment methods that are supported, and the availability of general e-payment alternatives. A significant increase in the acceptance and utilisation of electronic payment alternatives is hypothesized to be able to assist in the resolution of a significant number of the problems that currently plague conventional models of providing government services in person (Liébana-Cabanillas et al. 2014).

The dependent variables are the constituents that determine how successful electronic government services as a whole are from the point of view of the general public. The term "availability" refers to the extent to which a service is made available through various digital channels. Accessibility takes into account the obstacles that prevent digital access, such as the infrastructure of the internet or the rates of technology adoption. Efficiency is measured by how much time and effort are saved for citizens throughout the processing of requests. The flexibility of services and the feedback channels are the primary foci of responsiveness (Vasiljeva and Lukanova, 2016).

By analysing the relationship between these independent and dependent variables, this study seeks to offer recommendations for how Egypt's government can create electronic payment systems and regulations to maximise the availability, accessibility, efficiency, and responsiveness of its electronic government services.

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By looking at the link between these independent and dependent variables, following recommendations will be given. The objective of this research is to offer evidence-based recommendations for updating public administration practises in Egypt in a way that will significantly enhance the lives of the nation's residents.

1.2. Research Problem.

Egypt is facing significant challenges in its electronic government services, including low availability, accessibility, efficiency, and responsiveness (GOHARY, 2019). Citizens often experience long wait times, limited digital access, and inconsistent service quality across government departments. While some progress has been made in digitizing payments and transactions, the integration of fintech within e-government remains limited (Zaied et al. 2017). This hinders the government's modernization efforts and leads to public dissatisfaction.

To address these issues and improve the citizen experience, there is a need for research into how increasing the use of electronic payment options and financial services in Egypt can impact e-government services. This study aims to analyze the relationship between fintech adoption and key e-government metrics, providing evidence-based recommendations to policymakers for optimized fintech integration. Ultimately, the goal is to enhance online service delivery models and address Egypt's challenges in public service modernization.

1.3 Research Hypotheses

H1: There is a significant effect of fintech on financial inclusion.

H1a: There is a significant effect of fintech on reliability

H1b: There is a significant effect of fintech on availability

H1c: There is a significant effect of fintech on accessibility

H1d: There is a significant effect of fintech on efficiency

1.4 Research Questions

1- Does fintech have a significant effect on financial inclusion?

2- Does fintech have a significant effect on reliability?

3- Do fintech have a significant effect on availability?

4- Does the presence of fintech significant effect on accessibility?

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5- Is there an effect of fintech on efficiency?

1.5 Research objectives

1. To examine the effect of fintech on financial inclusion.
2. To analyze the impact of fintech on reliability of financial services.
3. To investigate whether fintech has a significant effect on the availability of financial products and services.
4. To determine if the presence of fintech companies significantly improves the accessibility of financial services.
5. To assess the influence of fintech on the efficiency of financial transactions and management.

1.6 Variables of the study

In this thesis the measurement will be as follows:

The Independent variable is fintech as it will be focused on E-payment services while the dependent variable is financial inclusion as E-government services. The information for each variable will be gathered from financial statements of banks. In this study, secondary data in the form of financial statements will be analysed. The website of the sampled bank is where the financial reports will be gathered. The duration will be between 2018 – 2022. According to the datasets each dimension will searched as keywords at the annual reports and if it is mentioned the dummy variable will be mentioned as 1; if present or 0; otherwise.

1 Table (1.1): Table of measurement

Variables	Measurement	Sources
Independent variables • Bills E-payment • Ways of payment • Bank accounts with E-governments	Checklist from annual reports for each bank based on the dimensions Keywords	AL-Majali, and Bashabsheh, (2016)
Dependent variables • Responsiveness	Dummy variables where 1 in case of existence of keywords and 0 if not	GOHARY (2019)

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• Availability • Accessibility • Efficiency	Keywords as: • Responsive, responsiveness • Available, availability • Accessible, accessibility Efficiency ratio is found in financial statements	
Control variables • Trust • Security	Dummy variables where 1 in case of existence of keywords and 0 if not Keywords as: • Trusted, trust, trusting • Secured, secure, security	He et al. (2017); Roca et al. (2022)

Source: AL-Majali, and Bashabsheh, (2016); GOHARY (2019); He et al. (2017); Roca et al. (2022)

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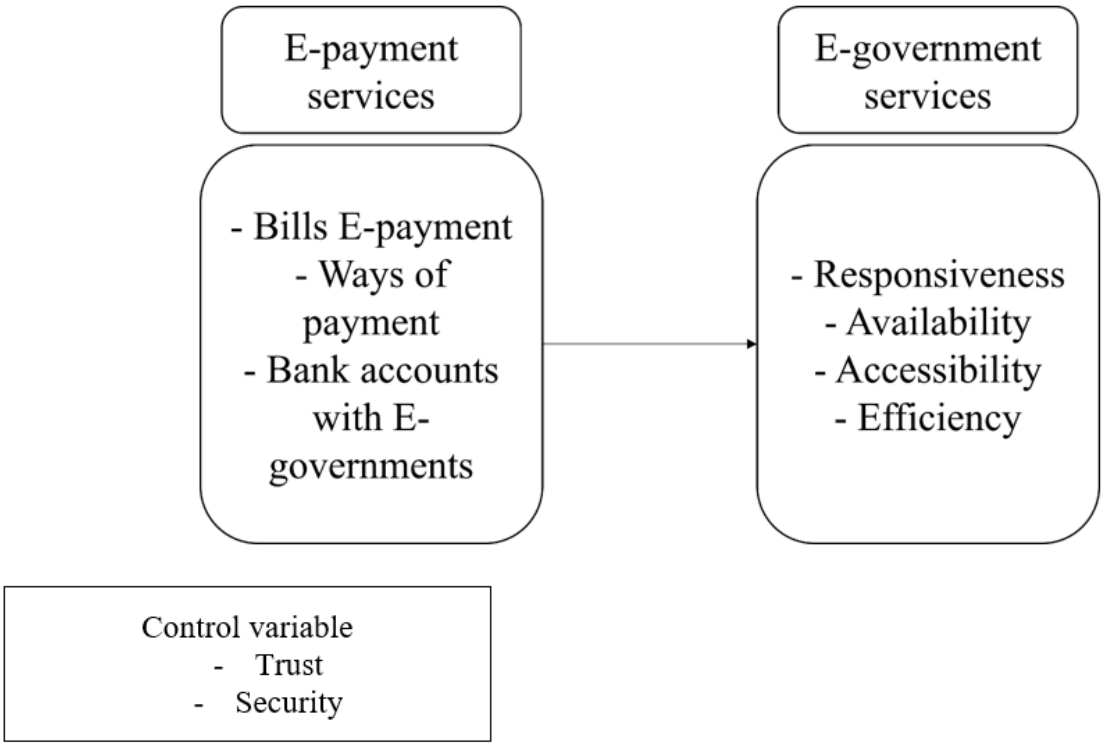
1.7 Conceptual framework



1 figure (1.1) Theoretical framework

Source: Mensah and Mwakapesa, (2023); Yaokumah et al. (2017)

Following an analysis of the relevant research, a model is selected to represent the effect that fintech (also known as e-payment services) has had on e-government services. The accompanying graphic, which illustrates the relationship that exists between the variables, includes a discussion of the variables that were utilised in the model.

Altering and tinkering with the independent variable in this experiment might potentially have an effect on the findings of the dependent variable. The behaviour of the dependent variable serves as the primary focal point of the investigation as well as the basis for the conclusions drawn from it. The use of electronic payments acts as the investigation's independent variable during the course of this study. After that, it is incorporated into the model as the third variable so that more study may be conducted on it. In order to measure each variable in its own right, there has to be a large number of statements. The pooled effect model was used to examine every one of the claims. The other side of the equation is the dependent

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variable, which consists of e-government services and their respective four dimensions. The primary goals of this research are to get a deeper understanding of the potential effects that E-payment services have on performance as well as the challenges that are connected with E-government services. Following the process of determining the criteria that will be utilized throughout the investigation, the study will next begin addressing the research topic.

2. Literature Review:

In the forthcoming literature review, the paper will explore the intricate dynamics of the research study, systematically dissecting the foundational elements of the independent variables. These independent variables encompass e-payment bills, diverse payment modalities, and the integration of bank accounts with the e-government system. Concurrently, the focus will extend to the dependent variable, which pertains to e-government services, with its dimensions encompassing availability, accessibility, efficiency, and responsiveness.

As the review progresses, the primary objective is to elucidate the intricate interplay among these dimensions. The ultimate goal is to conduct an analytical examination aimed at revealing and explaining the relationships that underlie these independent variables and the dependent variable of e-government services. This comprehensive investigation is expected to yield valuable insights into how the introduction and implementation of electronic payment options within Egypt's e-government framework can impact the accessibility, efficiency, and responsiveness of these services. Such insights will significantly contribute to an enhanced understanding of this critical area of research.

2.1. The concept of Fintech

The world of finance has undergone a remarkable transformation in recent years, driven by the emergence of financial technology, or fintech. Fintech represents a disruptive force that has reshaped the way individuals and businesses manage, invest, and transact their money (Jain et al. 2023). In this paper, the study will go into the concept of fintech, its evolution, key components, impact on various sectors, and its potential for the future.

Fintech is a portmanteau of "financial technology," and it refers to the innovative use of technology to deliver financial services and products. These technologies include software, applications, algorithms, and even hardware that aim to improve and automate financial processes. Fintech is a broad and multifaceted

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concept that encompasses various sub-sectors, each with its own unique applications and impacts (Gomber et al. 2018).

Fintech is not a new concept, but its recent surge in popularity and impact can be traced back to the early 21st century.

According to online Banking and Payments, the earliest forms of fintech can be traced to the introduction of online banking and payment systems in the 1990s. This allowed individuals to access their bank accounts, make payments, and conduct transactions from the comfort of their homes. The Peer-to-Peer Lending platforms, like Prosper and Lending Club pioneered the concept of peer-to-peer lending in the mid-2000s. These platforms connected borrowers with individual investors, disrupting traditional lending institutions (Arner et al. 2016).

While Mobile Banking and Wallets, the proliferation of smartphones led to the rise of mobile banking apps and digital wallets. Services like PayPal and Apple Pay enabled users to make secure and convenient electronic payments.

At Robo-Advisors, Fintech also impacted the investment sector with the advent of robo-advisors. These automated platforms use algorithms to provide personalized investment advice and portfolio management, making investing more accessible to a broader audience (Lowry, 2016).

In addition, the introduction of blockchain technology and cryptocurrencies like Bitcoin brought about a revolution in the world of finance. Blockchain offers transparent and secure ledger systems, while cryptocurrencies challenge traditional currencies and payment systems. The Payment and Money Transfer Services includes various payment solutions, from mobile wallets to digital currencies and blockchain-based systems. These technologies have simplified money transfers and reduced transaction costs (Joo et al. 2020).

Digital banks, or neobanks, have emerged as a significant component of fintech. They offer banking services entirely online, often with lower fees and more user-friendly interfaces than traditional banks. Robo-advisors and online investment platforms have made it easier for individuals to invest in stocks, bonds, and other assets. These platforms often offer lower fees and automated portfolio management (Temelkov, 2020).

For Crowdfunding, the Fintech has transformed fundraising through crowdfunding platforms like Kickstarter and Indiegogo. These platforms allow entrepreneurs and creators to raise capital from a global

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audience. Insurance technology, or insurtech, leverages data analytics and digital tools to improve underwriting, claims processing, and customer experience in the insurance industry (Rubanov et al. 2019).

Regulatory technology, or regtech, is concerned with assisting financial institutions in efficiently complying with complicated regulations. This comprises data management, reporting, and risk assessment tools. By enabling decentralised and secure transaction methods, blockchain technology and cryptocurrencies have the potential to revolutionise the financial industry (Teichmann et al. 2023). Fintech has cut the cost of financial transactions and services in order to reduce costs. Fees at neobanks are frequently lower, and peer-to-peer lending platforms can offer competitive interest rates (Molnár, 2018; Soloviev, 2018).

Due to the extensive availability of smartphones and internet connections, FinTech and financial services have become increasingly accessible to a broader demographic. This accessibility permits individuals to engage in a variety of online financial activities, including banking, investing, and crowdfunding. Fintech has been instrumental in spurring innovation in the financial industry. To remain competitive with nimble fintech companies, traditional financial institutions are now compelled to adapt and enhance their services (Gomber et al., 2018).

Fintech has significantly improved the speed and convenience of financial transactions. Payments can be made instantaneously, and investment decisions can be executed quickly through automated platforms. Regtech solutions have enhanced risk management and compliance for financial institutions, reducing the likelihood of fraud and regulatory violations (Kumari and Devi, 2022).

Fintech has reduced the need for intermediaries in financial transactions. Peer-to-peer lending, for example, connects borrowers directly with lenders, bypassing traditional banks. For Enhanced AI and Machine Learning of fintech applications will increasingly leverage artificial intelligence and machine learning for better customer service, risk assessment, and fraud prevention (Aziz and Dowling, 2019).

