FRAMEWORK FOR TRADITIONAL BANKS IN SG TO ASSESS AND COMPETE WITH RISING NEO BANKS AND FINTECHS

by

Balasubramanian Venkatarathinam
(Bala Venkat)

DISSERTATION

Presented to the Swiss School of Business and Management Geneva

In Partial Fulfillment

Of the Requirements

For the Degree

DOCTOR OF BUSINESS ADMINISTRATION

SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

APRIL, 2025

FRAMEWORK FOR TRADITIONAL BANKS IN SG TO ASSESS AND COMPETE WITH RISING NEO BANKS AND FINTECHS

by

Balasubramanian Venkatarathinam
(Bala Venkat)

Supervised by

Dr. Kamal Malik

APPROVED BY


Apostolos Dasilas

Dissertation chair

RECEIVED/APPROVED BY:

Admissions Director

Dedication

For every sleepless night we shared,
For your unwavering love and constant encouragement,
For your understanding and patience,

This is for you, my beloved spouse

For every silent sacrifice you made,
For always being the pillar of support,
For showing me the power of hard work and self-belief,

This is for you, my dear Dad

Acknowledgments

I would like to express my deepest gratitude to all those who have supported and guided me throughout the course of my thesis.

First and foremost, I am profoundly thankful to my thesis mentor, Dr. Kamal Malik, for her invaluable guidance, encouragement, and insightful feedback at every stage of this work. Her expertise and unwavering support have been instrumental in shaping the direction and quality of this research.

I would also like to extend my sincere appreciation to Mr. Nauman Bashir – Global Digital Sales Head of Singapore Wealth & Retail Banking (SG WRB) at Standard Chartered Bank (SCB) and to the entire SG WRB Digital & Data team for providing me with the opportunity, resources, and industry insights that greatly enriched my understanding and contributed significantly to the practical aspects of this research.

I would like to express my deepest gratitude to my family for their understanding, patience, and constant encouragement throughout this journey.

To my friends, thank you for being there during the highs and lows, offering both emotional support and constructive feedback when I needed it most.

This work would not have been possible without the collective support of all these individuals, and I am truly grateful for their contributions.

ABSTRACT

FRAMEWORK FOR TRADITIONAL BANKS IN SG TO ASSESS AND COMPETE WITH RISING NEO BANKS AND FINTECHS

Balasubramanian Venkatarathinam
(Bala Venkat)
2025

Dissertation Chair: <Chair's Name>
Co-Chair: <If applicable. Co-Chair's Name>

The banking sector in Singapore is being disrupted by neo-banks and various FinTech companies, offering customer-centric, tech-driven innovations that no longer align with traditional banks' image. This study seeks to offer a framework through which traditional banks in Singapore will be able to assess and compete with these new digital-first players. The research is to identify the key factors that make the success of neo banks and FinTechs, the competitive pressure they impose on traditional banks, and assess the ability of the strategies of traditional banks to enhance customer satisfaction and market performance. The goals will be accomplished using a mixed-method approach that combines qualitative and quantitative data; the quantitative data collected from customer surveys and financial performance indicators, while the qualitative data is obtained from focus groups. In this study, the survey was carried out through online questionnaires to 300 respondents. The acquired data were analyzed using "IBM Statistical Package for Social Science" (IBM SPSS). Using this software, reliability analysis, frequency analysis, descriptive statistics, regression, and correlation tests were performed on the dataset. These methods were used by the study to assess the effect of neo banks and FinTechs on customer preferences,

service expectations, and market performance metrics of traditional banks. According to the findings, traditional banks are under pressure to digitize further and use AI-driven solutions, as well as omnichannel service models, to be able to compete. Secondly, the study underscores the relevance of a strategic partnership between traditional banks and the professional FinTech firm to take advantage of digital breakthroughs and increase service offerings. Also, digital transformation projects can increase customer satisfaction, increase retention rates, and well as banking industry competitive positions. Theoretical and managerial implications of the study are forwarded on the need for a hybrid banking model that integrates technology-driven efficiencies with traditional banking strengths. It shows how continuous innovation, regulators' compliance and strategic collaboration are necessary for the long-term success in changing financial domain. Future research may determine, for instance, to what extent blockchain is an enabler of economic security in such hybrid banking, as well as customer trust in digital banking. Contribution to the study of the digital banking dynamics, this work discusses benefits and lessons for policymakers and industry managers, and researchers who are confronting the transformation of financial services.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviations	Full form
SPSS	Statistical Packages for Social Science
IFC	International Financial Centre
IT	Information Technology
ATMs	Automated Teller Machines
OEI	Operational Efficiency Index
FNIS	Fidelity National Information Services
IPO	Initial Public Offering
ACUs	Asian Currency Units
FX	Foreign Currency
QFB	Qualifying Full Bank
IO	Industrial Organisation
MAS	Monetary Authority of Singapore
FOI	Fintech Opportunity Index
AUN-UIE	ASEAN University Network—University Innovation and Enterprise
ASEAN	Association of Southeast Asian Nations
DOE	Digital Operational Efficiency
VECM	Vector Error Correction Method
ARDL	Autoregressive Distributed Lag Model
GFIS	Government Financial Informatics System
CS	Customer Satisfaction
BPC	Bargaining Power of Customers

TS	Threat of Substitutes
RC	Rivalry Among Competitors
DTS	Digital Transformation Strategy
PI	Product Innovation
TI	Technology Integration
DS	Diversification of Services
MP	Market Performance
AI	Artificial Intelligence
ESG	Environmental, Social, And Governance

CHAPTER I:

INTRODUCTION

1.1.Introduction

A. Overview of the Financial Sector in Singapore

Over the last fifty years, Singapore has transformed itself into one of the leading international financial centres offering advantages to the domestic economy and the whole of the Asia-Pacific region. It is established as a main global financial centre that accommodates more than 1,200 banks and other financial organisations providing diverse services and products across the range of assets. Singapore's well-established financial markets are mostly composed of banking (wealth management, treasury operations, and especially investment banking), insurance, and capital market services (securities, derivatives, and futures). What sets Singapore's financial hub apart is its well-functioning pro-business environment, well-enforced rules, excellent infrastructure, and easy access to a vast and skilled pool of financial professionals. Wojtera (2013). Since independence, Singapore's financial development has been mostly attributed to the government's proactive initiatives, in contrast to other major financial centres that are more laissez-faire. Reforms and liberalisation of Singapore's financial system have been ongoing initiatives since the 1960s. The Asian financial crisis prompted calls for financial deregulation to fortify and competitively position the financial sector for an increasingly globalised future. As many domestic banks merged, foreign participants were given more leeway to participate. To further promote financial innovation and development while reducing systemic risks, a new risk-based method of regulation and supervision was implemented (Mah-Hui and Maru, 2010). As it faces both internal and foreign challenges in its quest to

become a thriving financial hub in the Asia Pacific region, the Singaporean government has implemented some financial development plans (CHOW, 2019). Since becoming a republic in 1965, Singapore's fiscal policy, also known as Public Financial Management PFM, has been essential in the country's rise to high-income status. This means that Singapore's politicians may tackle the public policy issues that come with an ageing, wealthy, and mature population without worrying about the availability of fiscal resources or the sustainability of debt. This has major significance.

Public policy discourse, including its development, execution, and evaluation, benefits greatly from accurate and up-to-date statistics and supporting information (Dilnot, 2012). Both the limited utility and the style of presentation in Singapore's official publications' budget documents have been highlighted in the literature (Asher, 1986; Huff, 1989; Blöndal, 2006).

Singapore has become a regional financial hub in Southeast Asia thanks to its progressive improvements in the financial sector and the use of fiscal incentives, which enticed international bankers to set up shop in the country. Since the foundation of ASEAN forty years ago, the country's economy has had tremendous improvement (Hew, 2002). With its economy shifting from manufacturing to services, Singapore has grown steadily over the years, becoming the only ASEAN nation with developed status. In addition to supporting its economy, Singapore is now a key financial hub for the surrounding area and beyond. The country's further financial sector development has also made it a popular location for international trade and investment. That is why Singapore's expanding finance sector is a major reason for the country's booming economy (Lee, 2014).

As proposed by Sehrawat & Giri (2018), To monitor the advancement of the banking industry's expanding development, two main indicators are the amount of money supply, also known as M2, and internal lending to the business sector. According to Beck

et al. (2007); Polat et al. (2015), Many consider domestic lending to private companies as a more comprehensive measure of economic growth compared to the alternative. Trade credit, non-equity security purchases, loans, and other accounts receivable that give rise to a claim for repayment are all forms of domestic credit that the private sector receives. This type of financing is well-suited for developed nations like Singapore, which has both a broadly and deeply developed financial sector (Boutabba, 2014). According to Čihák et al. (2013), financial progress is evident in the amount of domestic savings that investors receive for productive investment projects (Ridzuan *et al.*, 2019).

B. The Banking Landscape in Singapore

Despite the fact that the 2008 financial crisis has centered on the systemic risks presented by too-big-to-fail institutions, Singaporean banks have been subject to mounting pressure to expand their activities (Claessens and Van Horen, 2015). In the long run, this will help Singapore's domestic banks achieve the MAS's vision of becoming a world-class "international financial Centre" (IFC). In the five years leading up to 1998, a chain of mergers and acquisitions reduced the number of major local banks from six to the present trio of DBS Bank (previously Development Bank of Singapore), OCBC, and UOB. The banks' deposit bases were greatly expanded by these mergers, which were seen as crucial for fostering extra-territorial competitiveness, regardless of the impact on their competitiveness in domestic markets. The original plan for the combined banks was to diversify their revenue streams away from deposit taking and become more intricate financial institutions serving a wider range of customers in more global and regional markets with a wide array of high-tech financial products and services. The aforementioned shift is indicative of broader tendencies in banking during the last 30 years (Erturk and Solari, 2007). Think about how many retail and investment banks in the US and Europe

have moved away from charging interest and towards charging fees. What is known as securitised banking is replacing more traditional forms of bank funding (Gorton and Metrick, 2012). The shift from bank-based financing to market-based banking must be carefully considered to fully understand the role of banks in contemporary capitalism (Hardie *et al.*, 2013). There has been a shift in the focus of Singaporean banks away from traditional loan mediation and towards fee-generating operations and deeper market engagement for capital gains. These banks are becoming more akin to financial services businesses. Williams (2000); Froud *et al.* (2006); Erturk *et al.* (2007); Dore (2008), all point to the financialization of banks as evidenced by a move towards financial logic and activities. This includes things like adopting an idea of control held by shareholders, growing emphasis on financial markets and products within businesses, and increased investments in insurance and associated operations by non-bank financial institutions. However, the government of Singapore has actively pursued financial services as a vital industry to solidify Singapore's position in the global economy, so these massive changes in Singaporean banks were not prompted by a local banking crisis or market-driven ideologies (Cook, 2008). In this research, they want to inspect how the state influenced the financialization of local banking institutions at a time of rapid industrialization. Research on financialization and the role of the state has yielded three distinct schools of thought. One school of thought, which has dominated the field, sees financialization as a rollback of government services, with an emphasis on market-based solutions to social welfare issues and a general "decline" of the state brought about by the rise of neoliberalism (Clark, 1998; Martin, 2003). A second line of thought is that state actors and institutes are increasingly looking to financial markets as a solution to issues like budget deficits and economic downturns. This trend is known as the financialization of the state. Aalbers et al. (2011); Bassens et al. (2013); Hendrikse & Sidaway (2014), recognized the state as a

significant but understudied participant in the current literature on financialization, because to the increasing impact of financial reasoning and capital markets on company strategy and behavior.

This is in contrast to the first method, which emphasized the effects of financial deregulation on institutional change, firm behavior (van der Zwan, 2014), and every day saving and borrowing habits. Research tends to focus on the state's inability to handle internal crises and highlights deregulation for higher market efficiency under the second method, which presents financialization as a thoughtful avenue desired by state actors and politicians. They contend that the first two methods fail to adequately address state-led financialization, which manifests as the deliberate mobilization of institutions and enterprises by the state to embrace and implement financialization scripts for political-economic goals.

By focusing on the developmental consequences of state-firm relations' roles in financialization procedure mobilization, they hope to add the existing literature on financialization and state in this particular setting. To comprehend how state-led financialization causes local enterprises to evolve from banks into financial institutions, it is essential to consider this state-firm nexus. Originating from the normative influence of states on firms' everyday business practices, this type of financialization extends beyond market-creating endeavors such as mortgage-backed securitization in the US or the Netherlands. (Schwartz and Seabrooke, 2008; Gotham, 2016), They contend that this has a more profound impact than the unforeseen results of greedy companies taking advantage of the state's independence; it suggests that states and firms are co-creating the norms for acceptable business practices, which in turn leads to banks' and companies' increasingly financialized strategies and operations (Andreff, 2020). With its prominent role in international financial networks, Singapore offers a good case study to analyze the

subtleties of state-firm relatives during a specific era of financialization. Here, financialization is defined as the process by which local firms undergo a transition from banking to financial services companies due to the state's formal and informal interventions and influences.