Central bank digital currencies (CBDCs) and stablecoins may gain traction, possibly causing substantial changes in the global financial climate. Open banking efforts are gaining traction, allowing people to safely exchange financial information with third-party fintech businesses in order to improve their financial management and obtain personalised services. Fintech has the potential to play a critical role in improving financial literacy and assisting individuals in making better educated financial decisions (Wang, 2023; Buckley et al., 2021).

Environmental, social, and governance (ESG) factors will almost certainly become more incorporated into fintech platforms, matching investments with long-term aims. As the fintech industry expands, authorities

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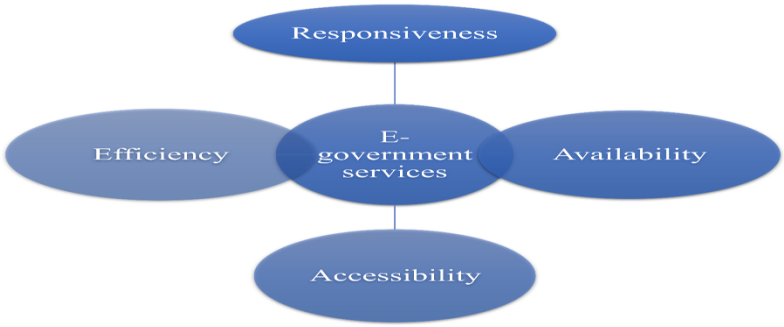
must adapt to new technology and business models while finding a balance between innovation and consumer safety. Fintech has the potential to simplify and lower the cost of cross-border payments and transactions, hence helping global commerce and remittances (Ng et al. 2021).

At the end, the concept of fintech represents a transformative force in the financial industry, reshaping how individuals and businesses manage their finances. It has democratized access to financial services, reduced costs, and spurred innovation across various sectors (Varga, 2017). As fintech continues to evolve, it holds the potential to address critical financial challenges, promote financial inclusion, and shape the future of finance on a global scale. However, it also presents regulatory and security challenges that will need to be carefully navigated to ensure a sustainable and secure financial ecosystem. Fintech is not merely a technological trend; it is a fundamental shift in the way we think about and interact with money, with far-reaching implications for the financial landscape of the future (Gruin and Knaack, 2020)

2 figure (1.2): Developments of fintech

Source: Based on the author

In the context of economic and social development, the concept of financial inclusion can be thought of as a dependent variable that is influenced by a variety of different circumstances and interventions. It is a multi-faceted concept that represents the level to which individuals and communities have access to and



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participate in formal financial services and systems. It also refers to the degree to which formal financial services and systems are available (Chen and Yuan, 2021).

Source: Based on Kurfalı et al. (2017); Sharma, (2015)

2.2 The impact of fintech on financial inclusion

Plyler et al. (2010) investigated the impact of M-PESA on the socioeconomic status of Kenyans. They show how the advent of M-PESA has made it simple for family members to send money via SMS. It helps families show off their unity, which contributes to the stability of family structures. As a result, M-PESA weakened family structures. In certain situations, it has also contributed to family dissolutions.

Mbogo (2013) conducted a study of 409 micro-enterprise entrepreneurs in Nairobi to investigate the motivations for using M-PESA services. The ease of use of money transfer, technology, usefulness, cost, safety, and support all contribute to the success of micro-enterprises that employ M-PESA. M-PESA influences wealth development by cutting costs and risks. Digital payments can also aid in the reduction of corruption by enhancing transparency and empowering women by giving them greater financial autonomy (Klapper and Singer 2014).

According to Frimpong et al. (2014), incorporating financial technology into the financial services sector enhances the possibility of offering e-banking products and services to increase financial inclusion. Microcredit, microfinance, and financial innovation all have the potential to increase financial inclusion. It has the ability to boost both economic and entrepreneurial activities. By comparing state-owned and private-sector banks, Joseph and Varghese (2014) attempted to determine the Indian economy's financial inclusion status. During the study period, the use of debit cards increased dramatically, with banks increasingly focused on semi-urban and rural areas. According to the report, despite the country's inclusive

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banking measures, only a small number of people have access to banking and financial products and services.

According to Kamboj (2014), the number of banks branch networks and ATMs is positively related to the country's GDP growth rate. Because of mobile phones and the Internet, there are additional incentives for unbanked persons to join formal or traditional financial institutions. Because of mobile money services, rural communities now have more access to affordable financial products and services (Thulani and Chitakunye 2014).

Joshi (2014) investigated how well-known and extensively used various financial services provided by banks are. Current accounts, demand loans, drawdown facilities, credit cards, and mobile banking are examples of financial products with limited penetration. Less than 41% of respondents were aware of the financial options available. This degree of comprehension is mostly due to a lack of participation, instruction, and accountability.

The costs levied, as well as the inability to reach rural and unbanked areas, are critical. It could be critical for lowering operational expenses and reaching the vast majority of unbanked communities. It provides a variety of financial services to those who do not have access to banking facilities, such as mobile banking and micro ATMs (Gautam and Garg 2014).

According to Shah and Dubhashi (2015), access to financial services and goods in rural and semi-urban areas has been limited due to technical improvements in the banking industry such as e-commerce, mobile devices, email, ATMs, and plastic money. Retailers, banks, card issuers, device manufacturers, technology companies, and service providers all benefit from the formation of a new ecosystem of market participants as a result of mobile payment systems (Liu et al. 2015).

Access to the formal financial system is critical for preventing marginalisation, promoting inclusive growth across all society groups, and promoting economic development. Peru's access to the formal financial system is hampered by geographical constraints and a dispersed population. The development of mobile banking systems has lately addressed this accessibility issue. By addressing access concerns through technology and correspondent banking, this revolutionary new banking model decreases operational expenses for banks. Because customers interact with neighbourhood shops rather than bankers, the combination of technology and extended coverage through a broad network of banking correspondents promotes access to and trust in formal financial services. Poor clients prefer to contact with these agents rather than bankers (Cámara and David 2015).

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According to Onaolapo (2015a), in order to attain creative financial inclusion, ICT and non-bank retail agents such as post offices must be employed to deliver financial services outside of typical financial institution branches. A branchless banking system would be used to communicate between the retail agent, financial service provider, and consumer in this method. Mobile banking services and other ICT-based infrastructure, such as point-of-sale app networks, would be used. Private and foreign players commonly engage in a variety of business activities related to online banking in urban regions. According to McKinsey (2013), Internet banking gained 130% in India between 2007 and 2011, whereas branch banking decreased 15%. However, just 7% of Indian account holders use Internet banking for transactions.

Internet banking and mobile banking are two further methods of gaining access to financial services. However, many in India prefer to obtain financial services through physical branches rather than virtual ones, particularly in rural areas. People choose mobile banking to check their accounts or receive quick text notifications for each transaction. Checking account balances and viewing the most recent three transactions are the two most popular mobile banking functions. In rural India, payments and mobile transactions were not widely used. Customers in India avoid mobile banking due to simple and secure access to ATMs, security concerns, and other issues (Sharma 2016).

The widespread availability of mobile phones promotes inclusive growth. They also show how institutions can contribute to the positive effects of mobile technology on long-term growth (Asongu and Nwachukwu 2016). Villagers' access to weather, market, and price information via mobile phones allows for enhanced production and productivity. More evidence suggests that mobile phones are hastening India's economic progress (Ghosh 2016). Governments in both emerging and wealthy economies prioritise inclusive growth. Financial services have been regarded as essential to accomplishing this goal and moving towards a more just and equal society. It is impossible to emphasise the importance of service design in raising financial literacy, enhancing service consumption and well-being, and empowering people by bringing them into the mainstream (Bisht and Mishra 2016).

One of the crucial reasons contributing to the expansion's speed is the effective fusion of financial needs and practical As technology advances, finance can now better fulfil the needs of the actual world. As a result, rather than the technology itself, the success of financial innovation is defined by how well finance fits the business and real-life conditions (Chen 2016).

Rojas-Suarez (2016) studies mobile money penetration in Kenya and Mexico. The researcher investigated how regulatory frameworks and business practises influence mobile money payment uptake and growth rates in these two countries. Only 2% of Mexicans utilise mobile payments, whereas more than half of

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Kenyans do. The author explores the two business models—those of banks and mobile network operators—that are driving the growth of mobile money in these countries. Kenya has adopted a less regulated paradigm, which is being led by mobile network companies. Mexico, on the other hand, has embraced a bank-led, mobile payment approach with rigorous rules that largely serves individuals with bank accounts. Mexico's stricter legislation had little effect on the number of people who had access to banking, but it did show the growth of mobile money.

The financial business is being transformed by big data, blockchain technology, cloud computing, and mobile Internet. Fintech is expected to disrupt traditional banking business models, requiring organisations to modernise and restructure their processes (Chen et al. 2017). Blockchain and other digital finance technology have aided a developing type of entrepreneurship that tries to give chances for those who are financially disadvantaged (Larios-Hernández 2017). Access to these goods has risen dramatically as a result of Digital Financial Services, owing mostly to mobile technology and agricultural development programmes. Fund implementers are excited about their power to impact change throughout all agricultural value chains (World Bank Group 2017). As a result of the financial technology revolution, financing for traditional supply chains has transformed. Online supply-chain finance is a relatively new source of credit for suppliers, such as small and medium-sized firms. To justify enabling or supporting FinTech developments in terms of online supply-chain finance, such as those listed above, measures to improve financial inclusion for underserved SMEs should be provided (Tsai and Peng 2017).

As a result of the digital transition, financialized inclusion takes on new dimensions, opening up new options for the state to improve "legible" inclusion. Global finance is a novel technique for transforming low-income households into producers of financial assets (Gabor and Brooks 2017). Ranade (2017) emphasised fintech's potential and influence on financial services. He discussed the purpose of information management and its prospective application in conjunction with the Jan Dhan, Aadhaar, and Mobile (JAM) infrastructure, which has the potential to dramatically improve financial inclusion. The author also suggested care over the privacy and data ownership issues that may arise as a result of the approach. The findings of Digital Financial Inclusion and Consumer Capabilities in India: A Handbook for Financial Service Providers (2017) attracted attention to the obstacles and issues involved in digital finance, ranging from willingness and capability to access and use it. Regional settings must be actively created in order to raise awareness and attract more people to embrace digital financial technology.

Low-income consumers' digital financial data can be utilised to identify trends in purchases, deposits, and loans, which can assist service providers in developing customised financial products that appeal to

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society's different and unique segments. However, such prospects went untapped because digital finance usage had yet to spread beyond individuals who are financially aware and live in cities. Financial technology has an impact on financial institutions, regulators, clients, and business owners across a wide range of industries (Leong et al. 2017). Because a sizable section of the country's population still lacks access to formal banking, the new collection of banks has a compelling financial rationale. Potential competitors may try to exploit the synergies by leveraging the company's clients, distribution network, and market reputation. The new banks can effectively function on mobile and internet platforms while keeping low operating expenses since they have fewer physical branches and a stronger emphasis on virtual banking. Because of structural and operational constraints, smaller banks have a considerable advantage in providing last-mile connectivity that established companies do not (Sikdar and Kumar 2016). Hanafizadeh (2018) researched e-bank service outsourcing and discovered a number of influencing factors. Twenty-three major elements influencing e-bank outsourcing decisions were discovered and classified as technical attributes, organisational attributes, and environmental attributes.

Digital financial technology plays a crucial role in bringing impoverished or marginalised people into the formal financial sector. Financial market products expose the poor and vulnerable to the risks of investing in financial markets, financial institutions, and other investment possibilities (Mader 2018). Female-headed households do not benefit more from mobile phone use and financial inclusion. It will help the government and stakeholders find methods to enhance people's livelihoods (Abor et al. 2018). Mobile phones have created significant financial development prospects and are likely to become a regular tool for a wide range of financial operations. As a result, hundreds of mobile payment systems have been introduced around the world (Iman 2018).

Following the 2008 global financial crisis, Fintech innovation was spurred by transformations in e-finance and mobile technologies for the banking and financial services sector (Lee and Shin 2018). Fintech solutions that mix finance and technology are being developed as a result of recent breakthroughs in IT technology. The rapidly rising online market and supply of mobile devices have created demand for mobile Fintech payment services that enable quick online and offline payment (Kang 2018).

Globally, innovative financial inclusion methods are being accepted and implemented. In this perspective, financial inclusion must be seen holistically in order to achieve the SDGs. Universal collaboration is essential to build the correct financial tools, services, and regulatory laws in order to transform existing economic behaviour and establish an ecosystem for innovative financial inclusion. Financial inclusion will become a crucial prerequisite for social and economic growth, culminating in global access to vital financial

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services that is unconstrained (Salampasis and Mention 2018). There is a push in India to digitise all payments. It gained prominence following the demonetization of massive sums of bank notes in November 2016. But how willing are low-income Indians (and other citizens of developing countries) to accept digital payments? This subject requires further investigation due to the numerous constraints related with mobile phone usage, bank account features, digital payment acceptability throughout value chains, and the sustainability of tiny transactions (Sinha et al. 2018). Digital technologies are transforming the way financial services are supplied around the world. "Fintech" opens up new channels for increasing access to financial services. Financial inclusion has the ability to significantly improve people's living standards. Certain dangers in existing investment opportunities in the financial system, on the other hand, need cautious regulatory approaches. Regulators and policymakers are currently straining to catch up (Michaels and Homer 2018).

The mobile money revolution is undoubtedly the most convincing current example of the failure of state-led financial sector development and the triumph of market-oriented policy. Across Sub-Saharan Africa, the nations with the best success have not always been those with the most governmental resources engaged in expanding financial inclusion. Although a number of socioeconomic factors can influence how effectively mobile money succeeds in a particular country, the most essential element is whether governments provide an appropriate regulatory environment. First, authorities should reduce impediments to new entrants into the financial services market. Second, they should loosen restrictive restrictions such as KYC-AML laws, minimum capital and liquidity requirements, and other policies that increase the cost of serving low-income customers (Burns 2018).

In banking, identity is crucial for combating fraud and crime, meeting know-your-customer regulations, and maintaining market integrity. However, identification and know-your-customer laws can be substantial barriers to financial services. Technology allows us to address this issue by creating digital infrastructure and related services (Arner et al. 2019).

According to Ene et al. (2019), banks should minimise concerns connected with employing automated teller machines and establish worldwide best practises. Many new financial services require the use of smartphones rather than basic mobile phones. People in poor countries usually lack access to cell phones. Fintech services, in particular, necessitate low-cost, long-term technology and infrastructure. Furthermore, both emerging and established countries must build a supportive infrastructure that allows for secure transactions in order to digitalize financial services (Haddad and Hornuf 2019).

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Many developing countries encounter difficulties in overcoming inadequate access to formal banking goods and services. Remittance inflows have a major negative impact on financial inclusion by lowering the demand for bank accounts at formal financial institutions (Gautam 2019). In the wake of ever-increasing claims about the risks and benefits of developing financial technology (Bernards and Campbell-Verduyn 2019), a careful study of the extent to which technical breakthroughs in global finance are actually "disruptive" is critically needed.

The high adoption of M-pay in China was influenced by four major factors: government support and sponsorship, easy-to-use technology infrastructure QR Code rather than NFC technology, ease of usage, convenience, and safety of the M-pay apps, and savings incentives due to the absence of any associated fees with M-pay transactions for both consumers and small businesses. A favourable government regulatory framework, or lack thereof, is the key enabler of extensive M-pay adoption in China. In addition to direct Chinese government sponsorship of M-pay use as a main factor influencing M-pay adoption in China, where government sponsorship and inclusion of financial services resulted in the blooming of this Fintech innovation in China (Kennedyd et al. 2020).

In China, mobile payment systems are largely regarded as one of the most effective tools of promoting inclusive finance. It is also seen as a turning point in their digital success story. The bulk of emerging and poor countries' financial and economic systems are still in the early stages of development. Digitalization of inclusive finance has the potential to have a substantial impact on their economic development (Hasan et al., 2020). Financial services can help drive development. They help people get out of poverty by letting them invest in their health, education, and enterprises. They also make it easier to deal with financial crises that may lead to family poverty, such as job loss or crop failure. Financial inclusion, particularly through digital financial services such as mobile money, debit and credit cards, and other financial technology (or fintech) applications, provides various potential development benefits, according to a growing body of research. Many impoverished people around the world lack access to traditional and new financial services, such as bank accounts and digital payments that can assist them in meeting these demands. They rely on cash instead, which is hazardous and difficult to handle. That is why the World Bank has prioritised financial inclusion (access to and utilisation of formal financial services) (Demirgüç-Kunt et al., 2020).

The current situation might be regarded as the advent of Fintech 4.0 (akin to Industry 4.0), in which start-ups and technology companies supply services directly to economic agents (both individuals and corporations), bypassing traditional financial intermediaries. Of course, digital technology does not make financial services more accessible in and of itself. A sophisticated payment system and physical

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

infrastructure are required, as well as an adequate regulatory framework and consumer protection mechanism. Lowering the costs of providing financial services should lead to improved availability (Belozyorov et al. 2020). As a result of technical innovation and broad use, many unbanked people around the world may now access financial services via mobile phones. Though the fintech revolution is regarded as a game changer in terms of increasing financial inclusion, its greater penetration must be increased because its reach is limited. Users' attitudes towards financial technologies are influenced by technological and behavioural aspects (Senyo and Osabutey 2020).

Fintech firms are financial lending and investing choices that have emerged as alternatives to traditional bank services. They are commonly referred to as digital technology that aids in financial inclusion and long-term development. Thus, the poor's life are improved (Bhagat and Roderick 2020). Financial technology companies offer a wide range of financial instruments and services that use cutting-edge technology. Fintech and traditional banks are combining into a single market, with co-opetition tactics being used to avoid conflicts of interest and other governance concerns. Banks are digitising their business models, which is assisting in the acceleration of strategic convergence (Moro-Visconti et al., 2020).

Financial literacy is critical to economic well-being and resilience, according to a number of research studies. At an unprecedented rate, financial technology is revolutionising the banking and financial services industries. Financial education, financial literacy, and financial well-being all have an impact on the socioeconomic growth of society's poorest members. They also help with financial inclusion and the issues that come with financial scams and fraud (Panos and Wilson 2020).

According to the United Nations Sustainable Development Goals, financial technology is a crucial enabler of financial inclusion and the cornerstone of long-term growth. Fintech's full potential to contribute to the SDGs may be realised with a proactive approach to establishing the necessary infrastructure to facilitate the digital financial transformation (Arner et al. 2020). The fourth industrial revolution, which resulted in technological breakthroughs in many areas of life, including banking, occurred swiftly. Because of developments in financial technology, the financial sector is increasingly approaching the digital era. Fintech is one of the current financial field adaptation breakthroughs, and there has been a movement in financial institutions towards technology-based financial organisations. Because to Fintech's growing influence, the government predicts an increase in financial inclusion. Financial inclusion is the ability of a person to find cheap financial products that meet their specific needs. This article investigates the Fourth Industrial Revolution's enhancements to public financial inclusiveness (Mardiana et al. 2020).

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DOI: https://doi.org/10.56830/IJNZ1133

Despite local differences, India's telecommunications industry has a broad impact on financial inclusion. Low-income households do not have enough access to financial services. Telecom is critical for extending financial services to outlying areas and assisting individuals in improving their lives. Inclusive and comprehensive policies must be developed to advance India's financial inclusion and telecommunications infrastructure (Siddiqui and Siddiqui 2020).

The influence of interest rate changes on a household's intertemporal expenditure decisions is dramatically reduced when non-inclusive families exist. Fintech is also inextricably linked to financial inclusion. On the one hand, Fintech helps to solve the problem of financial inclusion by reaching out to those who were previously unavailable to banks. Fintech, on the other hand, will alter the structure of an economy's payment system, hence influencing the effectiveness of monetary policy (Saraswati et al., 2020). According to the study, mobile phone use raises household income by 3-10% from a variety of sources, including small companies and remittances, empowers women, and enables for consumption smoothing during shocks (Hossain and Samad 2020).

Hadar and Manos (2020) discovered that educated and employed women are more inclined to use fintech services. Men, on the other hand, are preoccupied with their financial situation. The financial inclusion strategy appears to have aided the expansion of financial inclusion. Following the adoption of the PMJDY, respondents were more likely to have bank accounts or use traditional Fintech services, particularly women and the poor. Despite the fact that financial market defects such as information asymmetries, market segmentation, and transaction costs are thought to limit poor people's access to formal financial services (Demir et al. 2020), financial technology are regarded as critical enablers of financial inclusion.

Ozili (2020) investigated key concerns and debunked the assumption that digital finance serves the poor. Although digital finance has the potential to improve development results, this argument is founded on flawed economic theory. The researcher also says that digital finance benefits the poor, but only with government assistance. Fintech adoption has dramatically increased financial inclusion. All countries and regions are growing, with Africa, Asia, and the Pacific witnessing the most progress (Khera et al. 2021b). As the financial system grows more competitive, new strategic applications are continually being created to boost efficiency. As a result, identifying and retaining high-value market niches typically takes precedence in decision-making. Those who fail to provide the market with the required profitability, on the other hand, are "excluded." There is a lot of interest in creating a more user-friendly financial system, particularly when it comes to using digital currency (Fintech) to encourage financial inclusion (Gálvez-Sánchez et al. 2021).

International Journal of Accounting and Management Sciences
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Print ISSN: 2834-8923 Online ISSN: 2832-8175
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Financial inclusion, a strategy for socialising the financial industry by increasing public access to financial services, has enabled people from all walks of life to participate in the quickly expanding Fintech financing market (Candraningrat et al. 2021). Because of COVID-19, the world has changed, and every industry is undergoing a downturn. Simultaneously, digitization has grown and is undergoing a paradigm change that began in 2015. It has been dubbed "digital inclusion" by experts (Kaur, 2021).

Fintech has grown in popularity on a global basis in recent years. Legislators, scholars, and researchers are all becoming more interested in the subject. Despite the fact that Fintech adoption appears to be a global strategic priority for financial institutions, there is little empirical data on the managerial challenges connected with Fintech, particularly from the perspective of poor countries. System outages, cyberattacks, insufficient IT manpower, increased competitiveness, technological risk, and client retention are the seven barriers to financial technology adoption (Dzingirai 2021).

The most notable underlying concerns influencing financial service acceptance and utilisation are "operational and implementation challenges," "financial literacy," and "affordability." The phrases "usage" and "access" have a substantial impact on financial inclusion. These are some of the most important factors to consider when building a demand-driven strategy for financial products and services, especially lending. According to Singh (2002), the identified latent hurdles to financial inclusion's "usage" dimension demand more governmental attention to augment supply-side efforts.

It was recently established that digital financial inclusion has a favourable impact on economic growth. According to empirical examination of drivers, digital financial inclusion is higher where there is a demand for financial services but a supply shortfall in traditional financial services. Separate estimates are made for the elements that influence digital financial access and usage. Access to basic infrastructure (mobile phones, mobile data services, and broadband internet) as well as financial literacy/familiarity are essential variables in supporting the adoption of digital financial inclusion. On the supply side, increased competition, inefficiencies in financial institutions, and the rule of law are required (Khera et al. 2021a).

Despite the fact that digital services have improved physical access to financial services, they remain underutilised due to a lack of basic connectivity, financial expertise, and social awareness. Financial systems should not only provide financial services, but they should also be localised to fit the context. As a result, the framework encourages a rethinking of reality and underlying concerns, as well as a more complete approach to digital financial inclusion (Aziz and Naima 2021). Fintech innovations are rapidly transforming the global financial system and making financial inclusion programmes for microfinance organisations (MFIs) easier. Such technology improvements are expected to improve financial system

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stability and, as a result, reduce risk-taking behaviour among the system's major stakeholders (Banna et al. 2021).

Digital financial services provide unprecedented prospects for financial inclusion of vulnerable parts of society by removing the limits of cost, distance, and transparency and offering financial services suited to their requirements. Despite tremendous advances in digital financial inclusion in India, women continue to encounter barriers to obtaining and using digital financial services (Kulkarni and Ghosh 2021). The financial system contributes to closing gender disparities and promoting community economic prosperity. Because of the increasing usage of mobile phones, women's access to mobile banking, improved saving habits, greater credit limits, and awareness of formal financial institutions have all expanded dramatically. Mobile phones boost financial inclusion dramatically, particularly among Indonesian women (Rahadiantino and Rini 2021).

Financial inclusion has the greatest impact on the Bank of Thailand's automated high-value transfer network, followed by online retail funds transfer, bulk payments, and credit card payments. Furthermore, the quality of financial services and products has a substantial impact on financial inclusion. Financial inclusion has the greatest impact on the Bank of Thailand's automated high-value transfer network, followed by online retail funds transfer, bulk payments, and credit card payments. Furthermore, the quality of financial services and products has a substantial impact on financial inclusion (Chancharat and Kijkasiwat 2021). Financial inclusion, through financial intermediaries such as banks, is critical to bridging greater socioeconomic disparities. Access to cheap healthcare, egalitarian education, equal work opportunities, and income parity for underprivileged and marginalised members of society can be made attainable by digitalizing traditional banking (Kanungo and Gupta 2021).

2.3 Previous studies of Egypt according to fintech on financial inclusion

According to El Gohary (2019), the aim of the study was to investigate the impact of implementing fintech, including services e-payment, bills e-payment, ways of payment, and bank accounts with e-government, on facilitating e-government services in terms of availability, accessibility, efficiency, and responsiveness. The study used secondary sources of data, with a self-administered questionnaire used for data collection. The results of the study showed that the most common obstacles faced by respondents were related to internet speed, low responsiveness, and difficulties in using the website. The study also found that all studied items were consistent and valid to use in another time, and that there was a poor positive relationship between independent variables and dependent variables, except for accessibility, which had a

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poor negative relationship with bank accounts with e-government, and responsiveness, which had a moderate positive relationship with services e-payment and bills e-payment.