The banking services of Singapore are world-renowned, and the city-state is sometimes called the "Lion City" due to its exceptional reputation as a global financial powerhouse. As a country, Singapore has always prioritised financial sector excellence, and its banking experience reflects that legacy. Banking services in Singapore have become an example for the rest of the world to follow because of their customer-centric attitude, innovative technology, and strict regulatory environment. Exploring the complexities of the Singaporean banking scene, this essay will illustrate the fundamental elements that have contributed to its amazing success (Lai and Daniels, 2015).

i. Overview of Neobanks and FinTech

Neobanks and Fintech are now advanced examples of how the financial industry is digitalized, challenging conventional banking systems with improved efficiency, speed, and cost (Barroso and Laborda, 2022). Neobanks are a fully digital branch of the financial organization, using only the mobile application and website to offer the majority of personal banking services, which include savings accounts, payment platforms, debit cards, and other financial management tools (Monis and Pai, 2023). Most of them do not have many overhead expenses because they typically do not maintain brick and mortar locations, they pass on more favorable interest rates, fewer fees, and more customized advice tailored to your financial situation (Gupta *et al.,* 2023). Many of today’s most significant players, including Revolut, Chime, N26, and Monzo, meet different customers’ needs, from multi-territory wallet management to spending tracking and cryptocurrency trading. Some of the

neobanks also operate in niche markets, including fields of freelancers as well as sellers, with such extra features as digital invoices or quick approaches to loan agreements. In compliance with applicable legal requirements, most of the neobanks collaborate with holding finance institutions or obtain substandard accreditations (KALYTA, GORDIIENKO, and ERKES, 2024). As you will learn, their flexibility serves as one of their strengths, but problems like data protection, profitability, and gaining the trust of customers can slow down their pace (Paul *et al.*, 2023). Besides, social distancing eliminates the opportunity to build close relationships with the clients who still value branch banking for some services.

At the same time, fintech is not limited strictly to the banking sector but aims at innovations in the field of payment systems, credits, insurance, wealth management, and cryptocurrencies (Harsono, Ayu and Suprapti, 2024). PayPal, Apple Pay, Lending Club for P2P loans, and Betterment for robo-advice – these are just a few examples of how fintech works to revolutionize the financial industry. The incorporation of new technologies such as blockchain, AI, or ML is made by fintech companies, which introduced radical new business models such as DeFi or automated credit scoring (Javaid *et al.*, 2022). These innovations enable immediate preparations and execution of activities, as well as timely and precise financial advice, unrestricted market connectivity, and enhanced financial accessibility to unserved and underserved account segments (Al-Ansi *et al.*, 2024).

Fintech and neobanks are seen working hand in hand in areas such as design, personalization, as well as analytics (El-Gohary *et al.*, 2021). For instance, several of them are in a symbiotic relationship with other fintech solutions for better services, such as an instant loan or investment (Nkatekho, 2024). National governments and regulatory bodies are also actively participating through the invention of regulatory sandboxes and digital

banking environments that foster responsible advancement in the sector (Khan, Khan and Ghafoor, 2023).

However, both industries have challenges as much as the two industries are facing challenges, they are closely related. The threat of cybersecurity is high owing to the fact that operations are conducted online, and several security features are needed to guard against loss of data or fraud. Also, the threat from traditional banks puts pressure since they are already venturing into developing their applications that work like neobanks. Another challenge that fintech firms face is changing regulations, since the two are usually firm-specific and may change from one country to another (Allahrakha, 2023). Yet, neobanks and fintech do not fade away and evolve by putting the customer's needs at the forefront. They are transforming finances for the better through awareness creation, enhancement of user uptake, and the creation of opportunities for more people to participate in the economy (Ozili, 2018). The rise of technologies such as AI, blockchain, and open banking frameworks may also ensure that these digital players continue to reshape the firm structure of financial services and norms and reposition the established banking model as a reactive one, which has lost the standing it once commanded with clients (Kumari and Devi, 2022).

ii. The Rise of Neobanks and FinTech

The ever-increasing influence of financial technology has caused a sea change in the banking industry in recent years (Amalia, 2016). Innovative financial services and state-of-the-art technology have entered a new era, completely altering the perception, implementation, and outcome of banking services. "Fintech" encompasses a wide range of services, including but not limited to online payment systems, peer-to-peer lending, automated financial advisors, blockchain-based solutions, and mobile banking apps. These

innovations have revolutionised the operations of financial institutions, leading to an enhanced customer experience (Adel *et al.*, 2023).

Improving access to financial services is one area where fintech has made a significant impact. Smartphones' widespread availability and the democratization of banking services have given voice to those who were previously unable to use them (Arner, Buckley and Zetzsche, 2018). The unbanked and underbanked now have unprecedented access to essential financial tools and services because to fintech's ground-breaking solutions that transcend geographical constraints.

This analysis goes even farther, exploring how financial technology has affected both the economy and the efficiency of banks. Financial transactions are now faster and more accurate than ever before because of automation, AI, and data analytics, which have also cut operational expenses (Kamuangu, 2024). Banks and other financial firms have profited from this efficiency dividend, which has also led to better service for customers. This analysis doesn't just focus on the benefits of Fintech integration in financial services; it also takes a close look at the risks and difficulties that come with it. To give a well-rounded picture of the banking landscape influenced by Fintech, we look at topics including data security, regulatory frameworks, and the possible concentration of financial power (Dharmadasa, 2021).

Modern technology is advancing at such a rapid pace that it is causing widespread disruption across all industries worldwide, ushering in the FIR. The magnitude and breadth of these shifts necessitate the overhaul of whole manufacturing, administrative, and governmental systems (Xu, David and Kim, 2018). Consequently, the widespread operation of digital technologies such as the Internet, social media, and mobile phones is a by-product of the FIR. Within the confines of this research, new business models that offer greater variety in the delivery of financial services are the result. Due to this digitization, a

new class of companies known as Fintech have emerged, providing financial services and products. To provide services and products utilizing digital platforms and innovative technologies, fintech firms are eager to shake up the financial industry (Wang, Xiuping and Zhang, 2021). They filled a need that banks had during the 2008 financial crisis and have grown at a rate of 46.5% per year since its inception (Fung *et al.*, 2020). Among other things, these upstarts make it easier for people to get their hands on digital financial services, make the industry more innovative and competitive, and cater to individual clients' demands through more tailored offerings. As a result of more secure financial markets, new problems and opportunities will arise in this area, which will be addressed in due course.

Concepts like e-government, e-governance, e-information systems, and Web 2.0/3.0 emerged with the introduction of the Internet (Rupeika-Apoga and Thalassinos, 2020). The business and management world has devoted a great deal of time and energy to studying concepts like knowledge management, which draw heavily on social science theories such as social capital theory. Its profound impact on the financial industry has thrust it into the limelight and into people's daily lives across the world, which is hardly surprising. This is although this sector has been different throughout the years as a result of shifts in political regimes, legislation, and geographical boundaries (Hasan, Hassan and Aliyu, 2020).

Although FinTech has been around for a while, it is said that a new age is dawning because of its emergence and evolution. Financial technology (FinTech) bridges the gap between innovation and the financial sector and "information technology" (IT). The acronym "Fin-Tech" represents the combination of the terms financial and technological. Among its many subjects is the integration of state-of-the-art technology into the banking and finance sectors (Agarwal and Zhang, 2020). further define Fin-T ech as the association

between technology, specifically cloud computing and mobile internet, and financial services, which includes money transfers, payments, loans, and banking. Despite the abundance of literature on FinTech, the vast majority of studies have concentrated on the transformation that FinTech has wrought within the banking industry and its implications. (Giglio, 2021).

iv. Traditional Banks vs Neobanks / Fintech

Singapore's traditional banks are under pressure from neobanks and fintechs, with the latter innovating the market at large. Neobanks are digital-only platforms that are app-based and have lower operating costs, which translates to lower fees and faster services with tailored and personalized products (CHOI *et al.*, 2023). Fintechs are thus offering specialty financial services, including P2P plans for lending, robo-advisory services, together with transactions underpinned by blockchain, and much more, challenging conventional banking (Javaid *et al.*, 2022). Since the industry is being shaped by new digital players, it becomes a challenge for traditional banks to effectively compete for market share.

One key issue that traditional banks face is problems with their infrastructure: legacy systems are not as fast or flexible as banks would need at present. However, neobanks and fintechs can swiftly expand and diversify because they use modern technology like cloud computing, data analytics, and artificial intelligence (Josyula, 2021). Also, the millennial consumers in Singapore have been proven to be inclined much more towards a single-touch solution with an advanced technical interface and options, keeping the competitive pressure on the conventional banks (Murinde, Rizopoulos and Zachariadis, 2022).

The following strategies are now being adopted by traditional banks to maintain a competitive position: Some are collaborating with fintech companies to acquire specific solutions for their portfolios, for example, including a mobile wallet or 'buy now, pay later' service. Some are undertaking large-scale digital business transformations such as cloud computing, smart core processing, and next-generation mobile banking (On-Piu Chan, 2020). For the traditional banks, this has always been an added strength due to long-standing and recognized relationship with regulatory authorities, while emerging players face raw challenges of operating in a highly compliance-oriented financial market of Singapore (Stability and Institute, 2020).

But as the competitive challengers intensify, the traditional banks will have a consider between the confidence and stability they offer their consumers while serving as pioneers towards innovation (MUHUNI and Ouma, 2024). The key issue for Singapore's traditional banks is to position themselves against the neobanks and fintech firms more effectively by creating customer-oriented strategies, improving data protection issues and offering more sophisticated digital solutions (Prodanova and Bondarenko, 2023).

Figure 1.1: Traditional Banks vs Neobanks / Fintech

Meanwhile, the 2008 global financial crisis, new actors and technological growth, and applications began to appear because of several factors, including the inability of many companies to raise finances and the disappointment of many consumers with the traditional financial system. Additionally, in the last decades, many factors such as the exponential increase in the level of mobile and internet penetration, improvement in bank infrastructure, use of alternative data, non-financial companies entering the financial services industry (Belgavi, 2022), and expectations from millennials and digital natives are contributing to the rise of financial technologies. The emergence of new technologies promised to revolutionize the world of traditional finance. It was then that the word “fintech”, derived from financial technology, started to become popular (Anyfantaki, 2020).

The abbreviation "fintech" stands for "financial technology." New products, services, and business models could be born out of technological developments in the financial sector, which could have far-reaching effects on financial markets, institutions, and applications (Diéguez, Martín and Camacho, 2023). Therefore, as shown in Figure 1.2, fintech encompasses promoting novel monetary goods and services through the application of technological techniques. This can be related to both new and traditional areas within finance, such as payments, advice or investment services, fundraising methods, credit scoring, client profiling, and new forms of marketing, among others. Therefore, fintech is no more than the utilized of technology in the financial sector, provided these technological developments create a material outcome on the actors, infrastructure and services provided in the financial industry (Musabegovic *et al.*, 2019)

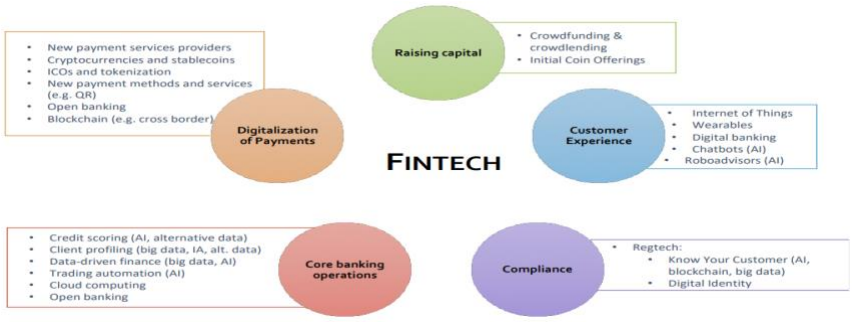

Figure 1.2: Concept and scope of fintech

A new buzzword, "fintech," has only just gained traction, yet innovation in the financial industry has always tracked with its popularity. Take the first electronic ATMs, for example, which debuted in 1970. Instantaneous ATMs have been hailed by some as the most ground-breaking innovation in the world of finance during the past three decades. By the time automated teller machines (ATMs) were widely used, some began to wonder what would happen to the banking industry as a whole because of these technological advancements. Specifically, they wondered if ATMs would lead to a significant reduction in bank branches and the displacement of human tellers, which would result in job losses (Kingdom *et al.*, 2018). However, teller positions have not only grown since the year 2000, but they have also been expanding at a somewhat higher rate than the overall labor force. Rather than eliminating the need for tellers, the advent of ATMs increased their use.

Another illustration of the close association between the development of the financial sector and technological developments is the Internet. In 1986, the London Stock Exchange went from conducting face-to-face negotiations between brokers to implementing transactions on computers using the Internet (Shahrokhi, 2017). This altered the dynamics of the market and the difficulties regulators confront in safeguarding investors, consumers, and the financial system. (Kauffman, Hu and Ma, 2015).

These examples show that the utilized of technology in the financial industry, or some of the social and labor challenges generated by the rise of new technologies, is not

something new. Blockchain), and existing technologies (e.g. machine learning) are currently being used for more purposes and applications in the financial services industry (Attaran and Gunasekaran, 2023). For example, AI is being used for credit scoring and asset management, and blockchain is being used as the technological infrastructure needed to exchange cryptocurrencies and raise finance initially However, in recent years, new technologies have emerged (e.g. Currently, algorithms were utilized by trading systems to ascertain the timing, pricing, amount, and routing of orders. Offerings. In addition, new actors are emerging, and traditional financial institutions are more interested in digitizing their operations, services, and products. Some banks even argue they have transformed into technology companies (Heckel, 2023).