Furthermore, Hussein (2020) study was to explore the role of Fin-Tech development for financial inclusion in countries in transition, with a focus on Egypt. The study used data from the Global Findex Database, which was launched by the World Bank through a survey data collected in cooperation with Gallup covering more than 140 economies around the world. The study found that with a 95% confidence level, all the independent variables "Have mobile money account, Mobile Subscribers and use of Internet" have a significant effect on financial inclusion as they all have a p-value less than the significance level alpha = 0.05. The study also found that despite high internet and mobile phone penetration in Egypt, it still has the lowest rank of financial inclusion among other Arab and African States.

Overall, previous studies have shown that fintech can positively impact financial inclusion in developing economies like Egypt. E-payment systems and greater accessibility of digital financial services have increased inclusion for vulnerable groups by making transactions more convenient and lowering barriers.

However, challenges remain around digital and financial literacy as well as infrastructure gaps. Fintech alone may not be enough to fully address underlying socioeconomic issues. A holistic approach is needed that considers local contexts and provides tailored services.

While Egypt has made progress in areas like mobile connectivity and digital payments, financial inclusion rates still lag behind regional peers according to survey data. This highlights the need to further strengthen digital payment networks and integrate them within e-government platforms to better facilitate access to essential services.

Previous research on Egypt also identified common barriers citizens face like slow internet speeds and unresponsive websites. Relationships between e-government payment options and metrics like availability, accessibility and responsiveness were found to be weak based on questionnaire responses.

This study aims to build on prior work by further examining these relationships through quantitative analysis. The goal is to provide new data-driven insights that can help policymakers design policies and systems optimized for driving financial inclusion through improved e-government services in Egypt.

3. Methodology

The purpose of the study is to investigate the extent to which fintech can contribute to the expansion of financial inclusion in Egypt. This chapter discusses the research methods that will be utilised in the study,

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as well as the data description and the source of the data, the sample frame and the sampling method, the sampling technique, the methodology, logistic regression, and the measurement of the model.

3.1 Research Design

A research method is a systematic plan for conducting research. Everything that is beneficial in the goal achievement is the part of research methodology (Holme and Solvang, 1996). According to Kombo & Tromp (2006), research design can be thought of as the structure of research. While the research design shows the framework for the analysis and collection of data. (Ghauri and Gronhaug, 2010; Bryman and Bell, 2007). The main focus of the study will be quantitative, in which descriptive and inferential statistical techniques used in data analysis. Through Mean, Median, Standard deviation and variance described the data. While the hypothesises were tested through correlation and regression techniques. Stata 14 was used for data analysis and statistical techniques were used to achieve the research objectives, including Descriptive Statistics, Correlation Analysis and Regression Analysis.

3.2 Data Description and Data Source

The statistics are from a secondary source, which indicates that they were obtained from annual reports beginning in the year 2018 and continuing through the year 2022. Additionally, the data used to demonstrate the reliability of the findings came from the respective websites of the various financial institutions.

3.3 Sampling Frame and Sampling Method

3.3.1 Sampling Frame

The method chosen to collect the data is secondary data, and mainly from historical data, which comes from the annual reports of 11 Banks in Egypt, which are CIB, HSBC, EG bank, ADIB, AIB, QNB, Attijariwafa, NBK, AUB, AAIB, Alex bank, Banke misr, Cairo bank and NBE based on 5 years period from 2018 to 2022. Only those 5 years were considered, due to having complete financial statements for those years. The sample did include national and private banks that is mentioned earlier.

2 Table (1.2): sample list of banks

Bank Name	Abbreviation
CIB	Commercial International Bank

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HSBC	Hongkong and Shanghai Banking Corporation
EG bank	Egyptian Gulf Bank
ADIB	Abu Dhabi Islamic Bank
AIB	Arab International Bank
QNB	Qatar National Bank
NBK	National bank of Kuwait
AUB	Ahli United Bank
AAIB	Arab African International Bank
Alex bank	Alexandria Bank
NBE	National Bank of Egypt

Source: List obtained from EGX 100

3.3.2 Sampling technique

Sharma (2017) stated that this method's primary objective is to guarantee that each person or thing in the population has an equal and independent chance of being chosen for the sample. This procedure aids in reducing bias and enhances the generalizability of the sample's results to the entire population. The sample size for the research paper is decided by

$$n = \frac{z^2 * p * (1-p)}{e^2} = \frac{(1.65)^2 * (0.5)(0.5)}{0.15^2} \approx 30.25 \approx 31 < 55$$

Therefore, the sample need to exceed 31 respondents to obtain a margin of error of 0.15.

3.4 Methodology

The Egyptian banks was the topic of the study. The information was gathered from the financial statements of banks that used fintech and its dimensions were. In this study, secondary data in the form of financial statements were analysed. The website of the sampled bank is where the financial reports are gathered. Using the simple random sampling approach, a sampling methodology, samples are chosen where the target populations are

1) The Banks that released the full set of financial reports for the 2018–2022 fiscal year.

2) The banks that implemented the fintech approach.

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3) The banks giving all the necessary data, including dummy variables of Bills E-payment, ways of payment, Bank accounts with e-governments as fintech (Independent variable) while the dependent variable responsiveness, availability, accessibility and efficiency as financial inclusions.

3.4.1 Logistic regression

The method of logistic regression will make use of the technique. Logistic regression is a method of statistical analysis that develops a statistical model to describe the relationship between a binary or dichotomous (yes/no type) result (dependent or response variable) and a set of independent predictor or explanatory variables, as stated by Wilson et al. (2015). This method of statistical analysis is known as logistic regression.

While regression modelling is a common and effective strategy in statistics, Das (2021) describes it as being used to investigate and explain the relationship between an outcome or dependent/response variable and a set of independent predictors. This approach is used to investigate and describe the relationship between the two variables. According to Hosmer and Lemeshow (2000), logistic regression is a type of regression modelling that is used specifically for the case in which the result can be characterised as either binary (yes/no) or dichotomous (yes/no).

Research on quality of life (QOL) seems to turn out results like this quite frequently. For instance, the P-FiQ Study, which was conducted on people in the United States who had haemophilia, used patient-reported outcome (PRO) instruments to evaluate several outcomes, including quality of life (QoL). They utilised logistic regression to assess relationships between patient characteristics and high, moderate, or low total activity as reported in the International Physical Activity Questionnaire (IPAQ) instrument (Batt et al. 2016). The IPAQ is used to measure patients' levels of physical activity.

In addition, quality of life measures like the Health Complaints Scale and the Global Mood Scale are frequently dichotomized (often by using a median split) to create a binary outcome of "impaired QOL," for which logistic regression would be the appropriate method of statistical analysis (Denollet et al. 2000). This dichotomization of quality of life measures is a common practise among researchers.

Because the probabilistic distribution of a binary (also called dichotomous) variable is very different from that of a continuous variable, linear regression, in which the outcome is continuous, cannot be used for determining binary outcomes. This is due to the fact that in the former case, the variance is typically a function of the mean, whereas in the latter case, this is not the case.

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In addition, modelling a binary outcome requires modelling the likelihood of that event, which cannot be negative negative. This restriction does not apply to modelling a binary outcome using linear regression because linear regression does not describe the probability of events. For the purpose of modelling the likelihood of a binary occurrence, the logistic regression model makes use of a logit link function. Let's say that our binary outcome, or "event," is Y, which can only be either 0 (meaning "No") or 1 (meaning "Yes") in value.

Then, logistic regression models Pr(Y ¼ 1) ¼ p (suppose) as follows: log pð Þ¼ ½ 1 p b0 þ b1 x1 þ b2 x2 þ ... , where b0 is the average odds for event Y to happen; x1, x2, etc. are independent predictors or covariates; and b1, b2, etc. are the corresponding regression coefficients. Generalizations to this model that incorporate ordinal and categorical outcomes (i.e., more than two groups) are discussed elsewhere (Agresti 2002).

The maximum likelihood estimation technique is used to fit the logistic regression model that was just presented. This technique produces estimated values for the model parameters (b0, b1, b2, etc.) that maximise the probability of receiving the set of data that was just seen. In order to perform model diagnostics on a fitted logistic regression model, the receiver operator characteristics (ROC) curve and the area under the ROC curve (AUC) can be used. These two metrics indicate how well the fitted model differentiates between the two categories events (Y ¼ 1) and nonevents (Y ¼ 0), as well as the Hosmer-Lemeshow goodness-of-fit test, which compares the observed data with that expected under the fitted model.

These tools are often included in the majority of widely used statistical analysis software, such as SAS (PROC LOGISTIC), SPSS, STATA, and R. When interpreting the regression coefficients that come from a logistic regression model, it is necessary to exponentiate these coefficients so that they may be stated in terms of odds ratios. Only then can the interpretation of the regression coefficients be complete.

For example, suppose, in the above equation, Y measures impaired QOL secondary to treatment for coronary heart disease (CHD), with Y ¼ 1 signifying impaired QOL and Y ¼ 0 for unimpaired QOL, x1 measures patient age (in years), and x2 signifies gender (0 ¼ male, 1 ¼ female). The odds ratio for age, which represents the factor by which the probabilities of having a quality of life impairment grow with each year of additional age, is denoted by the symbol exp(b1). Similarly, the factor that causes women to have a higher risk of reduced quality of life relative to males can be measured using the exp(b2) expression.

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It is important to keep in mind that the odds ratio can either be more than 1 or less than 1. If it is the former, it indicates that the relevant factor is negatively associated to the outcome, and if it is the latter, it indicates that the factor is favourably related to the outcome. Therefore, if the value of exp (b1) is more than 1, and the value of exp (b2) is less than 1, as in our case, this would suggest that there are higher rates of reduced quality of life among older males.

After reviewing the logistic regression there is a previous study that used this approach applying the topic of financial inclusion. According to Abu et al. (2022) the aim of the study was to investigate the impact of financial inclusion on poverty reduction in Niger State, Nigeria. The authors collected data using a questionnaire administered to 624 respondents across 224 towns and villages in 12 local government areas of the state. They used logistic regression to analyse the data and control for other factors that could affect poverty levels, such as age, gender, education, and marital status. The results showed that financial inclusion has a significant positive impact on poverty reduction in Niger State, particularly for women and rural residents. The authors recommend that policymakers prioritize financial inclusion initiatives to help reduce poverty and promote economic growth in the state.

3.4.2 Pooled Effect Model

Pooled OLS model is one of the algorithms built to deal with the panel data analysis. ADEKEYE et al. (2021) explained that Pooled OLS can be expressed in terms of following function

$$y_{it} = X_{it}\beta + \omega_{it}, i = 1, \ldots\ldots, N \; and \; t = 1, \ldots\ldots, T$$

Where X is matrix of independent variables, β represent coefficients and ω_{it} is vector of errors. The pooled effect model presents its optimal solutions when there is no panel effect of data. To test whether Pooled OLS model is the optimal model for explaining the phenomenon when compared to other panel regression models as random and fixed effect model, a Lagrange multiplier test should be used.

3.4.3 Estimation Regression Equations

The hypotheses in this study are tested using logistic Regression Analysis to obtain the overall view of the relationship between one variable to another variable. The formulation is as follows:

Model 1: Responsiveness = βo + β1fintech + β2 trust + β3 security + e_i

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Model 2: Availability = βo + β1fintech + β2 trust + β3 security + e_i

Model 3: Accessibility = βo + β1fintech + β2 trust + β3 security + e_i

Model 4: Efficiency = βo + β1fintech + β2 trust + β3 security + e_i

4. Results:

4.1 Data Management

Data management is the process of changing data to make it easier to read or be more organized. In this section, how the data was dealt with will be discussed. Upon obtaining the data using the annual reports from banks websites. Some adjustments have been made.

1) There was no missing data or outliers, so the data was clean and needed not any imputations

2) A logistic regression analysis was performed, which is a statistical study that creates a statistical model to describe the relationship between a binary or dichotomous (yes/no type) outcome (dependent or response variable) and a set of independent predictor or explanatory factors.

Overall, dataset was clean and was ready to be further analyzed using STATA4.2 Findings

4.2.1 Descriptive statistics

3 Table (4.1): Descriptive Statistics

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Bills E payment	.9818182	.13484	0	1
Ways of payment	.9818182	.13484	0	1
Bank accounts with e-governments	.6	.4944132	0	1

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Responsiveness	.8909091	.3146266	0	1
Availability	.5818182	.4978066	0	1
Accessibility	.9454545	.2291839	0	1
Efficiency	.0435012	.3446127	-1.847909	1.130705
Trust	.8181818	.3892495	0	1
Security	.7090909	.4583678	0	1

Source: Calculations based on data collected from banks using Stata 14

The average banks who had ways of payments and bills e-payment were 98% of sampled banks. Around 60% of the sample had bank accounts with e-government. Concerning Responsiveness, 89% of the sample reported they were being responsive. Only 58% reported they were available. The majority were accessible by 94% of the sample. The average efficiency was 0.04 and the variation was found to be high in the sample. The average trust and security in the sample were 81.8% and 70.9% of the sample respectively.

4.2.2 Correlation Analysis

4 Table (4.2) Kendall Correlation Analysis

	Bills E-payment	Ways of payment	Bank accounts with e-governments	Responsiveness	Availability	Accessibility	Efficiency
Bills E-payment	1						
Ways of payment	.224**	1					
Bank accounts with e-governments	.248**	.108	1				
Responsiveness	.283**	.056	.030	1			

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DOI: https://doi.org/10.56830/IJNZ1133

Availability	.215*	.011	.055	0.029	1		
Accessibility	.312**	.233**	.197*	.262**	.302**	1	
Efficiency	.375**	.277**	.147*	.127*	.205**	.017	1

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

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

Source: Calculations based on data collected from banks using Stata 14

Observing the Table (4.2), there is a significant weak positive relationship between Bills E-payment and ways of payment at confidence level 99%. While there is a significant weak positive relationship between Bills E-payment and Bank accounts with e-governments. In addition, there is a significant weak positive relationship between Bulls E-payment and Responsiveness at confidence level 99%. Moreover, there is a significant weak positive relationship between Bills E-payment and Availability at confidence level 95%. Furthermore, there is a significant weak positive relationship between Bills E-payment and Accessibility at confidence level 99%. At the end, there is a significant weak positive relationship between Bills E-payment and Efficiency at confidence level 90%.

4.2.3 Logistics regression model building

By starting to check the stationarity using the Levin Liu Chu test, all the variables were found stationary at 90% confidence level. There was no need for differences or lags. Afterwards a logistic regression model was built.

At model 1

5 Table (4.3): Logistic regression modelling coefficients for responsiveness

Responsiveness	Coefficient	Standard error	P-values
Fintech	3.3209616**	1.252248	0.028
Trust	5.4261749***	1.004183	0.000
Security	8.5770133**	3.687452	0.010
_cons	10.416612***	3.371072	0.001

Sig values: ***<0.01, **<0.05, *<0.1, “”>0.1

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Source: Calculations based on data collected from banks using Stata 14

For table (4.3), after applying the logistic regression, at 95% confidence level, Fintech had a significant positive impact on Responsiveness. Observing the Trust and security, Trust had a significant impact on Responsiveness at 95% confidence level while Security had a significant positive impact on Responsiveness. Gohary (2019) had mentioned there is a positive moderate relationship between responsiveness and fintech and this comes in line with the results of the findings.

At model 2

6 Table (4.4): at Logistic regression modelling coefficients for Availability

Availability	Coefficient	Standard error	P-values
Fintech	1.338145*	0.73323	0.079
Trust	1.145945*	0.658968	0.076
Security	5.319858***	1.721637	0.000
_cons	4.572684***	1.588841	0.002

Sig values: ***<0.01, **<0.05, *<0.1, “”>0.1

Source: Calculations based on data collected from banks using Stata 14

Observing the table (4.4), at 90% confidence level, Fintech had a significant positive impact on Availability. Observing the Trust and security, Trust had a significant impact on Availability at 90% confidence level while Security had a significant positive impact on Availability at 95% confidence level. Gohary (2019) had mentioned there is a positive weak relationship between availability and fintech and this comes in line with the results of the findings.

At model 3

7 Table (4.5): Logistic regression modelling coefficients for at Accessibility

Accessibility	Coefficient	Standard error	P-value
Fintech	1.440380**	0.543130	0.028
Trust	2.364448*	1.295588	0.071
Security	6.498355*	3.926499	0.086
_cons	8.345148**	3.219939	0.034

Sig values: ***<0.01, **<0.05, *<0.1, “”>0.1

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Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Source: Calculations based on data collected from banks using Stata 14

Observing the table (4.5), at 95% confidence level, Fintech had a significant positive impact on Accessibility. Observing the Trust and security, Trust had a significant impact on Accessibility at 90% confidence level while Security had a significant positive impact on Accessibility at 90% confidence level. Gohary (2019) had mentioned there is a negative weak relationship between accessibility and fintech and this comes in contrast with the results of the findings. However, the weak relationship may have been unclear due to choice of dataset by Gohary (2019).

4.2.4 Pooled Effect Model

8 Table (4.6): Linear regression modelling coefficients for at Efficiency

Efficiency	Coefficient	Standard error	P-value
Fintech	0.857818***	0.024739	0.000
Trust	-0.23752***	0.007456	0.030
Security	-0.32259**	0.005294	0.034
_cons	-0.80239***	0.001142	0.002

Sig values: ***<0.01, **<0.05, *<0.1, “”>0.1

Source: Calculations based on data collected from banks using Stata 14

Observing the table (4.6), at 99% confidence level, Fintech had a significant positive impact on Efficiency. Observing the Trust and security, Trust had a significant impact on Efficiency at 99% confidence level while Security had a significant positive impact on Efficiency at 90% confidence level. Gohary (2019) had mentioned there is a positive weak relationship between efficiency and fintech and this comes in line with the results of the findings.

9 Table (4.7): Model evaluation

Model	**R**	***R2***	**Adjusted *R2***
Model 1	0.860	0.740	0.69666667
Model 2	0.877	0.770	0.73166667
Model 3	0.836	0.700	0.65000000
Model 4	0.883	0.780	0.74333333

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Source: Calculations based on data collected from banks using Stata 14

Based on this table 4.7 at model 1, the value of adjusted *R*2 is 0.740 and shows the 74% of variation in Responsiveness, explained by Fintech, Trust and security. For model 2 the value of adjusted *R*2 is 0.770 and shows the 77% of variation in Availability, explained by Fintech, Trust and security. While model 2 the value of adjusted *R*2 is 0.700 and shows the 70% of variation in Accessibility explained by Fintech, Trust and security. In addition, at model 3 the value of adjusted *R*2 is 0.780 and shows the 78% of variation in Efficiency explained by Fintech, Trust and security.

5. Conclusion, limitations and recommendations

5.1. Discussion

The findings from the logistic regression analysis provide support for the hypothesized relationships between fintech adoption and dimensions of financial inclusion in Egypt, specifically responsiveness, availability, accessibility, and efficiency of e-government services.

Interpretation of Key Findings

The positive significant effects of fintech on all four dimensions align with prior research indicating that digital financial services can lower barriers and facilitate improved delivery of essential government services (Agur et al. 2020; Zaied et al. 2017). The weak strength of these relationships highlights that while fintech contributes, its integration alone may not fully address Egypt's broader challenges around socioeconomic inclusion and e-government modernization (Elkadi 2013; GOHARY 2019).

Availability and efficiency models had the highest explanatory power, suggesting fintech adoption has been most impactful on the presence and timeliness of e-services. This could reflect progress made on payment-enabling platforms even while issues persist around digital literacy, affordability and website design (Vasiljeva & Lukanova 2016).

Trust and security were also significant drivers, emphasizing they remain key considerations for Egyptian citizens in adopting online financial transactions as found through surveys (Zaied et al. 2017). Ongoing public skepticism presents an obstacle for government to increase digital payments.

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5.2 Conclusion

This study analyzed the impact of financial technology (fintech) on financial inclusion in Egypt, focusing on e-government services. The results show that fintech has a significant positive effect on the key metrics of e-government services - responsiveness, availability, accessibility, and efficiency.

Specifically, the integration of e-payment systems and digital financial services increases the convenience and reliability of transactions, lowering barriers for traditionally underserved groups. The data indicates that as options for electronic payments and banking increase, citizens benefit from improvements in the quality and reach of government services.

However, there are still challenges in terms of digital literacy, trust in online systems, and infrastructure availability. Policies should focus on education campaigns, cybersecurity frameworks, and investments in connectivity. With a holistic approach, Egypt can leverage fintech to drive financial inclusion and modernize public service delivery.

The quantitative analysis built on previous studies on this topic in the Egyptian context. The findings reinforce that financial inclusion rates lag behind regional peers, highlighting the need for payment networks enabling access to e-services. As such, the recommendations center on optimizing e-government platforms for financial inclusion.

Overall, this study adds to the body of knowledge on deploying fintech for development goals in emerging economies.

5.3 Recommendations

5.3.1 Academic Recommendations

This study contributes to academic literature on the relationships between financial technology (fintech) adoption and financial inclusion outcomes, specifically in the context of developing countries. It provides empirical evidence that increasing citizens' access and usage of digital financial services can lead to improvements in the delivery of essential government services.

- This paper could adopt multidimensional perspectives incorporating economic factors that influence citizens' experiences with e-government systems.
- A quantitative methodology limits deeper insights into behavioral and perception factors influencing adoption of digital payments and e-services.
- Follow up qualitative and mixed-methods research focused on user experiences would provide

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richer explanations for the complex challenges developing economies face in leveraging fintech for financial inclusion.

5.3.2 Practical Recommendations

- Results indicate Egypt should prioritize holistic policies that provide digital skills training, upgrade telecom infrastructure, enhance cybersecurity protections and rebuild citizen trust alongside promoting fintech payment integration into e-government services. This is imperative for translating availability of e-services into actual adoption and routine use by Egyptian citizens.
- Recommendations for policymakers include requiring user experience testing during development phases and instituting multi-channel support systems so that e-government upgrades do not overly rely on digital access.

5.4 Limitations

- As this study utilized secondary financial data and due to time limit, more data could have been implemented by increasing the no of years and adding more banking samples.
- Follow up surveys and interviews could provide qualitative insights into the user perspective on fintech and e-government adoption challenges.
- Additionally, the analysis only considered one developing economy context. Comparisons between Egypt and regional peers at varied stages of digitization would highlight transferrable lessons as for MENA region or Middle East–West Asia region.

Reference:

Abdelkader, A. (2015). A manifest of barriers to successful e-government: cases from the Egyptian programme. *International Journal of Business and Social Science*, *6*(1), 169-186.

Abdullah, N. A. S., Md Noor, N. L., & Mior Ibrahim, E. N. (2015). Contributing factor to business continuity management (BCM) failure-A case of Malaysia public sector.

Abdullah, N. R. W., Mansor, N. B., & Hamzah, A. (2013). Keeping ahead of the game: Innovations and challenges in e-government in Malaysia. *The Economic and Labour Relations Review*, *24*(4), 549-567.

Abor, J. Y., Amidu, M., & Issahaku, H. (2018). Mobile telephony, financial inclusion and inclusive growth. *Journal of African Business*, *19*(3), 430-453.

Abu, N., Sakanko, M. A., David, J., Gamal, A. A. M., & Obi, B. (2022). Does Financial Inclusion Reduce Poverty in Niger State? Evidence from Logistic Regression Technique. *Organizations and Markets in Emerging Economies*, *13*(2), 443-466.

ADEKEYE, K. S., IGWE, K. E., and OLAYIWOLA, O. M. (2021). ON POOLED OLS AND PANEL REGRESSION MODELS FOR ASSESSING THE CONTRIBUTIONS OF ELECTRONIC PAYMENT SYSTEM ON COMMERCIAL BANKS PROFITABILITY. *Journal of Statistics: Advances in Theory and Applications*, *25*(2), 61-81.

Agarwal, P., Chatterjee, S., & Agarwal, P. (2017). Digital financial inclusion and consumer capabilities in India. *Institute for Financial Management and Research*.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Agresti, A. (2002). Categorical data analysis. New York: Wiley.

Agur, I., Peria, S. M., & Rochon, C. (2020). Digital financial services and the pandemic: Opportunities and risks for emerging and developing economies. *International Monetary Fund Special Series on COVID-19, Transactions*, *1*, 2-1.

Akgül, Y. (2022). Evaluating the performance of websites from a public value, usability, and readability perspectives: a review of Turkish national government websites. *Universal Access in the Information Society*, 1-16.

Akinyokun, N., & Teague, V. (2017, August). Security and privacy implications of NFC-enabled contactless payment systems. In *Proceedings of the 12th international conference on availability, reliability and security* (pp. 1-10).

Al Mudawi, N., Beloff, N., & White, M. (2020). Issues and challenges: Cloud computing e-government in developing countries. *International Journal of Advanced Computer Science and Applications*, *11*(4), 7-11.

AL-Majali, M. M., & Bashabsheh, A. A. (2016). Factors that affect commercial banks customers intention towards electronic payment services in Jordan. *International Business Research*, *9*(3), 79.

Alzoubi, H., Alshurideh, M., Kurdi, B. A., Alhyasat, K., & Ghazal, T. (2022). The effect of e-payment and online shopping on sales growth: Evidence from banking industry. *International Journal of Data and Network Science*, *6*(4), 1369-1380.

Anagnoste, S. (2018, May). Robotic Automation Process–The operating system for the digital enterprise. In *Proceedings of the International Conference on Business Excellence* (Vol. 12, No. 1, pp. 54-69).

AR, O. (2015). Effects of financial inclusion on the economic growth of Nigeria (1982–2012). *Int J Bus Manag Rev*, *3*(8), 11-28.