The financial services business is seeing fast changes, which is a problem for regulators. The FIR is defined by a shift to new systems that are based on the foundation of the last digital revolution, with an emphasis on technology and cyber-physical systems that incorporate completely new human and machine capabilities. Instead of calling what is happening now a continuation of the 3rd Industrial Revolution (Horváth and Szabó, 2019).

New technologies and players have emerged, and regulators have recognized \the need to address these issues as the Fourth Industrial Revolution has begun, including neo-banks, fintech companies, tech companies providing financial services, and traditional financial institutions involved in significant digital transformation processes (Harsono, Ayu and Suprapti, 2024). Likewise, Rivalry for technical advancement has heated up due to the FIR. This is driving corporate strategies in the financial markets and increasing competition among countries vying to be recognized as fintech hubs. This pattern influences not just established markets like the US, UK, Hong Kong, and Singapore, but also developing economies like Mexico and Colombia, and smaller markets from more

developed economies that aspire to be fintech centers, like Gibraltar, Malta, and Estonia. Financial regulators are vying for a position where they can promote innovation in the sector without jeopardizing consumer and investor safety, market integrity, or the stability of the financial system. This predicament is fueling regulatory competition (Haddad and Hornuf, 2019).

Limited studies have examined the effects of the Fintech industry on individual economies, including Singapore's. This is even though the sector is booming worldwide. In light of Singapore's status as a world leader in both conventional and digital finance, studying the country's progress in this area has significant domestic and global ramifications (Anifa *et al.*, 2022). Singapore is a great place to do research because of its mature economy, large international financial links, and high acceptance of digital transformation, as shown by its broad use of digital payment and e-commerce (Javaid *et al.*, 2024). By building a Fintech indicator framework and applying a VAR model, this research examines the influence of Fintech on the economic expansion of Singapore from 2010 to 2022. Investigating how financial technology affects GDP growth, it looks at the current situation of Fintech in Singapore and how it has affected interest rates, consumer spending, and investment markets. The objective is to examine how Fintech has affected various parts of Singapore's economy, both directly and indirectly, so that policymakers can better advise on how to foster Fintech's growth and development (Fang, 2023). Through an analysis of Fintech's real impact, this research aims to uncover its possible uses, promote the effective allocation of financial resources, and help establish Singapore as a leading global Fintech hub (Huang, Jie and Wu, 2023).

C. Technological Disruption in Singapore's Banking Sector

Financial institutions and the sector must prioritize the evaluation of operational results. According to Pio et al. (2024) this evaluation is highly significant since it demonstrates their financial efficiency to market participants, investors, and competitors, and it builds trust with their clients. The "Operational Efficiency Index" (OEI), which is calculated by dividing the cost by the income, is a well-established tool for this purpose (Nguyen, Tripe and Ngo, 2018; Khan and Shireen, 2020). Financial analysts and investors can perform comprehensive financial evaluations and comparisons among companies by using this methodology (Bangarwa and Roy, 2023). This involves looking at things like payroll costs and income from different company lines (like credit cards and corporate banking) to find the best companies. In addition, this method is useful for figuring out which companies are good bets for investments or sales (Luo, Fan, and Zhang, 2017)

The banking industry is entering a new phase of digital transformation, which is altering both the internal workings of banks and the relationships between customers and those institutions (Al-Dmour *et al.*, 2022). In addition to streamlining internal operations, this technology innovation has completely transformed client engagement through new digital channels (Bueno, Sigahi and Anholon, 2023; Pio *et al.*, 2024). A digital ecosystem that is independent of location and time zone has become possible due to fast developments in AI, data analytics, databases with many layers, and information technology (Singh *et al.*, 2022). Digital wallets, mobile banking, and virtual advising services are just a few examples of the many new offerings from banks that have sprung up in response to the explosion in popularity of online banking (Shaikh and Anwar, 2023). As a result, the banking sector is at a crossroads: digital tool integration is crucial for improving operational efficacy and putting institutions at the forefront of innovation.

Digital technologies, such as Industry 4.0, have revolutionized the monitoring, execution, and optimization of financial tasks, ushering in a new era of operational efficiency in the banking sector (Schepinin and Bataev, 2019). Digitalization and automation of mundane processes have slashed processing times for both transactions and human errors, saving a lot of money and time. Furthermore, banks can gather, process, and analyze massive amounts of data through digital platforms. Insights gained from this data allow organizations to better allocate resources, manage risk, and enhance services (Banna and Alam, 2021; Al-Dmour *et al.*, 2022). Thus, the sector's operational efficiency has been enhanced as a whole thanks to the paradigm shift towards digitization, which has improved the efficiency of both individual operational components and the synergistic harmonization of different aspects of banking operations.

There are far-reaching significances for society at large as a whole from the banking industry's quest for DOE. Financial institutions can improve their resource allocation, cost optimization, and risk mitigation capabilities by utilizing digital technologies to streamline their operations (Pandey, Mittal and Subbiah, 2021). Investors and stockholders are encouraged by the increased operational efficiency, which mains to better financial performance and sustained growth (Chauhan, Akhtar and Gupta, 2022). In addition, customers advantage from enhanced services, faster response times, and personalized experiences due to efficiency benefits, which in turn increase customer loyalty and confidence.

From a societal standpoint, innovations in technology, financial inclusion, and economic stability are all aided by a technologically efficient banking industry. According to Anis et al. (2023); Winasis et al. (2020) Banks are becoming increasingly important in fostering innovation, increasing job opportunities, and strengthening economic resilience as they become more technologically proficient. The pursuit of DOE, then, has far-reaching

consequences, echoing across the minutiae of financial management as well as the larger picture of social progress (Chauhan, Akhtar and Gupta, 2022; Indriasari *et al.*, 2022).

D. The Evolving Banking Landscape in Singapore and Neobank Effect

Neo banks, sometimes called digital banks or challenger banks, are a type of online-only bank that does not have any physical locations. They use technology to provide cutting-edge banking services with an emphasis on the client. They fall under the category of fintech companies. By offering a streamlined and intuitive digital banking experience, neobanks want to shake up the conventional banking industry (Monis and Pai, 2023). A Neobank is no longer the same thing it was when it first entered the larger FinTech industry. Neobanks were originally defined as online-only financial institutions that dealt with clients directly. Rather than settling for becoming just another bank, neobanks aim to revolutionize digital banking by providing exceptional experiences. Due to nonbanks' shift in emphasis from digital banking alone to providing an exceptional customer experience as a differentiator from established online banking services, this definition has evolved. However, neo-banking policies have changed slightly (Basu, 2022). Take, for example, how alternative lenders nowadays tend to prioritize embedded finance and use-case-centric loans over pure-play lending platforms and markets. As they aim to incorporate financial services into larger client demands, contributors in other FinTech marketplaces have also employed this same approach, hoping to generate more long-term demand and innovation in products. The modernization of outdated systems and customer service practices, the capacity to allow transactions at the source, and the digitization of the entire banking and transactional process are driving the extensive development and application of embedded finance. Rapid customer-centric transformation is occurring in the banking industry as a result of embedded finance. A hallmark of neo-banks is an emphasis on the client service

they provide. A user-friendly interface, personalized service, and 24/7 availability of financial goods and services are their top priorities.

Typical neobanking services include a variety of accounts (checking, savings, loans, payment, investment, and budgeting tools), all of which can be accessed online or through mobile apps. Security and data privacy are also prioritized by neobanks. They use state-of-the-art encryption and robust authentication methods. Neo banks, sometimes called digital banks or challenger banks, are a type of online-only bank that does not have any physical locations. A subset of financial technology companies, they provide cutting-edge, client-focused banking services through the use of technology (Zeidy, 2022). To compete with more established financial institutions, neobanks are developing digital platforms that streamline and simplify banking for customers. A Neobank is no longer the same thing it was when it first entered the larger FinTech industry. Neobanks were originally defined as online-only financial institutions that dealt with clients directly. Rather than settling for becoming just another bank, neobanks aim to revolutionize digital banking by providing exceptional experiences. To differentiate itself from established online banking services, neobanks have shifted their emphasis from digital banking alone to providing an exceptional customer experience, which has led to a shift in this definition (Belgavi, 2021). A small shift has occurred, nonetheless, in neobanking policy. Take, for example, how alternative lenders nowadays tend to prioritize embedded finance and use-case-centric loans over pure-play lending platforms and markets.

Others in the FinTech industry have taken a similar tack in their pursuit of integrating financial services into larger customer demands to generate longer-term demand and product innovation. Some factors are driving the expansion of embedded finance, including the digitization of all banking and transactional processes, replacement of antiquated systems and customer service practices, and the capacity to enable

transactions at the source (Javaid *et al.*, 2024). Rapid customer-centric transformation is occurring in the banking industry as a result of embedded finance. A hallmark of neo-banks is an emphasis on the client service they provide. A user-friendly interface, individualized service, and 24/7 availability of financial goods and services are their top priorities. Typical neobanking services include a variety of accounts (checking, savings, loans, payment, investment, and budgeting tools), all of which can be accessed online or through mobile apps. Security and data privacy are also prioritized by neobanks. Secure client information and financial transactions are guaranteed by their use of cutting-edge encryption and multi-factor authentication. Some security features, including real-time transaction notifications and card controls, are also offered to help users manage their accounts safely (Evans *et al.*, 2015). The emergence of new types of banks, known as neo banks, has shaken up the banking industry and forced long-standing financial institutions to change with the times. Neobanks have become more popular among tech-savvy customers who prioritize ease of use, straightforwardness, and new features when banking online. However, the financial services market is very competitive, and they must contend with stringent regulations. (Sardar and Anjaria, 2023).

i. The Neo Banking Industry

In 2021, the Neo banking market was worth $47.39 billion. From 2022 to 2030, it is expected to rise at a fantastic rate of 53.4% CAGR. Since the beginning of the global pandemic, the use of net banking has increased. Challenger banks, or neobanks, are a new type of financial institution that is threatening established banking practices and customer service (Au, 2024).

ii. Evolution of Neobanking

The neo-banking industry has grown substantially within the past few years. More than 36 organizations are attempting to increase their operations, but the distinct products and customer bases of the neobanks suggest that they will all experience tremendous growth in the years to come (Stegmeier and Verburg, 2022).

iii. Neo Banks Services

Neobanks provide highly tailored services like:

a. Lower Fees

Neobanks offer higher interest rates than conventional banks due to their distinctive online presence (Prodanova and Bondarenko, 2023). Due to their elimination of the need for physical branches, these financial institutions can provide low or non-existent fees along with high interest rates on deposits.

b. Elevated Customer Experience:

To adapt to the needs of millennials and Gen Zers, neobanks provide digital services around the clock and prioritize mobile applications. A combination of cutting-edge technology and creative problem-solving allows them to offer superior customer service, faster response times, and simplified onboarding. (Aithal, 2023).

c. Faster Loan Processing:

With their streamlined online application and verification processes, neobanks have made getting a loan a breeze. Following the validation of their credit ratings, customers can select their loan and get the money immediately.

d. Advanced Technology and Security:

Neobanks offer safe online banking with state-of-the-art security features, including biometric verification and two-factor authentication. Their priority is cybersecurity, and they use AI and cloud analytics to prevent hacks and make shopping safer for consumers. Users have 24/7 access to their accounts and financial data, even when they don't have a physical branch nearby. (Sardar and Anjaria, 2023).

e. Impact of Neo Banks and Fintechs on Traditional Banking

As the field known as "FinTech," which stands for "finances met technological innovation," has progressed beyond its infancy, it poses a worldwide danger to the rising digital revolution in the banking industry. The US has been the leading site of worldwide fintech finance activity growth since 2008, with Europe following suit beginning in 2014 (Feyen *et al.*, 2021). They are entering an era of cloud and mobile banking, where users may expect secure, customized services. Experts believe that digital banking will keep evolving to meet client demands for safety and satisfaction.