Arner, D. W., Barberis, J., & Buckley, R. P. (2015). The evolution of Fintech: A new post-crisis paradigm. *Geo. J. Int'l L.*, *47*, 1271.

Arner, D. W., Barberis, J., & Buckley, R. P. (2016). 150 years of Fintech: An evolutionary analysis. *Jassa*, (3), 22-29.

Arner, D. W., Buckley, R. P., & Zetzsche, D. A. (2018). Fintech for financial inclusion: A framework for digital financial transformation. *UNSW Law Research Paper*, (18-87).

Arner, D. W., Buckley, R. P., Zetzsche, D. A., & Veidt, R. (2020). Sustainability, FinTech and financial inclusion. *European Business Organization Law Review*, *21*, 7-35.

Arner, D. W., Zetzsche, D. A., Buckley, R. P., & Barberis, J. N. (2019). The identity challenge in finance: from analogue identity to digitized identification to digital KYC utilities. *European business organization law review*, *20*, 55-80.

Arun, T., & Kamath, R. (2015). Financial inclusion: Policies and practices. *IIMB Management Review*, *27*(4), 267-287.

Asongu, S. A., & Nwachukwu, J. C. (2016). The mobile phone in the diffusion of knowledge for institutional quality in sub-Saharan Africa. *World Development*, *86*, 133-147

Aziz, A., & Naima, U. (2021). Rethinking digital financial inclusion: Evidence from Bangladesh. *Technology in Society*, *64*, 101509.

Aziz, S., & Dowling, M. (2019). Machine learning and AI for risk management. *Disrupting finance: FinTech and strategy in the 21st century*, 33-50.

Bada, M., Sasse, A. M., & Nurse, J. R. (2019). Cyber security awareness campaigns: Why do they fail to change behaviour?. *arXiv preprint arXiv:1901.02672*.

Banna, H., Mia, M. A., Nourani, M., & Yarovaya, L. (2022). Fintech-based financial inclusion and risk-taking of microfinance institutions (MFIs): Evidence from Sub-Saharan Africa. *Finance Research Letters*, *45*, 102149.

Batt, K., Recht, M., Wang, M., Quon, D. V., Boggio, L. N., Kessler, C. M., Buckner, T. W., Neff, A. T., Iyer, N. N., Cooper, D. L., & Kempton, C. L. (2016). Linear and logistic regression models of patient-

International Journal of Accounting and Management Sciences
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Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

reported outcomes and patient characteristics in US adults with hemophilia from the pain, functional impairment, and quality of life (P-FiQ) study. Blood, 128(22), 252.

Bell, E. and Bryman, A., 2007. The ethics of management research: an exploratory content analysis. British journal of management, 18(1), pp.63-77.

Belozyorov, S., Sokolovska, O., & Kim, Y. S. (2020). Fintech as a precondition for transformations on global financial markets. *Форсайт*, *14*(2 (eng)), 23-35.

Bernards, N., & Campbell-Verduyn, M. (2019). Understanding technological change in global finance through infrastructures: Introduction to review of international political economy special issue 'the changing technological infrastructures of global finance'. *Review of international political economy*, *26*(5), 773-789.

Bernstein, E. S. (2017). Making transparency transparent: The evolution of observation in management theory. *Academy of Management Annals*, *11*(1), 217-266.

Bezovski, Z. (2016). The future of the mobile payment as electronic payment system. *European Journal of Business and Management*, *8*(8), 127-132.

Bhagat, A., & Roderick, L. (2020). Banking on refugees: Racialized expropriation in the fintech era. *Environment and Planning A: Economy and Space*, *52*(8), 1498-1515.

Bhattacharjya, J., Ellison, A., & Tripathi, S. (2016). An exploration of logistics-related customer service provision on Twitter: The case of e-retailers. *International Journal of Physical Distribution & Logistics Management*, *46*(6/7), 659-680.

Bisht, S. S., & Mishra, V. (2016). ICT-driven financial inclusion initiatives for urban poor in a developing economy: implications for public policy. *Behaviour & Information Technology*, *35*(10), 817-832.

Bordo, M. D., Redish, A., & Rockoff, H. (2015). Why didn't Canada have a banking crisis in 2008 (or in 1930, or 1907, or…)?. *The Economic History Review*, *68*(1), 218-243.

Bournaris, T. (2020). Evaluation of e-government web portals: The case of agricultural e-government services in Greece. *agronomy*, *10*(7), 932.

Brown, M., Woodhouse, S., & Sioshansi, F. (2019). Digitalization of energy. *Consumer, prosumer, prosumager: How service innovations will disrupt the utility business model*, 3-25.

Brummer, C., & Gorfine, D. (2014). FinTech: Building a 21st-century regulator's toolkit. *Milken Institute*, *5*.

Buckley, R. P., Arner, D. W., Zetzsche, D. A., Didenko, A. N., & Van Romburg, L. J. (2021). Sovereign digital currencies: reshaping the design of money and payments systems. *Journal of Payments Strategy & Systems*, *15*(1), 7-22.

Burge, M. E. (2015). Apple pay, bitcoin, and consumers: The ABCs of future public payments law. *Hastings LJ*, *67*, 1493.

Burhouse, S., Homer, M., Osaki, Y., & Bachman, M. (2014). Assessing the economic inclusion potential of mobile financial services. *Fed Depos Insur Corp*, *274*.

Burns, S. (2018). M-Pesa and the 'market-led'approach to financial inclusion. *Economic Affairs*, *38*(3), 406-421.

Bussmann, O. (2017). The future of finance: Fintech, tech disruption, and orchestrating innovation. *Equity Markets in Transition: The Value Chain, Price Discovery, Regulation, and Beyond*, 473-486.

Candraningrat, I., Abundanti, N., Mujiati, N., & Erlangga, R. (2021). The role of financial technology on development of MSMEs. *Accounting*, *7*(1), 225-230.

Carlos Roca, J., José García, J., & José de la Vega, J. (2009). The importance of perceived trust, security and privacy in online trading systems. *Information Management & Computer Security*, *17*(2), 96-113.

Chavan, J. (2013). Internet banking-benefits and challenges in an emerging economy. *International Journal of Research in Business Management*, *1*(1), 19-26.

Chen, L. (2016). From fintech to finlife: The case of fintech development in China. *China economic journal*, *9*(3), 225-239.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Chen, W., & Yuan, X. (2021). Financial inclusion in China: an overview. *Frontiers of Business Research in China*, *15*(1), 1-21.

Cooper, D.R. and Schindler, P.S., 2003. Research methods. Boston, MA: Irwin.

Dargan, T., & Evequoz, F. (2015, June). Designing engaging e-Government services by combining user-centered design and gamification: A use-case. In *Proceedings of the 15th European Conference on eGovernment* (pp. 70-78).

Das, A. (2021). Logistic regression. In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 1-2). Cham: Springer International Publishing.

Demir, A., Pesqué-Cela, V., Altunbas, Y., & Murinde, V. (2022). Fintech, financial inclusion and income inequality: a quantile regression approach. *The European Journal of Finance*, *28*(1), 86-107.

Demirgüç-Kunt, A., & Singer, D. (2017). Financial inclusion and inclusive growth: A review of recent empirical evidence. *World Bank Policy Research Working Paper*, (8040).

Demirguc-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2018). *The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*. World Bank Publications.

Denison, D. V., Hackbart, M., & Yusuf, J. E. (2013). Electronic payments for state taxes and fees: Acceptance, utilization, and challenges. *Public Performance & Management Review*, *36*(4), 616-636.

Denollet, J., Vaes, J., & Brutsaert, D. L. (2000). Inadequate response to treatment in coronary heart disease: Adverse effects of type D personality and younger age on 5-year prognosis and quality of life. Circulation, 102, 630–635.

Dhariwal, A., Chong, J., Habib, S., King, I. L., Agellon, L. B., & Xia, J. (2017). MicrobiomeAnalyst: a web-based tool for comprehensive statistical, visual and meta-analysis of microbiome data. *Nucleic acids research*, *45*(W1), W180-W188.

Di Minin, E., Fink, C., Hausmann, A., Kremer, J., & Kulkarni, R. (2021). How to address data privacy concerns when using social media data in conservation science. *Conservation Biology*, *35*(2), 437-446.

Dittes, S., Richter, S., Richter, A., & Smolnik, S. (2019). Toward the workplace of the future: How organizations can facilitate digital work. *Business Horizons*, *62*(5), 649-661.

Domeher, D., Frimpong, J. M., & Appiah, T. (2014). Adoption of financial innovation in the Ghanaian banking industry. *African review of Economics and Finance*, *6*(2), 88-114.

Doran, N. M., Puiu, S., Bădîrcea, R. M., Pirtea, M. G., Doran, M. D., Ciobanu, G., & Mihit, L. D. (2023). E-government development—A key factor in government administration effectiveness in the European Union. *Electronics*, *12*(3), 641.

Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., ... & Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, *66*, 102542.

Dzingirai, M. (2021). Managerial challenges under FinTech: evidence from Zimbabwean Commercial Banks. In *Influence of FinTech on management transformation* (pp. 141-166). IGI Global.

Elkadi, H. (2013). Success and failure factors for e-government projects: A case from Egypt. *Egyptian Informatics Journal*, *14*(2), 165-173.

ELMS, D. (2021). Increasing access and interoperability of cross-border e-payments in Asia.

Ene, E. E., Abba, G. O., & Fatokun, G. F. (2019). The impact of electronic banking on financial inclusion in Nigeria. *American Journal of Industrial and Business Management*, *9*(6), 1409-1422.

Eynon, R., & Geniets, A. (2016). The digital skills paradox: how do digitally excluded youth develop skills to use the internet?. *Learning, Media and Technology*, *41*(3), 463-479.

Gabor, D., & Brooks, S. (2020). The digital revolution in financial inclusion: international development in the fintech era. In *Material Cultures of Financialisation* (pp. 69-82). Routledge.

Gálvez-Sánchez, F. J., Lara-Rubio, J., Verdú-Jóver, A. J., & Meseguer-Sánchez, V. (2021). Research advances on financial inclusion: A bibliometric analysis. *Sustainability*, *13*(6), 3156.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Gautam, D. P. (2019). Do remittances promote financial inclusion?. *Economic and Political Institutions and Development*, 91-108.

Gautam, T., & Garg, K. (2014). Union Bank of India: Initiatives towards IT-enabled financial inclusion. *South Asian Journal of Business and Management Cases*, *3*(2), 149-156.

Ghauri, P., Grønhaug, K. and Strange, R., 2010. Research Methods in Business Studies, 4 uppl. Harlow, Storbritannien: Pearson Education Limited.

Ghosh, I., & O'Neill, J. (2020). The unbearable modernity of mobile money. *Computer Supported Cooperative Work (CSCW)*, *29*(3), 227-261.

Ghosh, S. (2016). Does mobile telephony spur growth? Evidence from Indian states. *Telecommunications Policy*, *40*(10-11), 1020-1031.

GOHARY, E. E. (2019). The impact of financial technology on facilitating e-government services in Egypt. *Journal of Distribution Science*, *17*(5), 51-59.

GOHARY, E. E. (2019). The impact of financial technology on facilitating e-government services in Egypt. *Journal of Distribution Science*, *17*(5), 51-59.

Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of management information systems*, *35*(1), 220-265.

Gómez-Carmona, O., Buján-Carballal, D., Casado-Mansilla, D., López-de-Ipiña, D., Cano-Benito, J., Cimmino, A., ... & Bujalkova, N. (2023). Mind the gap: The AURORAL ecosystem for the digital transformation of smart communities and rural areas. *Technology in Society*, *74*, 102304.

Grassi, P. A., Garcia, M. E., & Fenton, J. L. (2017). Digital identity guidelines. *NIST special publication*, *800*, 63-3.

Gruin, J., & Knaack, P. (2020). Not just another shadow bank: Chinese authoritarian capitalism and the 'developmental'promise of digital financial innovation. *New political economy*, *25*(3), 370-387.

Guo, Z., & Dan, M. A. (2023). Catching the fast payments trend: Optimal designs and leadership strategies of retail payment and settlement systems. *MIS Quarterly*, *47*(2), 669.

Gupta, A., & Xia, C. (2018). A paradigm shift in banking: Unfolding asia's fintech adventures. In *Banking and finance issues in emerging markets* (Vol. 25, pp. 215-254). Emerald Publishing Limited.

Gurumurthy, A., & Chami, N. (2016). E-Government for Women's Empowerment in Asia and the Pacific. *Available at SSRN 3875261*.

Guttmann, R. (2016). The New Face of Finance. In *Finance-Led Capitalism: Shadow Banking, Re-Regulation, and the Future of Global Markets* (pp. 203-227). New York: Palgrave Macmillan US.

Hadar, R., & Manos, R. (2021). Government policy and financial inclusion: analyzing the impact of the Indian national mission for financial inclusion. *Inclusive Financial Development*, 265-292.

Haddad, C., & Hornuf, L. (2019). The emergence of the global fintech market: Economic and technological determinants. *Small business economics*, *53*(1), 81-105.