According to a survey, most banks on average launched four businesses in 2018, including both conventional and technologically innovative options. According to Galvin et al. (2018), most multinational banks are concerned about income loss if they don't work with fintech to adopt new ideas. The digital banking industry was worth more than $7 trillion in 2017, and experts believe it will be worth more than $9 trillion by 2024. As predicted by Brezina et al. (2015), techs will cause a stir in the worldwide financial services industry, which generates an income of $4.7 trillion. With a small decrease from 2018 statistics, worldwide fintech investment reached $137.5 billion in 2019, which was more than twice any year before 2018. Most of the 2019 fintech investment deal value came from two mega-deals: Worldpay, bought for $42.5 billion by "Fidelity National Information

Services" (FNIS), and First Data, bought for $22 billion by Fiserv. Financial technology (fintech) start-ups have been receiving funding from well-known U.S. banks such as JPMorgan and Goldman Sachs through venture capital, private equity, and mergers and acquisitions. At the same time, traditional brick-and-mortar banks like Citi and Barclays have adopted digital retail and business banking strategies, utilizing fully integrated automation to improve the traditional financial services' accessibility, efficiency, affordability, and security. This is from the perspective of the customers of financial institutions, and its objective is to mitigate risks and expenses while exploring novel banking service delivery methods and establishing a more personalized and customer-centric banking experience. The financial technology sector has produced some innovative new products and services, including cybersecurity and cloud banking platform providers that automate many regulatory and compliance tasks. they have gone public through an “initial public offering” (IPO) and are now listed on the main stock markets. Working together, conventional banks and fintechs hope to weather the storm of fintech's potential revolution. Because of their size, reliability, and the ever-increasing development of technology, they can improve the quality of financial lives and the experience their customers have when dealing with money. According to recent developments in the financial technology industry, new entrants have been flooding the retail banking sector, particularly in the areas of payment and banking (such as money transfers, loans, and loan products). When it came to fintech start-ups offering digital-only banking and global payment solutions in 2019, 88% of banks were scared. Additionally, 82% of banks, insurance firms, and investment managers plan to increase their partnership with FinTech, according to the survey (PwC, 2019). Fintech is driving organizations in the financial services, media, technology, and telecommunications sectors to digitally revolutionize the banking industry. This will improve the consumer skills of financial services and products

while reducing costs and increasing operational efficiency. A growing number of digital wallet-only mobile banks are reaching out to the unbanked in Asia, the Middle East, and sub-Saharan Africa. (Wewege and Thomsett, 2019) examined that old-style banks in the national and global finance system have credibility and size due to regulatory supervision and policy. As a result, fintechs can look forward to a future filled with varied partnerships and collaborations that improve value. Online and mobile payment solutions, as well as the proliferation of mobile banking platforms, have propelled retail banking to the forefront of the digital banking revolution. Because of the fast implementation of digital payment services in India and China, the Asia Pacific region dominates the market with over 60% of the revenue. There are several factors causative of this, including an ageing population, an established network of communication tools, the expansion of online shopping, and government subsidies for these forms of payment. Take fintech as an example. In 2019, the global average was 33%, Europe was 38%, the UK was 42%, India was 52%, and China was 69% (Business Insider Intelligence, 2019). Similarly, according to EY (2019), consumer fintech adoption rates in China and India are 87% and 71%, respectively, far higher than in many other nations. Based on these two findings, it seems that countries with a big youth population are increasingly using digital payment methods. India and China have seen a proliferation of digital and non-cash transactions, which is mostly attributable to the demand from their digital banking markets. Value in the market would rise thanks to the government programs and policies that are helping developing nations like India and China. Traditional banking models are evolving in response to new digital challenger neo-banks and virtual banks that operate solely inside the digital realm. After decades of little competition in their regions and little client turnover, these new businesses joined the market. While fintech-digital banks cater to a niche market, traditional financial institutions are quickly going digital to differentiate themselves from newer rivals. This research uses

a systematic review approach to examine financial technology investment data and analytics covering the years 2010–2020. The data set includes information on worldwide financing from VC and PE firms, corporate VC divisions, hedge funds, and government-backed funds. While fintechs do offer innovations and technologies for portfolio management, insurance, capital markets infrastructure, cybersecurity, legal and compliance, accounting, and payments (e.g., transfers), our focus is on fintech companies that provide technologies for banking, personal financial management, capital markets, corporate finance (e.g., lending to SMEs), and personal financial management (Thomsett Michael, 2020).

E. Singapore's Regulatory Framework for Digital Banks

Financial regulation seeks to reduce a variety of market failures, including (i) asymmetries of data between financial institutions/issuers and consumers/investors; (ii) the existence of a situation of market power by certain actors (especially large financial institutions); and (iii) the negative externalities potentially created by the operation and failure of financial institutions (particularly in terms of systemic risk). By reducing these market failures, financial regulation can protect consumers and investors, reduce financial crime and market integrity, and promote competition, stability of the financial system. More importantly, it can enhance sureness in financial markets, facilitating the channeling of resources from savers to borrowers and therefore making the financial system a more powerful tool to promote economic growth (CHOW, 2019)

In some countries, these goals of financial regulation are pursued by different regulatory authorities. In Singapore, the regulation and supervision of financial markets rely on a single financial market authority: Namely, MAS has the mission to develop a sound and progressive financial sector (Maysami and Tan, 2003). Thus, MAS is tasked

with promoting the following: (i) a secure financial system; (ii) reliable intermediaries; (iii) an efficient and secure infrastructure; (iv) markets that are fair, efficient, and transparent; (v) offerors and intermediaries who are transparent and fair-dealing; and (vi) consumers who are well-informed and have agency over their own financial decisions (Burton, 2004)

New technologies have generated new risks and challenges for financial regulators. For example, cryptocurrencies can be utilized for illegal activities associated with money laundering, tax evasion, and financing of violence. Additionally, as they can serve as a means of payment, cryptocurrencies also raise several concerns from the consumer protection perspective (Alekseenko, 2023). The issuance of digital tokens for fundraising can also harm consumers and investors, especially considering that 80% of ICOs are scams. The rise of open banking raises some concerns for consumers. The increasing use of AI for credit scoring and robo-advice has also led to new challenges, including ethical and discrimination issues. Finally, a failure of the cloud increasingly used by financial institutions may hamper the ability of banks to provide financial services. Therefore, this situation may lead to a lack of confidence that can ultimately jeopardize the stability of the financial system. Hence, these new risks have led to a variety of variations in the regulatory framework of financial markets in Singapore (Grout and Zalewska, 2004).

F. Regulatory framework of cryptocurrencies and digital tokens in Singapore

From the perspective of financial regulation, the rise of cryptocurrencies has led to several challenges and regulatory responses. First, cryptocurrencies are often utilized as a means of payment. Since providing an efficient and reliable infrastructure of payments is one of the primary purposes of the financial system, MAS decided to regulate cryptocurrencies serving as a means of payment DPT under the “Payment Services Act” 2019 (PSA). Any digital asset meeting the following conditions is defined as a "Digital

Payment Token" (DPT) according to the PSA: (a) It needs to have a unit of measurement; (b) It can't be bought or sold with other currencies; (c) It can be stored, traded, or transferred electronically; and (e) It needs to meet any other criteria the Authority may set. A person carrying on a business related to any payment services provided under the PSA must get a license (Gauci, Ian, 2020). Namely, among the three licenses provided by the PSA (licenses for money exchange, large payment institutions, and standard payment institutions), actors facilitating the purchase, sale, or exchange of DPTs should apply for a standard payment institution license unless they exceed the threshold established for this type of license. If so, they will be required to apply for a major payment Institution license (deloitte, 2018).

Second, cryptocurrencies can be utilized for illicit purposes in Singapore, such as money laundering and funding terrorist attacks. Brief synopsis of applicable laws and ordinances: Fighting for fair rules in the payment services sector. Multiple International organizations, including the "Financial Action Task Force" (FATF), have enforced AML/CFT duties on actors, including MAS, platforms, and intermediaries dealing with cryptocurrencies. Namely, these obligations are imposed on intermediaries of digital tokens involving capital markets products ("security tokens"), as well as providers of DPT service (Subramanian, 2020).

Third, certain digital tokens issued by a promoter in an ICO may meet the definition of capital market products under Singapore law. These security tokens will exist in digital assets representing shares, debenture, units in business trusts, securities-based derivative contracts, and units in collective schemes. If a digital token falls under any of these categories of capital markets products, as it may occur if a company issues 'tokenized shares' or when the promoter issues any other capital market products represented in a digital asset (Subramanian, 2020), the ICO will be subject to the Securities and Futures Act Thus, among other implications, the issuer will be supervised by MAS and it will be

required to prepare a prospectus for the issuance of tokens unless one of the exemptions provided in the SFA applies. Therefore, in a variety of offerings, including those made to a restricted group of investors (private placement), small (personal) offerings, and offerings to accredited investors and institutional investors, issuers of security tokens do not need to prepare a prospectus (Lambert, Liebau and Roosenboom, 2022).

Even though the Guide on Digital Token Offerings issued by MAS clarifies the treatment of ICOs, it is significant to emphasize that Singapore does not have any special regulatory framework for ICOs. If the digital token issued by the promoter meets the definition of the capital market product, the ICO will be subject to the ordinary framework provided for the issuance of securities – that is, the SFA (Stacher, 2018). Moreover, the financial advisor and any intermediaries involved in the purchase, exchange, or sale of these security tokens will be compulsory to obtain a capital market license under the SFA. If, nonetheless, the token does not meet the definition of the capital market product under Singapore law, securities law will not apply. As a result, the actors involved in the issuance, trading, advice, and sale of these tokens will not be subject to the SFA. If so, they will be subject to the PSA (if the digital token can be classified as DPT) and, under the new Omnibus Act for the Financial Sector, they will also be subject to a comprehensive body of AML/CFT obligations (Levin and Tran, 2021).

Fourth, stablecoins started to get more attention in the academic and policy debate after Libra (Diem) was launched (Pupolizio, 2022). Therefore, since the PSA was drafted before this stablecoin was launched, it is not clear whether the PSA provides an adequate response to these new cryptocurrencies. By exhibiting characteristics of money, stablecoins blur the line between two payment services established in the PSA: e-money and DPT. Therefore, as they do not clearly fall into the definition of any of them, and some stable coins may also be deemed securities, it is not clear: (i) how these cryptocurrencies would

be treated under the regulatory framework existing in Singapore; and (ii) whether the existing framework properly addresses all the risks and challenges associated with stable coins. For this reason, MAS has proposed various amendments to the PSA that, among many other aspects, seek to address this issue (Hkma, 2022).

Finally, it is worth mentioning that, as part of Project Ubin, to facilitate local interbank settlement, MAS created a digital token representing the Singapore Dollar and added it to the distributed ledger (Sethaput and Innet, 2023). Now, however, Singapore does not have a specific regulatory framework for CBDC.

G. Regulatory framework of other emerging technologies used in the financial Sector

As it has been mentioned, other emerging technologies reshaping the financial services industry in Singapore –and internationally– include APIs and cloud computing. In the context of cloud computing, MAS views provider-operated cloud services as an outsourcing model. Therefore, the MAS Guidelines on Outsourcing should be observed (Feyen, Natarajan and Saal, 2023). The Guidelines on Technology Risk Management issued by MAS also cover certain aspects of cloud computing implementation in the financial sector, and it highlights the cloud computing's unique attributes and risks. Some international trends and potential regulatory responses to the growing use of cloud computing in the financial services industry (Ramavarapu, 2023).

Regarding APIs, MAS has highlighted that they are essential enablers that allow for the rapid and responsive development of applications, which in turn helps financial institutions drive towards customer-focused initiatives (Pilipinas, 2022). Unlike other jurisdictions, however, including the UK and EU, Singapore has not implemented a formal

regulatory framework for open banking. Instead, it has adopted an organic approach facilitated by a non-binding document, the "API Playbook", published by MAS and the Association of Banks of Singapore (Group and Report, 2022). Some writers have claimed that Singapore's non-compulsory approach promotes innovation in finance, market development, and competition without compromising consumer protection. One small bank from the area, DBS Bank, has grown into the biggest banking API developer platform in the world, with 155 different APIs. Along with that, 517 open APIs provided by Singaporean financial institutions are included in the Financial Industry API Register, which is overseen by MAS. As a result, the organic approach to open banking adopted by Singapore could be more desirable than other regulatory models requiring financial institutions to give free access to their data and infrastructure to third-party developers, as it is imposed under the regulatory framework existing in the UK and the EU (Bris *et al.*, 2021)

Even though it is not an 'emerging' technology, it is also important to emphasize new challenges associated with the use of the Internet and Internet-enabled platforms in the financial sector. For example, in the past era, many companies have used internet-enabled platforms to raise funds from the general public. This practice, generally known as 'crowdfunding', has also been subject to many debates from a financial regulation perspective (Suthar *et al.*, 2024). In general, there are four forms of crowdfunding: (i) equity crowdfunding, when firms raise funds by issuing shares; (ii) crowdlending, when firms borrow financial resources from the general public in the form of loans or debentures; (iii) reward crowdfunding, when firms raise funds by offering current or future units of their products or services; and (iv) donation crowdfunding, when the financial resources provided by the general public are provided without expecting any consideration in return. As it happens in other jurisdictions, Singapore is only subject to securities regulation

for those forms of crowdfunding involving a type of capital market product. Thus, only equity crowdfunding and crowdlending are subject to securities regulation (Hornuf and Schwienbacher, 2017). Therefore, the issuers, financial advisors, and intermediaries (e.g., platforms) involved in these activities will need to comply with the provisions of the SFA.

Second, the increasing use and importance of data and new technologies in the financial services industry have exposed financial institutions to a higher risk of being subject to cyber-attacks. For this reason, MAS has adopted various strategies, including the enactment of Guidelines on Technology Risk Management, Notifications on Cyber Hygiene, Incident Reporting, and Technology Risk Management ("Tech-Risk Notices") that specify needs for essential system resilience, incident reporting, and cyber hygiene.

a. Future Regulatory Challenges

Singapore has been able to implement one of the most attractive and comprehensive regulatory frameworks for fintech, probably observed internationally (Lin, 2019). This fact, along with the existence of a sophisticated regulator, a very active policy debate, and a close collaboration between innovators and regulators, has made Singapore one of the world's leading fintech hubs. Nonetheless, technological developments and the increasing utilization of data in the financial services industry make the fintech ecosystem constantly evolving (Alaassar, Mention and Aas, 2020). Therefore, some future reforms might be needed to respond to new risks and challenges. Various legislative proposals currently discussed in Singapore seek to address some of them. For instance, since the Omnibus Act for the Financial Sector encompasses all forms of digital assets, it is anticipated that it will offer a more all-encompassing solution to the AML/CFT complications linked to cryptocurrencies, including those that do not qualify as DPT or capital market products (Coelho, Fishman and Ocampo, 2021)

In November 2020, it was introduced to Parliament an amendment to the PSA ("the Amendment Bill") suggesting various changes to keep adapting the regulatory framework of payments to the new risks and challenges raised by recent developments in the fintech industry (Keren Khambhata, 2023).

First, the purpose of the Amendment Bill is to make the DPT service regulation structure better and clearer. To be more specific, the process by which a DPT service provider acquires funds or DPTs and then facilitates their exchange is presently governed by the PSA. The goal of the Amendment Bill is to expand the PSA's coverage to encompass services that allow users to exchange DPTs without the provider having physical money or DPTs on hand, according to the global guidelines made by "Financial Action Task Force (FATF).

Second, for specific payment services that are required to protect client funds, the Amendment Bill grants MAS the authority to designate extra licensees or categories of licensees, and it also imposes new conditions to safeguard the interests of users from the opportunism or insolvency of the payment services provider. Finally, this amendment to the PSA provides MAS the authority to take additional steps against DPT service providers as needed to safeguard users, monetary policy, and the stability of the financial system. Therefore, these greater powers will allow MAS to quickly respond to the new risks and challenges potentially raised by stablecoins and new fintech developments, including decentralized finance (DeFi) (Ozili, 2022).

Likewise, Additional rules are also being imposed on the usage of AI in the banking and insurance industries. To help financial institutions encourage the moral utilized of AI and data analytics, MAS said in 2019 that it was collaborating with industry partners to develop a framework. The principles of justice, ethics, accountability, and transparency were announced by MAS in 2018 ASIFMA (2024) and this framework, Veritas, will allow

financial institutions to assess their AIDA-driven solutions in light of these principles. Initial work on developing fairness criteria for use in credit risk scoring and consumer marketing will kick off Veritas on May 28, 2020.

In addition to the existing legislative and regulatory efforts in Singapore, additional innovations in fintech and other disruptive technologies may necessitate legislation in the future. To begin with, there is concern that the stability of the financial system could be jeopardized by the increasing usage of cloud computing in the financial services sector (Arner, Barberis and Buckley, 2015). Namely, a failure in the cloud, or the collapse of one of the cloud providers, can create a situation of panic that can ultimately jeopardize the stability of the financial institutions. For this reason, it would be useful to assess whether cloud providers should be regulated by MAS, or whether financial institutions should adopt additional measures to prevent any situation of systemic risk potentially created by a failure in the cloud or the collapse of the cloud provider (Willard, 2021).

Second, if a CBDB is launched, new legislation will be needed not only to respond to the risks and challenges of using CBDBs as a means of payment but also to those associated with including a new form of fiat currency in Singapore (Riksbank, 2021). Therefore, a future reform in this direction would involve aspects of financial regulation and monetary policy.

Third, many digital tokens –especially those that, from the perspective of their functionality, are classified as utility tokens– do not meet the definition of capital market products or DPT. Under the Omnibus Act for the Financial Sector, the issuers, exchanges, and intermediaries dealing with these tokens –and with any other digital asset– will be subject to AML/CFT obligations. Still, some additional risks and challenges need to be addressed. For example, as the FSA and the PSA will not apply to the issuance of these tokens, the buyers of these digital assets will be virtually unprotected. They will only be

protected by consumer protection laws and the conditions established in the White Paper prepared by the issuer. Unfortunately, these mechanisms do not seem to provide adequate protection to token holders. First, the promoter of the ICO might not be easily found and sued. Second, even if token holders enjoy certain contractual rights according to the White Paper, these rights might not be easily enforced. In practice, since a White Paper may just consist of a PDF document uploaded to a website that can quickly disappear, and the people behind the ICO might not even be known, token holders will not have the ability to sue the issuer for a breach of the conditions established in the White Paper. As a result, the holders of these tokens might need further protection.

First, it has been argued that any issuance of tokens, regardless of the legal nature of the token, should be disclosed to the financial regulator or any other public agency. This can be conducted through a simple, harmonized electronic form providing some basic information about the promoter, the tokens, the risks, the applicable law, and the advisors involved in the ICO. Issuers might even be required to register the ICO using their national identity – in the context of Singapore, even Sing Pass. This solution would not be very costly for regulators and entrepreneurs, and it would significantly reduce the number of scams by facilitating investigations, identification of issuers, public scrutiny, and the creation of a registry of ICOs. Moreover, by providing more protection to the buyers of tokens (especially the buyers of tokens that do not meet the definition of capital markets products or DPT), more people would be willing to participate in the ICO market. Therefore, ICOs would also become a more powerful fundraising method for bona fide entrepreneurs who need to raise funds.

Second, regulators and policymakers may consider the possibility of implementing some of the mechanisms adopted in the past decades to enhance the protection of consumers. For example, regulators can shift the burden of proof in case of any legal

disputes onto the issuer of digital tokens (Cappai, 2023). Thus, by putting the burden of proof on the promoter, it would be easier for the token holders to sue, leading to better behaviour ex-ante by the promoter. Another measure to protect token holders may consist of imposing 'cooling-off' periods that would allow token holders to return tokens within a given period without incurring any costs. The return of the token can be implemented automatically through a smart contract. Thus, unless token-holders 'ratify' their purchase within a few days, the token would be automatically returned to the issuer. Additionally, issuers of digital tokens can be subject to stricter obligations in terms of conduct. For example, they should be required to act in the interest of the buyers of the tokens (de Andrés *et al.*, 2022).

b. The Evolution of Singapore's Financial Sector

Following gaining independence from Malaysia in 1965, Singapore, which had been established as a British trading colony in 1819, began to make significant progress towards its goal of becoming a worldwide financial centre (Institute for State Effectiveness, 2011). It has recently grown into one of the most prominent hubs for private wealth management on a global scale. By 2020, according to Wealth Insight research from 2013, Singapore would have surpassed Switzerland as the leading offshore wealth centre. Singapore has been acknowledged as a significant international financial centre (IFC) since the inception of the Asian dollar market (ADM) in 1968. The industry's scale and scope have expanded significantly since then, as evidenced by the fact that over 700 financial institutions currently engage in a variety of activities, including banking, equities markets, insurance, treasury operations, debt issuance, fund management, and commodities trading. The "International Financial Centre" (IFC) in Singapore has recently surpassed Hong Kong and London to become one of the world's leading financial centres (CDI and Z/Yen, 2017).

When seen through the lens of financial geography, IFCs—the actual places where financial services are made and traded—are seen as the bedrock upon which financial markets and actors rest. No, markets are not nebulous concepts run by invisible hands; rather, they are socially formed and entrenched in physical space. The location of financial activities, or capitals (Cassis, 2006), is essential for comprehending and making sense of financial markets, goods, and services, even though the financial sector seems to have worldwide operations and repercussions. This chapter delves into the historical and geographical factors that have formed Singapore's financial markets and activities, shedding light on the country's ascent to the position of IFC. It also touches on current issues and potential areas for growth, paying special attention to those that have emerged in the era after the 2008 financial crisis. Because policy reactions and industry shifts in 1997 paved the way for industry shifts in 2008 and influenced the reactions and influences of businesses, managers, and consumers to the global financial crisis.

When the Singaporean government decided to build the ADM in 1968, it was a strategic move that would cement the country's position as an IFC. At the time, Prime Minister Lee Kuan Yew's Dutch economic advisor, Albert Wineskins, sought counsel from a Bank of America official in London on the establishment of a financial hub, more especially on the establishment of an offshore Eurodollar financial market for Asia to be headquartered in Singapore (Woo, 2016). At the time, the Eurodollar market was growing at a rapid pace, thus there was a need to expand to an Asian location to accommodate more time zones. Thanks to favourable tax and regulatory policies that allowed commercial banks in Singapore to establish their own “Asian Currency Units” (ACUs), the Asian dollar market exploded, particularly in the South Asian market, and was helped along by the massive US dollar expenditure in the area during the Vietnam War. By being the first to market, Singapore gained an advantage against Hong Kong, which was simultaneously

building an ADM (Emery, 1975). Not long after that, in 1971, MAS was established to serve as the central bank and financial controller for the nation. “Foreign currency” (FX) goods and transactions were propelled forward by the 1973 Singapore dollar flotation. New equity, derivative, and commodity financial markets emerged in the 1970s and 1980s, while the fund management, corporate finance, and insurance industries rose to prominence in the 1990s and beyond (Giglio, 2021).

H. Banking Liberalization

A developmental goal that was seen as critical to Singapore's long-term economic growth and competitiveness was a develop the local banking sector into a strong, internationally orientated financial services sector. Businesses that had previously specialized in conventional loan intermediation were restructured into capital market-integrated financial services organizations as a result of this. Retail and investment banks in the US and Europe have been moving away from interest-based banking and towards fee-based banking since the 1980s, and this change reflects that trend. For fuelling company segments and geographical expansion, banks have shifted their funding sources from old-style loan intermediation to more securitized approaches. In the early 2000s, Singaporean banks were positioning themselves in the area by emphasizing the expanding significance of non-bank capital to accompany bank financing in official speeches. For Singaporean banks, moving away from bank-based finance and towards market-based banking was the key to future growth and the ability to compete on a global and regional scale. following Singapore's becoming a member of the BIS in 1996 and the BCBS in 2009, the liberalization program began a short time following. The Asian financial crisis of 1997 forced Singapore to rethink its place on global regulatory platforms and figure out how to strengthen its financial institutions. By Basel II standards, there was a significant policy

change towards a consultative "risk-based" regulatory paradigm, as opposed to the prior "one size fits all" supervisory approach (Abshire, 2011). While this gave businesses more leeway to branch out into untapped areas, it also necessitated internal risk control procedures that met larger regulatory standards (e.g., reporting requirements, minimum capital ratios) (Asher, 2003). This elucidates the ensuing shifts in banking ownership, corporate strategy, and corporate governance that engulfed manufacturing during the Big Bang 3 in Singapore in the late 90s and early 2000s (de Andrés *et al.*, 2022).

Therefore, twenty years ago, Singapore did not face the universal threats to national economies and global finance posed by banks that were considered too big to fail. This has been emphasized in arguments following the 2008 financial crisis. For their benefit and the benefit of Singapore's banking sector and financial centre position, banks were instead encouraged to expand internationally to increase their size and ensure their continued competitiveness (Ioannou, Wójcik and Dymski, 2019). Over five years, from 1999 to 2004, Singapore executed some banking liberalization policies, which served to both attract more foreign banks (authorized to conduct a broader range of financial activities) and consolidate the country's smaller banks into three major players. The Big Bang reforms in Singapore comprised the issuance of a new category of "Qualifying Full Bank" (QFB) licenses to attract foreign banks. Additionally, there was an increase in the number of banks that were restricted. The 40% foreign shareholding limit in local banks was lifted, and offshore banks were granted additional flexibility in conducting extensive Singapore dollar business. Due to all these factors, local banks were under intense competitive pressure to establish themselves in domestic and regional markets.

The banking liberalisation measures encompassed more than just bank mergers; they also mandated divestment and altered corporate governance practices. The state saw the merger and consolidation of local banks as a crucial step in fostering extra-territorial

competitiveness because it greatly expanded deposit bases. The original plan was for the larger banks to diversify their revenue streams beyond only accepting deposits. This would allow them to evolve from simple banks into sophisticated financial institutions able to serve a wider range of customers both locally and internationally. Divestments from non-financial enterprises and unwinding of cross-shareholdings were mandated for local banks in 2000 and were to be completed within three years. In addition to meeting the standards set by Basel II, this helped local banks recover from the Asian financial crisis of 1997. Particularly for banks that were once controlled by families, new regulations on the separation of financial and non-financial activities and restrictions on cross-shareholding arrangements altered the nature of corporate leadership and management. (Lai and Daniels, 2017).

The banking sector saw growing competition, new regulations, and liberalization initiatives, all of which caused many banks to rethink their business plans. More international banks were able to participate in a broader variety of banking activities thanks to new bank licensing systems, which improved their product offering and abilities in Singapore and boosted the profitable and retail banking industry. However, following corporate reorganization and mergers, the three regional banks moved away from conventional loan intermediation and towards capital market-integrated financial services, particularly in the areas of advisory services, asset management, financing and equity issuing, mergers and acquisitions, and asset and debt issuance. A general trend towards securitization and a focus on consumer markets as a source of revenue has resulted from this. As a result of rising incomes in the country and the surrounding area, demand for financial services and products has skyrocketed over the last two decades, making consumer markets an ideal target for this strategy. This is especially true in countries like India, Indonesia, Thailand, and China. The Private Banking Code of Conduct, which was

introduced in April 2011, reflects the focus on building Singapore into a leading Asian hub for wealth management. Its goals are to promote high standards of market conduct and to increase the competence of private banking professionals. (Poon, 2021).

i. Changing Financial Consumption

Everyday customers were just as crucial as banking corporations and regulatory organizations in Singapore's growth as an IFC. More international banks have entered the domestic market and competition has intensified since 1999, when banking liberalisation began. Singaporean and regional banks, along with their overseas counterparts with QFB status, reacted by broadening their product lines to appeal to the region's and Singapore's expanding middle class. Financial institutions began to diversify their revenue streams beyond deposit and loan services and into fee-based products and services, such as unit trusts and investment solutions offered by in-house asset management departments or through partnerships with other businesses. At the same time, in the 1990s, the Central Provident Fund was liberalised, allowing members to deposit some of their annuity assets in commercial funds with the hope of higher yields. The growth of Singapore's wealth management sector and enhancement of its IFC skills were also components of the strategic plan that followed the economic slump of 1985 and the Asian financial crisis of 1997 (Lai, 2013; Lye, 2011). Domestic banks have evolved from simple lending institutions to complex financial services conglomerates that offer a wider variety of goods and services, such as financial planning and insurance. At the same time, people are being urged to be more independent and responsible with their money, which drives demand for these products and services (Lai and Daniels, 2017). This portrays consumers of financial services as both autonomous and self-disciplined agents who must take responsibility for

their financial destiny (Langley, 2006), and as contributing members of society whose altered financial habits will strengthen and competitiveness of the nation's economy.