Hamidi, H. (2019). An approach to develop the smart health using Internet of Things and authentication based on biometric technology. *Future generation computer systems*, *91*, 434-449.

Hanafizadeh, P., & Zare Ravasan, A. (2018). A model for selecting IT outsourcing strategy: the case of e-banking channels. *Journal of Global Information Technology Management*, *21*(2), 111-138.

Hasan, M. M., Yajuan, L., & Khan, S. (2022). Promoting China's inclusive finance through digital financial services. *Global Business Review*, *23*(4), 984-1006.

Hashemi Joo, M., Nishikawa, Y., & Dandapani, K. (2020). Cryptocurrency, a successful application of blockchain technology. *Managerial Finance*, *46*(6), 715-733.

He, M. D., Leckow, M. R. B., Haksar, M. V., Griffoli, M. T. M., Jenkinson, N., Kashima, M. M., ... & Tourpe, H. (2017). *Fintech and financial services: Initial considerations*. International Monetary Fund.

Hernandez, K., & Roberts, T. (2018). Leaving no one behind in a digital world.

Holme, I. M., & Solvang, B. K. (1996). 15. Analyse av data» s. 190-270,«. *Metodevalg og metodebruk*, *3*.

International Journal of Accounting and Management Sciences
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Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Hosmer, D. W., & Lemeshow, S. (2000). Applied logistic regression (2nd ed.). New York: Wiley.
Hossain, M., & Samad, H. (2021). Mobile Phones, Household Welfare and Women's Empowerment.
Hussein, H. (2020). The impact of financial technology on financial inclusion: the case of Egypt. *IOSR Journal of Economics and Finance*, *11*(6), 35-51.
Iman, N. (2018). Is mobile payment still relevant in the fintech era?. *Electronic Commerce Research and Applications*, *30*, 72-82.
Iqbal, B. A., & Sami, S. (2017). Role of banks in financial inclusion in India. *Contaduría y administración*, *62*(2), 644-656.
Izquierdo, N. C., & Tuesta, D. (2015). Factors that matter for financial inclusion: Evidence from Peru. *Aestimatio: The IEB International Journal of Finance*, (10), 10-31.
Jain, R., Prajapati, D., & Dangi, A. (2023). Transforming the Financial Sector: A Review of Recent Advancements in FinTech. *Available at SSRN 4380348*.
Jakhiya, M., Bishnoi, M. M., & Purohit, H. (2020, February). Emergence and growth of mobile money in modern India: A study on the effect of mobile money. In *2020 Advances in science and engineering technology international conferences (ASET)* (pp. 1-10). IEEE.
Joshi, V. K. (2014). Financial inclusion: Urban-poor in India. *SCMS Journal of Indian Management*, *11*(4), 29.
Kamboj, S. (2014). Financial inclusion and growth of Indian economy: An empirical analysis. *The International Journal of Business & Management*, *2*(9), 175.
Kandpal, V., Chandra, D., Dalei, N. N., & Handoo, J. (2023). Key Drivers and Challenges for Financial Inclusion. In *Financial Inclusion in Circular Economy: A Bumpy Road Towards Sustainable Development* (pp. 23-58). Cham: Springer International Publishing.
Kang, J. (2018). Mobile payment in Fintech environment: trends, security challenges, and services. *Human-centric Computing and Information sciences*, *8*(1), 1-16.
Kanungo, R. P., & Gupta, S. (2021). Financial inclusion through digitalisation of services for well-being. *Technological Forecasting and Social Change*, *167*, 120721.
Kaur, A. (2022). Digital Inclusion: Its Impact and Parents Perspective in Education Sector. *Vision*, *26*(2), 143-146.
Kennedyd, S. I., Yunzhi, G., Ziyuan, F., & Liu, K. (2020). The cashless society has arrived: how mobile phone payment dominance emerged in China. *International Journal of Electronic Government Research (IJEGR)*, *16*(4), 94-112.
Kent, M. (2015). Disability and eLearning: Opportunities and barriers. *Disability Studies Quarterly*, *35*(1).
Ketterer, J. A. (2017). Digital finance: New times, new challenges, new opportunities.
Khan, S., Khan, S., & Aftab, M. (2015). Digitization and its impact on economy. *International journal of digital library services*, *5*(2), 138-149.
Khera, P., Ng, M. S. Y., Ogawa, M. S., & Sahay, M. R. (2021). *Is digital financial inclusion unlocking growth?*. International Monetary Fund.
Khera, P., Ng, S., Ogawa, S., & Sahay, R. (2022). Measuring digital financial inclusion in emerging market and developing economies: A new index. *Asian Economic Policy Review*, *17*(2), 213-230.
Kijkasiwat, P., & Chancharat, N. (2022). Financial inclusion in the industry 4.0: the effects of financial inclusion on electronic payments in Thailand. *International Journal of Trade and Global Markets*, *15*(1), 70-78.
Klapper, L. (2023). How digital payments can benefit entrepreneurs. *IZA World of Labor*.
Klapper, L., & Singer, D. (2014). The opportunities of digitizing payments.
Kremers, R. S. (2021). '*Hack/make the bank': the everyday politics of Fintech* (Doctoral dissertation, University of Warwick).
Kulkarni, L., & Ghosh, A. (2021). Gender disparity in the digitalization of financial services: challenges and promises for women's financial inclusion in India. *Gender, Technology and Development*, *25*(2), 233-250.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Kumar, R., Sachan, A., & Mukherjee, A. (2017). Qualitative approach to determine user experience of e-government services. *Computers in Human Behavior*, *71*, 299-306.

Kumari, A., & Devi, N. C. (2022). The Impact of FinTech and Blockchain Technologies on Banking and Financial Services. *Technology Innovation Management Review*, *12*(1/2).

Kurfalı, M., Arifoğlu, A., Tokdemir, G., & Paçin, Y. (2017). Adoption of e-government services in Turkey. *Computers in Human Behavior*, *66*, 168-178.

Lai, P. C., & Scheela, W. (2018). Convergence of technology in the E-commerce world and venture capital landscape in South East Asia. In *Global Entrepreneurship and New Venture Creation in the Sharing Economy* (pp. 149-168). IGI Global.

Larios-Hernández, G. J. (2017). Blockchain entrepreneurship opportunity in the practices of the unbanked. *Business Horizons*, *60*(6), 865-874.

Laroiya, C., Saxena, D., & Komalavalli, C. (2020). Applications of blockchain technology. In *Handbook of research on blockchain technology* (pp. 213-243). Academic press.

Lashitew, A. A., van Tulder, R., & Liasse, Y. (2019). Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations?. *Research Policy*, *48*(5), 1201-1215.

Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business horizons*, *61*(1), 35-46.

Leong, C., Tan, B., Xiao, X., Tan, F. T. C., & Sun, Y. (2017). Nurturing a FinTech ecosystem: The case of a youth microloan startup in China. *International Journal of Information Management*, *37*(2), 92-97.

Leung, M. S. T., Lin, S. G., Chow, J., & Harky, A. (2020). COVID-19 and Oncology: Service transformation during pandemic. *Cancer Medicine*, *9*(19), 7161-7171.

Li, Y., Hu, C., Huang, C., & Duan, L. (2017). The concept of smart tourism in the context of tourism information services. *Tourism management*, *58*, 293-300.

Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2014). Antecedents of the adoption of the new mobile payment systems: The moderating effect of age. *Computers in human behavior*, *35*, 464-478.

Liu, J., Kauffman, R. J., & Ma, D. (2015). Competition, cooperation, and regulation: Understanding the evolution of the mobile payments technology ecosystem. *Electronic Commerce Research and Applications*, *14*(5), 372-391.

Lowry, C. (2016). What's in your mobile wallet: an analysis of trends in mobile payments and regulation. *Fed. Comm. LJ*, *68*, 353.

Lytras, M. D., & Şerban, A. C. (2020). E-government insights to smart cities research: European union (EU) study and the role of regulations. *IEEE Access*, *8*, 65313-65326.

Mader, P. (2016). Card crusaders, cash infidels and the holy grails of digital financial inclusion.

Mader, P. (2018). Contesting financial inclusion. *Development and change*, *49*(2), 461-483.

Madsen, C. Ø., & Hofmann, S. (2019). Multichannel management in the public sector: a literature review.

Mærøe, A. R., Norta, A., Tsap, V., & Pappel, I. (2021). Increasing citizen participation in e-participatory budgeting processes. *Journal of Information Technology & Politics*, *18*(2), 125-147.

Mardiana, S. L., Faridatul, T., Herlindawati, D., & Mardiyana, L. O. (2020, May). The contribution of financial technology in increasing society's financial inclusions in the industrial era 4.0. In *IOP Conference Series: Earth and Environmental Science* (Vol. 485, No. 1, p. 012136). IOP Publishing.

Margetts, H., & Dunleavy, P. (2013). The second wave of digital-era governance: a quasi-paradigm for government on the Web. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *371*(1987), 20120382.

Marzooqi, S. A., Nuaimi, E. A., & Qirim, N. A. (2017, March). E-governance (G2C) in the public sector: citizens acceptance to E-government systems-Dubai's case. In *Proceedings of the Second International Conference on Internet of Things, Data and Cloud Computing* (pp. 1-11).

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Matheus, R., Janssen, M., & Maheshwari, D. (2020). Data science empowering the public: Data-driven dashboards for transparent and accountable decision-making in smart cities. *Government Information Quarterly*, *37*(3), 101284.

Mbiti, I., & Weil, D. N. (2015). Mobile banking: The impact of M-Pesa in Kenya. In *African successes, Volume III: Modernization and development* (pp. 247-293). University of Chicago Press.

Mbogo, M. (2010). The impact of mobile payments on the success and growth of micro-business: The case of M-Pesa in Kenya. *Journal of Language, Technology & Entrepreneurship in Africa*, *2*(1), 182-203.

McKinsey (2013) Retail banking in Asia: actionable insights for new opportunities. https://goo.gl/4QjSLw

Mensah, I. K., & Mwakapesa, D. S. (2023). The impact of e-government information quality (EGIQ) dimensions on the adoption of electronic government services. *Information Development*, 02666669231155164.

Mesbahi, M. R., Rahmani, A. M., & Hosseinzadeh, M. (2017). Highly reliable architecture using the 80/20 rule in cloud computing datacenters. *Future Generation Computer Systems*, *77*, 77-86.

Michaels, L., & Homer, M. (2018). Regulation and supervision in a digital and inclusive world. In *Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1* (pp. 329-346). Academic Press.

Mohamad, S. A., & Kassim, S. (2019, January). Examining the relationship between UTAUT construct, technology awareness, financial cost and E-payment adoption among microfinance clients in Malaysia. In *1st Aceh Global Conference (AGC 2018)* (pp. 351-357). Atlantis Press.

Mohamad, S. A., & Kassim, S. (2019, January). Examining the relationship between UTAUT construct, technology awareness, financial cost and E-payment adoption among microfinance clients in Malaysia. In *1st Aceh Global Conference (AGC 2018)* (pp. 351-357). Atlantis Press.

Molnár, J. (2018). What does financial intermediation theory tell us about fintechs?. *Vezetéstudomány-Budapest Management Review*, *49*(5), 38-46.

Moro-Visconti, R., Cruz Rambaud, S., & López Pascual, J. (2020). Sustainability in FinTechs: An explanation through business model scalability and market valuation. *Sustainability*, *12*(24), 10316.

Morris, N. L., Craig, C., Libby, D., & Cooper, J. (2018). Older driver support system (ODSS) usability and design investigation.

Morte-Nadal, T., & Esteban-Navarro, M. A. (2022). Digital competences for improving digital inclusion in e-government services: A mixed-methods systematic review protocol. *International Journal of Qualitative Methods*, *21*, 16094069211070935.

Mustapha, S. A. (2018). E-Payment technology effect on bank performance in emerging economies–evidence from Nigeria. *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(4), 43.

Nayak, A. K. (2018). Indian women in grassroots socio-political institutions: impact of microfinance through self-help groups. *International Journal of Indian Culture and Business Management*, *17*(4), 383-402.

Nemiroski, A., Christodouleas, D. C., Hennek, J. W., Kumar, A. A., Maxwell, E. J., Fernández-Abedul, M. T., & Whitesides, G. M. (2014). Universal mobile electrochemical detector designed for use in resource-limited applications. *Proceedings of the National Academy of Sciences*, *111*(33), 11984-11989.

Ng, T. H., Lye, C. T., Chan, K. H., Lim, Y. Z., & Lim, Y. S. (2020). Sustainability in Asia: The roles of financial development in environmental, social and governance (ESG) performance. *Social Indicators Research*, *150*, 17-44.

Nicholls, C. C. (2019). Open banking and the rise of FinTech: Innovative finance and functional regulation. *Banking & finance law review*, *35*(1), 121-151.

Okiro, K., & Ndungu, J. (2013). The impact of mobile and internet banking on performance of financial institutions in Kenya. *European scientific journal*, *9*(13).