The organizational shift and business initiatives of POSB reflect the evolving position of consumers in Singapore's financial-centered objectives (Lai and Tan, 2015). POSB's origins are in its early days as a public savings bank when its primary social mission was to lend money to people so they could buy homes for low-income families. In a unique transformation into a fee-driven, profit-based financial institution, POSB was acquired by the government-backed DBS bank for alliance and regional growth. In the past, POSB ads promoted frugal living and savings through methods such as public campaigns, school visits, tax-free savings accounts, and televised lottery draws. Nevertheless, over the past decade, the advertisements have transitioned to a financial investment model, implying that anyone can invest in corporations by visiting their neighborhood bank. An important part of DBS's business strategy in promoting a widening range of investment and insurance products has been appealing to social memories and POSB's huge local branch networks. Investing and insurance Product Sales at the expanded DBS experienced a substantial increase because of referrals from POSB customers. Investing and wealth management product sales as a whole at DBS soared between 1998 and 2003 (Lai and Daniels, 2017).

Changes to the operational requirements of banks came about because of regulatory reviews and policy revisions by the MAS. Bank staff received better training, customers were required to fill out more detailed product highlight sheets, and new evaluation frameworks were put in place to better match clients' risk profiles. Reforms to the Financial Advisers Act, the Securities and Futures Act, and a Financial Advisory Industry Review were enacted to enhance the standard of financial advice made available to individual savers (MAS, 2012; Milliman, 2013). Additional protections for retail investors and stricter oversight of retail banks' securities businesses are the results of recent regulatory measures

aimed at promoting transparency and due diligence in the financial advisory and sales processes. Considering the importance of wealth management and high net worth clients in Singapore and the greater Asia region, these measures are deemed crucial in protecting the credibility and standing of Singapore's financial legislation (Lai, 2020).

1.2.Research Problem

Banks in Singapore, which is considered to be an international financial city, are evolving right through the evolution of Neobank and fintech. The emergent digital-first challengers are increasingly posing a threat due to their propensity to deliver unique and convenient customer solutions to cover dynamic technology clients. It is particularly true that new players, which have recently entered the market, have recently started to appear more competitive even to the established traditional banks. The presence of neo-banks and fintech firms is an immense challenge to the traditional banking players in Singapore because they must face the challenge of disruption in the digital age while at the same time safeguarding consumers' trust as well as market stability. Neobanks and fintech firms cut across new-generation technology like AI, blockchain, and data analytics in delivering effective, cheap, and customer-friendly financial services to the targeted consumers. They are often digital upstarts, without the incumbent burden of legacy infrastructure that can slow them down and inhibit their growth. On the other hand, conventional commercial banks have a severe drawback in that they have well-entrenched bureaucratic structures and bear onerous regulatory requirements that slow them down and make them less agile than the codeless newbies. The research problem is aimed at identifying ways in which traditional banks in Singapore may be able to assess the threat posed by Neobanks and Fintech companies. In particular, the paper will consider what factors make these new digital entrants successful, the kinds of pressures that they are likely to exert on established

actors in the banking industry, and how, in turn, efforts by conventional banks to adopt new strategies are likely to affect customer satisfaction and overall performance. This research is significant in aiding traditional banks to know the areas to compete with the new applicants and how to harness the new technologies that are fast transforming the industry. Therefore, by analysing the relationship between these factors, the study seeks to produce a framework that might help traditional banks in Singapore become sustainable and capable of beating disruptive innovation.

1.3. Purpose of Research

This study aims to provide direction to the traditional banks in Singapore on how they can evaluate and even threaten the new entrants, such as neobanks and other fintech firms. Thus, the research aims to recognize core commonalities of the digital disruptors' entry and success, assess competitive pressures that they create, and study the effects of strategic activities on customer satisfaction and market outcome to provide meaningful guidance for traditional banks. These horsetails will assist them in developing new, effective approaches and using information technologies to improve the company's competitive standing and guarantee long-term market presence.

1.4. Significance of the Study

This study has important implications for the traditional banking industry in Singapore owing to the rising competition from the neobanks and fintech firms. Then these new entrants with a digital orientation adopt new technologies to deliver efficient, cheaper, and targeted products, a key challenge to traditional institutions. The contribution of this research lies mainly in that it may provide conventional banks with a systematic view of these disruptive forces.

Firstly, based on the analysis of the key factors that define entry options and performance of neobanks and fintech firms, the work contributes to the understanding of the competitive advantages of digital entrants. This knowledge is important for traditional banks since it makes them aware of the forces driving the market as well as the change in customer expectations brought about by advancing technologies. Familiarity with the benefits derived from recent neo banks – like flexibility, customer-centric approach, and product customization – will help traditional banks recreate their value proposition strategies.

Second, identifying competitive forces by neobanks and fintech companies will provide an understanding of how traditional banks are threatened in areas including price policies, organizational effectiveness, customer interaction, and service introduction. The conclusion made in this paper shall enable traditional banks to point out the exact struggles they encounter and determine where they ought to innovate or enhance to survive.

Finally, the study will assess customer satisfaction and market performance outcomes of strategic implementation carried out by Traditional banks. Through such assessment, the research will provide relevant suggestions to the traditional banks on how to improve their approaches from digital drive to engaging with the fintech firms. This is important for traditional banks so that they stay relevant and on the right fight in the changing financial industry.

1.5. Research Purpose and Questions

This study aims to identify target factors that traditional banks in Singapore can utilize to evaluate neobanks and fintech companies and learn about pressures that exist from internal and external sources, strategic actions undertaken by different banks, and the effects of these measures on customer satisfaction and market share.

i. Main Research Question:

How can traditional banks in Singapore effectively assess and compete with the rising threat of neo-banks and FinTech companies?

ii. Sub Research Questions:

- **RQ1:** What are the key factors driving the entry and success of Neo banks and FinTech in the Singaporean banking market?
- **RQ2:** What are the primary competitive pressures that Neo banks and FinTech exert on traditional banks in Singapore?
- **RQ3:** What are the outcomes of strategic initiatives on customer satisfaction and market performance for traditional banks in Singapore?

CHAPTER II:

REVIEW OF LITERATURE

2.1. Theoretical Framework

The five forces hypothesis put forward by Porter served as the theoretical basis for this study's rational action component. According to Porter's five forces model, the external environment presents both opportunities and risks that a company's strategy should consider. Factors like as the strength of suppliers and buyers, the presence of replacement products and services, the power of existing competitors, and the threat of new entrants are all examples of such dynamics (Planellas & Muni, 2019). Understanding different industries' history and current state is essential for developing a winning strategy. A strategist's role, according to Porter, is to zero in on and control a competitive environment, whether that means keeping a close eye on the competition or taking a step back to look at the bigger picture (Porter, 1989). It might be argued that shifts in strategic thinking and technical improvements have shifted the focus of Porter's five forces away from survival in an existing competitive market and towards capturing opportunities in new, inventive sectors. However, it's fair to wonder if these businesses have what it takes to become industry leaders in a field unrelated to their current one (Planellas & Muni, 2019).

Harvard Business Review released the original version of Michael Porter's five forces concept in 1979 after he had developed the term (Johnson, G., Scholes, K., and Whittington, 2008). They state that the five forces framework is an active and easy-to-understand method for classifying specific powers about a given business issue from an outside-in viewpoint. Five microenvironmental pressures are identified by the framework as driving competitiveness and threatening an organization's capacity to turn a profit. In industrial organization (IO) or industrial economics, the five forces model developed by Porter first emerged. Because market structure influences the actions of market

participants, according to the IO approach, a company's industry appeal is determined by its market structure (Raiblev, 2013; Slater & Olson, 2002). Success in the market, for instance, is dependent on the competitive strategy, which is in turn influenced by the market structure. Thus, the market structure indirectly determines the organizational success. One thing is that when macroeconomic conditions, governmental policies, and environmental factors change, so will separate forces and their combined effects. Mohapatra (2012) suggests that while doing an industry study, the five forces model might be considered. Closer inspection confirms the model's ability to shed light on the five factors at work in each given industry and their respective contributions to profit. This will help the company learn who the powerful people are in the business and who will most likely set the rules for the events. To top it all off, the framework gives businesses a bird's-eye view of the industry as a whole, including its current state as well as its future changes and dynamics.

Porter acknowledges that the five forces model should incorporate competition among current competitors as well as four additional forces: (a) New competitors' products or services, (b) suppliers' bargaining power, (c) buyers' bargaining power, and (d) other products or services' threats. The interplay of these five factors determines the nature of industry rivalry and poses an ongoing danger to every business that wants to succeed (Porter, 1989).

i. Neo Banks and FinTechs in Singapore

The study by Fang (2023) looked at how Fintech has affected firms and customers in Singapore's financial services sector. When it comes to the administration and facilitation of financial services, fintech has been a game-changer. The lack of research on Fintech's function in Singapore further emphasizes the necessity of this examination. The study employs a case study and a correlational technique for both quantitative and

qualitative analysis, together with a contemporaneous triangulation design, which is a mixed-method research methodology. Automating processes, developing new products, increasing competition, and making financial services more accessible are all areas where Fintech has enabled substantial transformation, according to the research. In addition, the research reveals the pros and cons of Fintech, including difficulties with data protection, legal frameworks, and market concentration. They offer strategies to help you properly manage these risks. The study also emphasizes how open innovation has helped speed up the development of Fintech. The study shows that demographic characteristics don't have much of an effect on consumers' perceptions of Fintech providers, but behavioural factors do. These findings provide helpful direction for Fintech professionals dealing with the challenges of implementing in Singapore's banking and insurance industry. This study expands our knowledge of the theoretical and practical aspects of Fintech's transformation, how it is being implemented, and how consumers perceive it in this specific local context. The results shed light on the pros, disadvantages, restrictions, and public opinion of Fintech adoption, which is important for researchers and industry professionals alike. In addition, the study provides actionable suggestions to boost Fintech's influence in Singapore's banking industry.

Mirahmedov *et al.* (2024) look at what makes Singapore's financial services so special and successful. First, the financial system is resilient and transparent because of the strong regulatory structure that is based on the “Monetary Authority of Singapore” (MAS). The second reason Singapore is a world leader in digital banking solutions is its constant pursuit of technological innovation, especially in the financial technology sector. Finally, when it comes to banking, Singaporean banks are customer-centric. They provided individualized financial recommendations and excellent support. It is safe to say that the

combination of these variables has strengthened the country's financial sector and established new standards for banking services globally.

Kokh and Kokh (2020) presented evidence that contradicts the widespread belief among industry professionals that banks are giving up their competitive edge in the face of fintech businesses' advances in the banking sector. To better understand how banks stack up against fintech startups, this study sets out to do just that. Statistical methods, expert opinions, logical reasoning, and comparisons were all employed in the research. A new wave of rivals has entered the financial market, and this is acknowledged in the piece. On the other hand, fintech companies are racing ahead of banks when it comes to technology, opening up more avenues for users to access financial goods. Financial institutions offer a far wider variety of products than fintech startups. The banking industry has started its digital transformation with the expertise of seasoned professionals. Banks are moving their operations to new, more sophisticated technologies these days. At the head of every financial market player is a top banker. The Savings Bank of Russia, Russia's biggest bank, has publicly stated a shift in its business model, making this trend particularly apparent in the country. The Sber ecosystem he built was a watershed moment in the evolution of the financial technology sector. While universal banks continue to dominate the Russian financial market in terms of digital technology and product offerings, Russian banks have started to expand their services outside banking and have begun to establish integrated ecosystems, according to this article's summary of the study's findings. By pointing up indicators that support this claim, the authors also established the beginning of the fintech 4.0 era.

Imam *et al.* (2022) Examining the SAARC and ASEAN areas, this essay examines the potential and threats faced by several FinTech categories. Taking into account the World Bank's data on financial inclusion on a worldwide scale, they plot the replies to learn

more about the possibilities and threats faced by FinTechs in each area. The “FinTech Opportunity Index” (FOI) is a new index that they developed to conceptualize the potential and limitations related to personal savings, borrowing, buying behaviour, and payment preferences. They have seen that the ASEAN nations have more chances for the growth of FinTech services than the SAARC regions do. A variety of FinTech services are required in different parts of the world. Crowdfunding, neobanks, and Ensure Tech are all services that could thrive in the ASEAN countries, thanks to the region's often optimistic outlook on starting a business and investing in assets. The SAARC areas could benefit from Ensure Techs that are associated with healthcare, as well as from Lend Techs and neobanks. Additionally, they have noticed that in both locations, FinTech adoption is higher among males and the younger generation. A new advertising and educational campaign is needed to persuade the more suspicious, particularly the older generation and women, to embrace FinTech services, according to the study.

Truong (2024) Southeast Asian economies are set to be propelled by financial technology, sometimes known as Fintech, in the coming years. Despite the abundance of research on Fintech in individual ASEAN countries, a synopsis of the region's progress has been noticeably lacking. This report's stated goal is to provide an inclusive analysis of the growth of Fintech in those ten countries by looking closely at things like market size, rate of adoption, Fintech categories, major players, fresh startups, technical infrastructure, governmental regulations and policies, the influence on the local economy, security issues, and upcoming trends. This study primarily uses a systematic review methodology to accomplish this goal by compiling data from a variety of reliable secondary sources, including academic studies, government agencies, and the World Bank. The findings also show that Fintech has experienced considerable growth in the majority of ASEAN nations over the last several years.

The study conducted by Vaganova (2021) overarching goal is to ascertain, through analysis of financial market transformation perceptions, the future orientations of financial technology development. An examination of the present state of fintech service acceptance in Russia and around the world is part of the research that defines the word fintech in this study. They also have the key players in the Russian fintech industry. An analysis of the Russian fintech market reveals that neobanks, e-wallets, online lending platforms, and personal finance management are the most intriguing subsets, and their analysis focuses on these areas in particular. The areas of smart insurance, predictive banking, P2P financing (crowdfunding), and transfer and payments are where fintech services in Russia are seen as having the most growth potential. An analysis is conducted to identify the primary opportunities and threats, as well as the strengths and weaknesses, of the Russian fintech market. This research will help pave the way for the whole Russian financial industry to undergo a revolution.

ii. Overview of Fintech Ecosystem in Singapore

Cao, Yang and Yu (2021) The influence of financial technology (FinTech) on contemporary economies, societies, and technologies is growing. Modern financial technology has evolved into smart FinTech, which relies significantly on DSAI techniques. To fuel intelligent, automated, whole-of-business, and individually tailored financial and economic services, systems, and enterprises, Smart FinTech integrates extensive DSAI and revolutionizes economics and finance. DSAI techniques in financial technology include techniques for complex systems, federated learning, quantitative techniques, deep learning, data analytics, intelligent interactions, privacy-preserving processing, optimization, augmentation, and system intelligence improvement. Smart financial technology includes banking, trade, lending, insurance, wealth, pay, risk, blockchain, and cryptocurrencies. The purpose of this research is to give the DSAI communities a big picture view of smart

financial enterprises, the environment that makes smart FinTech possible, the methodology that makes smart FinTech possible, and some ideas for where the field could go from here.

Khurshid, TAN and TAN (2024) The tremendous economic expansion in Southeast Asia during the last several years, propelled by robust tailwinds, has attracted attention from around the world. The result is a growing middle class that is taking part in and reaping the benefits of the digital economy that is booming in the area. Innovation and entrepreneurship (I&E) have great promise as a key economic engine in this setting. Businesses in Southeast Asia are under pressure to innovate quickly due to the proliferation of tech-first solutions presented by homegrown entrepreneurs in several nations. Also, by reaching out to people outside of major cities with innovative technology and scalable online platforms, businesses encourage inclusive growth. A lack of technical skill, cultural barriers that prevent market expansion, and unequal access to finance are some of the problems that persist despite these improvements. A platform for exchanging resources and taking collective action is necessary to address these concerns. When it comes to facilitating long-term I&E growth, no other organisation can compare to "ASEAN University Network—University Innovation and Enterprise" (AUN-UIE). The purpose of this white paper is to analyze macroeconomic drivers to support AUN-vision UIE's being a key player in the information and education (I&E) landscape in Southeast Asia. Investigate the driving forces behind I&E in the area, the effects it has had, and the need for expansion in the future. Locate key areas of focus within the region: Bring attention to opportunities and trends in regional growth that are specific to each country. - University mission enhancement: Demonstrate the positive impact that colleges have on the entrepreneurial environment by showcasing their successful efforts. - Encourage long-term plans: Promote teamwork by exchanging information, pooling resources, and using platforms together.

Sipakoly (2024) This study compares developing and developed economies to find out how government policies affect entrepreneurial ecosystems. Quantitative data analysis, case studies from various countries, and systematic literature reviews are all part of the mixed methods approach that this study employs. Case studies demonstrate the efficacy of policies in areas like technology, finance, and innovation, while systematic research uncovers many governmental initiatives used to encourage entrepreneurship. Examining quantitative data reveals that different economies have different regulatory frameworks, financing availability, and entrepreneurial rates. To cultivate thriving entrepreneurial ecosystems, the findings highlight the significance of sectoral focus, regional collaboration, and context-specific regulations. Findings and suggestions from this study can help researchers, stakeholders, and policymakers create adaptable policy frameworks that promote long-term business growth.

Neil Lee, Metta Ni (2024). The government of Singapore has been instrumental in the country's economic growth. That prompted worries that a government-run economy couldn't foster innovation in fields like digital technology, which depend on individual initiative and rapid technological advancement. But when it comes to digital technology companies expanding globally, Singapore has emerged as a frontrunner. How this occurred is the subject of this article. They prove that Singaporean lawmakers were brave enough to seize a locational opportunity in digital innovation when it presented itself, thanks to developments in information and communication technology. A unique "Singapore model" emerged to capitalise on this potential, drawing on Singapore's strategic location, liberal economy, and business-friendly climate while also incorporating active government involvement. Singaporean lawmakers engaged in what we call "network coordination" across agencies to solve coordination issues in establishing an entrepreneurial ecosystem. The nation has been able to scale up its digital technology companies, but its total

entrepreneurship rate is still low. Little progress has been made in frontier "deep tech," as these initiatives have mostly targeted consumer applications and markets outside of Singapore.

Huong, Puah and Chong (2021) Adapting to the new era of ASEAN financial technology, the financial services business is undergoing rapid transformation. Still, it's hard to tell how consumers intend to use financial technology across various financial services. Therefore, the purpose of this research is to explore the extent to which consumers in ASEAN nations have adopted Fintech by creating a Fintech Adoption Index. The adoption rates of Fintech are lower in Cambodia, Laos, Brunei Darussalam, and Indonesia than in Vietnam, Thailand, Malaysia, and Indonesia; in contrast, Singapore's implementation rate is relatively high due to the country's mature Fintech development. From 2017 to 2019, all ASEAN states were increasingly embracing financial technology. Dimensional and final index scores produced by this study are straightforward, and the study has accomplished its goal of simplifying the intricacy of Fintech adoption rates in several subsectors for each of the ten ASEAN nations. Finally, the newly built ASEAN Fintech implementation index can give a clearer picture of consumer desire for Fintech development, acceptance, and use, which information to guide sound financial policy.

Knoblauch (2021) seeks to determine Singapore's competitive advantages in the fintech sector and how they contribute to its international success. The development and implementation of a theoretical framework that integrates aspects of institutional aspects, innovation systems, national competitiveness, and fintech ecosystems allows for the investigation of success factors. This work utilised a description-explanatory research style based on a single case study to explore the theoretical foundations of Singapore's success in the fintech enterprise. To begin, several secondary sources, both qualitative and quantitative, were combed through to glean information regarding the industry's local

political and economic climate, its history, and more narrowly, issues about research, talent, collaboration, and capital availability. The second step was to triangulate the results with primary data gathered from two one-hour semi-structured interviews. Singaporean fintech firm Validus and the Singapore FinTech Association both sent representatives to participate in the interviews. Developed theoretical framework adequately identified distinct success elements. These results show that the local government in Singapore is mostly responsible for the country's competitive advantage in fintech. Major investments in infrastructure, people, and research have resulted from the financial authority's drive for innovation, which is aligned with Singapore's national goal for technological transformation. The deliberate establishment of international links, an entrepreneurial culture, and a supportive fintech ecosystem have all contributed to this boom. Research into industrial competitiveness at the level of specific fintech companies can benefit greatly from the findings of this thesis.

Yunus (2019) determined how Singaporean and Indonesian P2P lending platforms differ in terms of consumer behaviour, platform design, and regulation of borrowing and investing. The interpretive methodology utilised in this study permits a large amount of data to be gathered while analysing the challenges, which is why a qualitative approach is chosen. P2P lending platforms in Singapore and Indonesia are comparable, according to the study's findings. Identical details are present. However, social norms vary; for example, in Singapore, people use P2P to make a critically important but time-sensitive purchase, but in Indonesia, people use P2P for consumptive goods since saving is not a communal habit. Transparency in Fintech transactions is a boon to Singapore's already-friendly government regulations. While in Indonesia, people are still unsure of how Fintech is perceived; for example, some say it requires approval from the Minister of Finance, but in reality, it's through the Financial Services Authority or OJK. Particularly about legality,

Fintech players in Indonesia's P2P lending sector still require overhauling. Given Indonesia's large population, the country's financial technology industry has become a prime target for Singapore.

Bakar (2020) The banking sector manages a nation's financial assets, making it an essential part of any economy. In recent years, discussions surrounding FinTech have grown in prominence within the business sphere. "FinTech" refers to innovations in technology and business practices that aim to provide financial services in a way that is competitive with more conventional approaches. In this study, they looked at how commercial banks in Malaysia, Singapore, and Thailand use financial technology (tech spending ratios and R&D intensity) to affect their bottom lines. The researchers in this study examined the effects of the factors under investigation by use of a regression analysis. Technology spending ratios and R&D intensity are found to affect bank performance. Nevertheless, because every nation has its own set of banking laws and practices, the results can fluctuate depending on the sample. Hence, banks might use this study's results as a benchmark to assess how they're allocating their investments to technological development.

Ciulla and Mantegna (2020) conducted a comprehensive study of a corpus of fintech terminology appearing in (i) English-language news and blogs and (ii) business descriptions of various international corporations. Fintech words and locutions have developed into a unified vocabulary used to define fintech-related business activities around the world. Using complex network methods developed to handle heterogeneous systems, they analyzed a large dataset of company descriptions. Among these, they found that fintech companies over-express certain characteristics of the country, municipality, and economic sector.

iii. Regulatory Environment and Government Initiatives

Fan (2018) explored the findings of the MAS's policy goals in influencing the FinTech industry, expanding on its current "balanced" strategy to foster financial development while guaranteeing a stable financial system. It is also in line with its goal of using technology to make the financial markets more efficient. Following this, the article delves into MAS's proposed "Regulatory Sandbox"—a novel regulatory framework that seeks to find a happy medium between encouraging financial innovation and safeguarding consumers and maintaining financial stability. Lastly, the study delves into the author's thoughts on MAS's strategy and how financial regulation will likely evolve in the future regarding financial technology.

Rupeika-Apoga and Thalassinos (2020) explore potential legal definitions of FinTech, look into current approaches on a global scale, and analyse national policies in this area. In this study, document analysis was utilised as a method of qualitative research. They observed that the majority of nations' legal systems do not target fintech firms by name and that both conventional service providers and fintech operators are subject to the same regulations. On a global scale, the term "FinTech" is openly used by regulators, policymakers, businesses, academia, and the public. International organisations, including the IMF, the World Bank, and the OECD, have stated that FinTech presents a chance for all nations to increase their economic growth rate and increase their financial affordability and inclusion. To establish themselves as international or regional FinTech hubs, several nations are putting a lot of effort into creating interagency government initiatives and a legislative climate that is conducive to the industry. Politicians, researchers, and industry professionals all continue to have different understandings of what financial technology is, how it works, and the regulations that govern it. This article's worth lies in the fact that it

offers a new method to define FinTech by integrating many perspectives freshly and creatively.

Greene and Chuen (2019) delves into the reasons for Singapore's emergence as a leading global platform for open digital token offerings. It specifically looks at how different regulatory methods have helped to differentiate this token distribution model from more conventional securities offerings. Singapore had an 11% dollar volume of fully private token offerings in Q3/Q4 2018, while the US had a 94% volume. In contrast to the less than 40% of private sales in the US that led to operational networks or minimal viable products, this research indicates that more than 70% of Singapore's one-to-two-year-old open token offerings achieved this. Additionally, it compares the results, as well as policy issues, of this distribution mechanism (open digital token offering). Furthermore, more smart contract platform projects were filed in Singapore than in any other country in 2017 and 2018, accounting for almost 40% of all such projects. The results of this study provide credibility to the idea that projects that want to attract users, generate revenue, and encourage technical contributions all at once can reap the benefits of open digital token sales, for the reasons discussed in this study. In addition, the risks associated with this distribution technique can be effectively managed by retail participants. More digital token projects probably held token sales in Singapore in 2018 than any other city in the world, thanks to the city-state's regulatory orientation towards open digital token offerings.