Oliveira, A. D. A., & Eler, M. M. (2017, July). Strategies and challenges on the accessibility and interoperability of e-government web portals: A case study on Brazilian federal universities.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

In *2017 IEEE 41st Annual Computer Software and Applications Conference (COMPSAC)* (Vol. 1, pp. 737-742). IEEE.

Ozili, P. K. (2020). Contesting digital finance for the poor. *Digital Policy, Regulation and Governance*, *22*(2), 135-151.

Ozili, P. K. (2021, October). Financial inclusion research around the world: A review. In *Forum for social economics* (Vol. 50, No. 4, pp. 457-479). Routledge.

Panda, D., & Sahu, G. P. (2014). *E-procurement implementation: Comparative study of governments of Andhra Pradesh and Chhattisgarh*. SSRN.

Panos, G. A., & Wilson, J. O. (2020). Financial literacy and responsible finance in the FinTech era: capabilities and challenges. *The European Journal of Finance*, *26*(4-5), 297-301.

Pazarbasioglu, C., Mora, A. G., Uttamchandani, M., Natarajan, H., Feyen, E., & Saal, M. (2020). Digital financial services. *World Bank*, *54*.

Pereira, G. V., Parycek, P., Falco, E., & Kleinhans, R. (2018). Smart governance in the context of smart cities: A literature review. *Information Polity*, *23*(2), 143-162.

Perić, M., Kaličanin, M., & Kaličanin, Z. (2021). The role of digitalization in the financial sector, with reference to the banking sector. *Ecologica*, *27*(99), 421-428.

Pham, T. T. T., & Ho, J. C. (2015). The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in society*, *43*, 159-172.

Plyler, M. G., Haas, S., & Nagarajan, G. (2010). Community-level economic effects of M-PESA in Kenya. *Financial Services Assessment: College Park, MD, USA*, 1-8.

Porter, M. (2015). The competitive advantage of the inner city. In *The city reader* (pp. 358-371). Routledge.

Portnoy, J. M., Pandya, A., Waller, M., & Elliott, T. (2020). Telemedicine and emerging technologies for health care in allergy/immunology. *Journal of Allergy and Clinical Immunology*, *145*(2), 445-454.

Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 104.

Rahadiantino, L., & Rini, A. N. (2021). Women access and awareness of financial inclusion in Indonesia. *Jurnal Ekonomi Pembangunan*, *19*(1), 39-50.

Ranade, A. (2017). Role of'Fintech'in Financial Inclusion and New Business Models. *Economic and political weekly*, 125-128.

Rankins, M. G. (2023). We Keep Us Safe, Venmo Doesn't: The Impact on Peer-to-Peer Payment Apps on Mutual Aid and Community Organizing. *North Carolina Banking Institute*, *27*(1), 240.

Reddick, C. G., Enriquez, R., Harris, R. J., & Sharma, B. (2020). Determinants of broadband access and affordability: An analysis of a community survey on the digital divide. *Cities*, *106*, 102904.

Rijal, S. (2023). The Importance of Community Involvement in Public Management Planning and Decision-Making Processes. *Journal of Contemporary Administration and Management (ADMAN)*, *1*(2), 84-92.

Rizvi, S. K. A., Naqvi, B., & Tanveer, F. (2018). Is Pakistan ready to embrace Fintech innovation?. *The Lahore Journal of Economics*, *23*(2), 151-182.

Rojas-Suarez, L. (2016). Financial inclusion in Latin America: facts and obstacles. *Center for Global Development working paper*, (439).

Rubanov, P. M., Lieonov, S. V., Bilan, Y. V., & Liulov, O. V. (2019). The Fintech sector as a driver of private entrepreneurship development in time of industry 4.0. Conference proceedings: The Impact of Industry 4.0 on Job Creation (Web of Science).

Rubini, A. (2018). *Fintech in a flash: financial technology made easy*. Walter de Gruyter GmbH & Co KG.

Saidaminov, M. I., Spanopoulos, I., Abed, J., Ke, W., Wicks, J., Kanatzidis, M. G., & Sargent, E. H. (2020). Conventional solvent oxidizes Sn (II) in perovskite inks. *ACS Energy Letters*, *5*(4), 1153-1155.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Salampasis, D., & Mention, A. L. (2018). FinTech: Harnessing innovation for financial inclusion. In *Handbook of Blockchain, Digital Finance, and Inclusion, Volume 2* (pp. 451-461). Academic Press.

Saraswati, B. D., Maski, G., Kaluge, D., & Sakti, R. K. (2020). The effect of financial inclusion and financial technology on effectiveness of the Indonesian monetary policy. *Business: Theory and Practice*, *21*(1), 230-243.

Senyo, P. K., & Osabutey, E. L. (2020). Unearthing antecedents to financial inclusion through FinTech innovations. *Technovation*, *98*, 102155.

Shah, P., & Dubhashi, M. (2015). Review paper on financial inclusion-the means of inclusive growth. *Chanakya International Journal of Business Research*, *1*(1), 37-48.

Sharma, D. (2016). Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. *Journal of financial economic policy*, *8*(1), 13-36.

Sharma, S. K. (2015). Adoption of e-government services: The role of service quality dimensions and demographic variables. *Transforming Government: People, Process and Policy*, *9*(2), 207-222.

Shipalana, P. (2019). Digitising financial services: A tool for financial inclusion in South Africa?.

Siddiqui, T. A., & Siddiqui, K. I. (2020). FinTech in India: An analysis on impact of telecommunication on financial inclusion. *Strategic Change*, *29*(3), 321-330.

Sigwejo, A. O. (2015). *Evaluating e-government services: a citizen-centric framework* (Doctoral dissertation, Cape Peninsula University of Technology).

Sigwejo, A., & Pather, S. (2016). A citizen-centric framework for assessing e-government effectiveness. *The Electronic Journal of Information Systems in Developing Countries*, *74*(1), 1-27.

Sikdar, P., & Kumar, A. (2016). Payment bank: A catalyst for financial inclusion. *Asia-Pacific Journal of Management Research and Innovation*, *12*(3-4), 226-231.

Singh, A. (2021). Exploring demand-side barriers to credit uptake and financial inclusion. *International Journal of Social Economics*, *48*(6), 898-913.

Sinha, S., Pandey, K. R., & Madan, N. (2018). Fintech and the demand side challenge in financial inclusion. *Enterprise development & microfinance*, *29*(1), 94-98.

Soldatos, J., & Kyriazis, D. (2022). *Big Data and Artificial Intelligence in Digital Finance: Increasing Personalization and Trust in Digital Finance Using Big Data and AI* (p. 363). Springer Nature.

Soloviev, V. I. (2018). Fintech ecosystem and landscape in Russia. *Journal of Reviews on Global Economics*, *7*(Special Issue), 377-390.

Srivastava, S. C., & Shainesh, G. (2015). Bridging the service divide through digitally enabled service innovations. *Mis Quarterly*, *39*(1), 245-268.

Sun, P. L., Ku, C. Y., & Shih, D. H. (2015). An implementation framework for E-Government 2.0. *Telematics and Informatics*, *32*(3), 504-520.

Tan, B. C. C., Leong, C., Sun, Y., Tan, F. T. C., & Xiao, X. (2017). Nurturing a FinTech ecosystem: The case of a youth microloan startup in China.

Taskinsoy, J. (2022). The Great Silent Crash of the 21st Century. *Available at SSRN 4274584*.

Teichmann, F., Boticiu, S., & Sergi, B. S. (2023). RegTech–Potential benefits and challenges for businesses. *Technology in Society*, *72*, 102150.

Tejedo-Romero, F., Araujo, J. F. F. E., Tejada, Á., & Ramírez, Y. (2022). E-government mechanisms to enhance the participation of citizens and society: Exploratory analysis through the dimension of municipalities. *Technology in Society*, *70*, 101978.

Temelkov, Z. (2020). Differences between traditional bank model and fintech based digital bank and neobanks models. *SocioBrains, International scientific refereed online journal with impact factor*, (74), 8-15.

Thach, N. N., Hanh, H. T., Huy, D. T. N., & Vu, Q. N. (2021). technology quality management of the industry 4.0 and cybersecurity risk management on current banking activities in emerging markets-the case in Vietnam. *International Journal for Quality Research*, *15*(3), 845.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Thol, C. (2017). Poverty Relief and Financial Inclusion: Savings Banks in Nineteenth Century Germany. *VSWG: Vierteljahrschrift für Sozial-und Wirtschaftsgeschichte*, 203-236.

Thulani, M., Chitakunye, P., & Chummun, B. Z. (2014). Mobile money as a strategy for financial inclusion in rural communities. *Mediterranean Journal of Social Sciences*, *5*(25), 216.

Tsai, C. H., & Kuan-Jung, P. (2017). The FinTech revolution and financial regulation: The case of online supply-chain financing. *Asian Journal of Law and Society*, *4*(1), 109-132.

Uddin, M. N., Rashid, M., Mostafa, M., & Ahmed, S. Z. (2016). Automated queue management system. *Glob. J. Manag. Bus. Res. An Adm. Manag*, *16*(1), 1-9.

Uddin, M. S., & Akhi, A. Y. (2014). E-wallet system for Bangladesh an electronic payment system. *International Journal of Modeling and Optimization*, *4*(3), 216.

Ullah, S., Zheng, J., Din, N., Hussain, M. T., Ullah, F., & Yousaf, M. (2023). Elliptic Curve Cryptography; Applications, challenges, recent advances, and future trends: A comprehensive survey. *Computer Science Review*, *47*, 100530.

Varga, D. (2017). Fintech, the new era of financial services. *Vezetéstudomány-Budapest Management Review*, *48*(11), 22-32.

Varonis, E. M. (2015). From barriers to bridges: approaching accessibility in course design. *The International Journal of Information and Learning Technology*, *32*(3), 138-149.

Vasiljeva, T., & Lukanova, K. (2016). Commercial banks and FINTECH companies in the digital transformation: Challenges for the future. *Journal of Business Management*, *11*.

Verkijika, S. F., & De Wet, L. (2018). Quality assessment of e-government websites in S ub-S aharan A frica: A public values perspective. *The Electronic Journal of Information Systems in Developing Countries*, *84*(2), e12015.

von Mettenheim, K., & Butzbach, O. (2014). Alternative banking history. *Alternative banking and financial crisis*, 11-27.

Von Solms, J. (2021). Integrating Regulatory Technology (RegTech) into the digital transformation of a bank Treasury. *Journal of Banking Regulation*, *22*, 152-168.

Waldfogel, J. (2017). How digitization has created a golden age of music, movies, books, and television. *Journal of economic perspectives*, *31*(3), 195-214.

Wang, H. (2023). How to understand China's approach to central bank digital currency?. *Computer Law & Security Review*, 105788.

Wewege, L., & Thomsett, M. C. (2019). *The digital banking revolution: how fintech companies are transforming the retail banking industry through disruptive financial innovation*. Walter de Gruyter GmbH & Co KG.

Wewege, L., Lee, J., & Thomsett, M. C. (2020). Disruptions and digital banking trends. *Journal of Applied Finance and Banking*, *10*(6), 15-56.

Wilson Jr, J. D. (2017). *Creating strategic value through financial technology*. John Wiley & Sons.

Wilson, J. R., Lorenz, K. A., Wilson, J. R., & Lorenz, K. A. (2015). Standard binary logistic regression model. *Modeling binary correlated responses using SAS, SPSS and R*, 25-54.

Wong, J. (2013). Capturing emerging payments opportunities in rapidly developing economies: A review of the Malaysian payments landscape. *Journal of Payments Strategy & Systems*, *7*(3), 217-224.

Woodgate, R. L., Busolo, D. S., Crockett, M., Dean, R. A., Amaladas, M. R., & Plourde, P. J. (2017). A qualitative study on African immigrant and refugee families' experiences of accessing primary health care services in Manitoba, Canada: it's not easy!. *International journal for equity in health*, *16*(1), 1-13.

World Bank Group. (2017). *Mobile Technologies and Digitized Data to Promote Access to Finance for Women in Agriculture*. World Bank.

Yaokumah, W., Kumah, P., & Okai, E. S. A. (2017). Demographic influences on e-payment services. *International Journal of E-Business Research (IJEBR)*, *13*(1), 44-65.

International Journal of Accounting and Management Sciences
Vol.3 No.3, July 2024
Print ISSN: 2834-8923 Online ISSN: 2832-8175
DOI: https://doi.org/10.56830/IJNZ1133

Zaidi, A. A., Baldemair, R., Tullberg, H., Bjorkegren, H., Sundstrom, L., Medbo, J., ... & Da Silva, I. (2016). Waveform and numerology to support 5G services and requirements. *IEEE Communications Magazine*, *54*(11), 90-98.

Zaied, A. N. H., Ali, A. H., & El-Ghareeb, H. A. (2017). E-government adoption in Egypt: Analysis, challenges and prospects. *International Journal of Engineering Trends and Technology*, *52*(2), 70-79.

Zhonghai, Y. (2020). *An empirical analysis on the credit scoring and the intermediary role of financing guarantee institutions of China's car loans* (Doctoral dissertation, ISCTE-Instituto Universitario de Lisboa (Portugal)).