Colaert (2018). There was a deluge of new regulations aimed at the banking industry following the financial crisis. Ever since, the big concern has been how banks and other financial organisations can stay in line with this constantly changing set of regulations. This article delves into the possibilities of RegTech solutions to guarantee compliance with the law. A definition proposed for RegTech is the application of technology to the problem of regulatory oversight and compliance. Recent legal theory

practically unanimously praises RegTech for its potential to bring about significant efficiency improvements, lowered danger of administrative fines due to human error, and enhanced overall quality. However, the difficulties and dangers of RegTech solutions are under-discussed in regulatory reports and legal theories on the subject. New sources of systemic risk, increased costs, data protection worries, and undesirable side effects of "dehumanization" are some of the risks and issues that this contribution raises. Because RegTech still has largely unanswered questions regarding the compliance problem, this article presents some solutions or mitigation measures for each of these issues. After all, in this RegTech age, the financial regulator plays a pivotal role in mediating between lawmakers and financial organizations. The shift to a cooperative supervision model is being accelerated by RegTech, that much is clear. In this framework, regulators back banks as they strive for adequate and appropriate compliance, while financial institutions contribute crucial information to supervisors' efforts to create effective regulations, best practices, and RegTech solutions.

Jenweeranon (2023). At present, rise of FinTech, numerous Southeast Asian nations are attempting to formulate regulatory tools. To find a middle ground between market simulation and risk management, suitable regulatory tools for financial technology are required. As a result, developing nations like those in the “Association of Southeast Asian Nations” (ASEAN) can enhance their financial inclusion through the usage of digital money. Finding the best way for regulators to accomplish this is the primary motivation for this study. Strict regulation, when applied to the financial technology industry, can lead to overregulation issues, which in turn can hinder innovation and competitiveness. Unregulated companies, meanwhile, can lessen the dangers to customers. To illustrate the various degrees of regulatory frameworks concerning specific types of FinTech companies, this article mainly examines the legislative endeavours of numerous ASEAN nations.

While it's clear that ASEAN regulators are open to new, rapidly developing technologies like FinTech, there are still several reasons why these companies are so tough to oversee. When it comes to regulating these types of firms, regulators often struggle due to a general lack of understanding of the technologies involved. Conversely, regulators are quite worried about resource shortages in terms of personnel, knowledge, and equipment. The thesis applies a combination of legal research methods. It follows a doctrinal research method to explain different legal and regulatory frameworks related to financial service businesses in different ASEAN jurisdictions. This study determined that ASEAN countries should consider making greater use of alternative regulatory tools, particularly innovation offices. This approach, along with supporting initiatives, will allow regulators to be more adaptive and responsive to FinTech.

Allahrakha (2023) delves into the legal challenges that multinational FinTech platforms often face. Data sovereignty, interoperability, license hurdles, and talent acquisition challenges are some of the recurring concerns that entrepreneurs trying to provide services in multiple countries face. The development of uniform data management standards, oversight requirements, and open banking systems requires cross-sector collaboration, even though the results show that regulatory concepts are still mostly unharmonized. Better policy signalling that helps responsibly growing businesses can be achieved through phasing out proportionate need-based compliances and managed sandboxes. Market entrance may be made easier and the trust that is currently lacking is maintained by effective governmental incentives and dispute relief mechanisms.

Leong (2020) In the past, the bank-customer relationship has been envisioned as being closed. The emergence of open banking, however, has put that closed paradigm to the test. Clients have the power to begin and request data exchange with third parties in open banking. The principle behind this sharing is that people should be able to benefit

from and own their financial data. In this work, they take a look at two different frameworks and see how well they perform with the open banking model. The first is a framework based on obligations, which includes safeguards for sensitive financial information and banking secrecy; the second is a framework based on rights, which is tailored to each client and places a focus on open banking and data control. In light of the novel applications of financial data under the open banking paradigm, a rights-based framework, which gives customers more control over their data, is better suited to open banking, according to the study.

Chen (2019) took a high-level look at the regulatory sandbox system, outlining its main points and discussing its pros and cons. The paper continues by examining the sandboxes that were granted in the UK and Singapore from 2016 to 2018. Its goal is to learn about the activities, services, and regulatory status of the businesses that received these sandboxes, all set against the background of the financial technology revolution. These examples provide regulators something to think about and provide a foundation for evaluating the early success of the regulatory sandbox strategy.

Giglio (2021) offered some of the most important national and international definitions. Lastly, six primary Fintech models are examined. A total of fourteen publications addressing the phenomenon of Fintech were chosen from a comprehensive literature review. Among the many Fintech companies springing up every year, six distinct business models have emerged: wealth management, crowdfunding, payment processing, capital markets, lending, and insurance. Financial technology has already been defined by several international organisations, including the IMF, WBG, FSB, OECD, IOSCO, and BIS. Financial technology has also been the subject of national-level analyses in some nations, including the US, UK, Singapore, China, Switzerland, AI, and EU. When they talked about innovations in the financial sector, we're talking about fintech. The utilization

of new technology in the design of market firms, the internal production processes of financial operators, and the provision of services to end consumers enables these improvements. We're also talking about new configurations of intersectoral activities that are possible thanks to fintech. It would appear that fintech is more of an umbrella phrase for innovative technological approaches to financial services than a specific industry. Following the logic of the digital economy, fintech helps develop a continuous network of modular services for individuals, organisations, and intermediaries in banking, finance, and insurance. This industry is a driving force behind the EU's integration policies in the financial services markets.

2.2. Key Drivers of Neo Banks and FinTechs' Success

Nurbaev Cheuk Hang Au Chih-Yuan Chou (2022) The banking sector has undergone important changes due to the recent fast expansion of FinTech and associated domains. Neobanks, a subset of FinTech known as "Deposit and Lending," began to grow globally and begin to chip away at traditional banking by providing more innovative, diverse, and customer-centric goods and services online rather than through physical locations. Because neo banks are unique among FinTech companies, the reasons for the measurable success stories are not yet apparent.

Glushchenko, Hodasevich and Kaufman (2019) Innovative financial technologies are causing a worldwide shift in the financial and economic sphere, which in turn is altering the models used to design and build financial services and products. That causes a sea change in the financial market and the things that put people in the driver's seat. Keeping up with the competition and attracting new customers is impossible for banks that don't embrace cutting-edge software applications. Banks are reimagining their roles in the financial services sector by partnering with the fintech industry to revamp operations in areas like consumer banking, insurance, financing, lending, payments, currency exchange,

money transfers, asset management, and blockchain transactions. This study's goal is to survey recent advances in banking technology to spot emerging trends. The authors summarize the most crucial technological advancements of the last decade that have enabled the rapid growth of the international financial market and the dramatic change in the banking industry. Examining the best practices for incorporating FinTech into the creation of financial services, the writers of this piece assess their frequency and key areas of use in the banking industry.

Monis and Pai (2023) Banking in India has experienced dramatic shifts in both market structure and competitiveness. Technological and digital developments are reshaping the banking industry's future. Soon, the world's financial sector will be greatly affected by technological developments. Both established and up-and-coming financial institutions face threats and opportunities posed by innovations in the areas of payments, asset management, lending, and insurance. The word "fintech" describes new developments in technology that are influencing the financial services industry, which is heavily dependent on IT. The idea of new-generation banking is hitting home as more and more conventional banks embrace technology, either internally or through collaborations with FinTechs. This is prompting financial institutions to explore fresh avenues of operation and develop ground-breaking goods and services. Banks are under increasing pressure from clients to provide services that are reliable, quick, and tailored to their specific needs, especially retail customers. For this reason, universally accessible and reasonably priced financial services are essential. Tiny inlets. Neobanking is one example of a cutting-edge method employed by fintech organisations. A new term in the financial sector, "neo banking" is causing a stir in India's fintech sector. The highly successful neobanks are now branching out into India, providing customers with easy online banking. Neobanks, which do not have a physical location, can still offer banking services and

products online through partnerships with traditional banks. Especially for the tech-savvy youth and the underbanked people in our country, neobanks provide innovative banking solutions. Thus, the purpose of this research study is to examine the current and future of neobanking by weighing its advantages and disadvantages using the SWOC and ABCD frameworks and to convey the concept of neobanking to a broader audience.

Harasim (2021) seeks to shed light on the moments when cooperation is more likely than competition. This research presents a conceptual framework to facilitate understanding of the elements that influence the nature of relationships between technology businesses and banks, thus filling this knowledge gap. Banks' and technology businesses' external market position elements were investigated based on thorough literature research and the market-based methodology. It was discovered that the degree of acceptance of FinTechs and Big Techs in different nations or areas determines this position and, by extension, the fundamental form of interaction. Given that AEs had lower adoption of FinTechs and Big Techs compared to EMDEs, it stands to reason that tech companies in the former group would prefer to work with banks rather than compete with them. In contrast, competition is more common in the latter group. Analysing internal factors was done using a slightly modified version of IO theory and the resource-based method. Here, they offer a strategic tool that can be used to determine if the assets, talents, and features of banks, FinTechs, and Big Techs are complementary or substitutable. Based on this assessment, they may decide whether to cooperate or compete. This research contributes to the existing literature in three ways: first, by providing a definition of FinTech that is reflective of the subjective/institutional approach; second, by conducting separate analyses of FinTechs and Big Techs; and third, by proposing a strategic tool for comparing the benefits of banks, FinTechs, and Big Techs, which will make it easier to choose the optimal option for their interaction.

Boot et al. (2021) With a focus on developments in data gathering and processing as well as communication (relationships and distribution), they analyse how technological progress has impacted financial intermediation. Both continue the fast-moving historical trend of relying more on concrete data and less on face-to-face communication. They assess other contemporary developments, like digital platform proliferation, the merging of data abundance with AI, and so on. They contend that conventional banking models can be horizontally and vertically disrupted by the proliferation of new communication channels. Financial service providers with expertise in areas other than balance sheet access can eat away at non-core activity, while platforms can mediate disputes between financial institutions and their clients. Policymakers should take note of the constraints imposed by these threats to the conventional banking paradigm, which is addressed in this study.

2.3. Impact of Neo Banks and FinTechs on Traditional Banking

Temelkov (2020) As a result of innovations in technology and the growth of the financial technology industry, new types of rivals entered the market in the past decade, drastically altering the banking environment. Innovations in financial technology cause a stir, shaking up traditional banking practices; as a result, banks are adapting by developing more cutting-edge ways of doing business. Digital bank models and non-bank models have so disrupted the once-comfortable traditional banking business paradigm. Although neo banking and digital banking share some similarities, there are important distinctions between these three models and conventional banking model. The operational efficiency, client acquisition expenses, operational level, data processing ability, and organisational design are some of the key areas where the two systems differ significantly. It follows that barring any major setbacks, fintech-related business models have a good chance of pilfering market share from traditional banks.

Sardar and Anjaria (2023) Online financial businesses that use neobanks, digital banks, or challenger banks use state-of-the-art technology to provide clients with convenience, efficiency, and tailored banking services. They are becoming more popular among tech-savvy customers who prioritize innovation and convenience when banking, and they are shaking up traditional banking industry by forcing existing banks to change and adapt to stay competitive. This study seeks to gain a deeper understanding of how neo-banks are disrupting the Indian banking sector by taking on more conventional institutions. The results are derived from a Google form survey that was filled out by 200 people. Research shows that customers are very satisfied with the services offered by neo-banks, which is a major factor in their increased utilization compared to traditional banks. However new banks still have a tough time with regulatory compliance. New and improved user experience technology, as well as creative and personalised financial solutions, present promising opportunities. Traditional banks will likely continue to operate alongside neobanks, despite the latter's increasing popularity, because the two kinds of financial institutions may meet distinct client needs in the dynamic banking industry.

Bueno et al. (2024) accomplished two things: first, to classify the main ideas and themes around digitalisation and operational efficacy in the banking industry; and second, to lay out a plan for future studies to improve our understanding of "digital operational efficiency" (DOE). This study uses a two-stage content-centric review approach to thoroughly explain broad themes and then go on to specific dimensions. As a preliminary step, they sought to improve their search parameters for content analysis and present an overview of literature linking operational efficiency with digitization in the banking industry. Content analysis was employed in stage two, with an emphasis on academic journal articles released from 2018 to 2023. Key themes include how the COVID-19 pandemic affected banks' digital transformation, how organisations changed to adopt new

digital business models, how unconventional operational paradigms improved customer experience, and how industry 4.0 technology and partnerships improved industry performance. Research on digital banks' break-even points, customer service, product and service portfolio optimisation, and DOE conceptual development are all on the table. This research adds to our knowledge of the nuanced association between digitalization and operational efficiency by traveling effects of industry 4.0 technologies, digital business strategies, and pandemic efforts. With the proposed study agenda as a guide, scholars can advance theoretical frameworks in this area in their future work. This study sheds light on important topics for banking industry experts, helping them improve their performance, optimize their digital product and service portfolio, and elevate the entire client skill in the ever-changing world of digital banking.

2.4. Financial Performance and Market Position of Singapore Financial sector

LEE, David K. C. (2014) The rapid growth of Singapore into a major global financial hub in the last fifty years is truly remarkable. Success is a function of three things: time, place, and people. In today's rapidly evolving market landscape, characterized by massive global financial flows and crisis following crises, many obstacles arise because of the interconnectedness and complexity of today's markets. Following the U.S. debt crisis, Euro crisis, and probable slowdown in developing countries, this chapter will address the researcher's prediction regarding the prospects of the island state of Singapore and its thriving financial industry. Specifically, the possible issues brought about by the large inflow of capital in a short period in the tiny open economy are brought to light.

Talpur (2023) examined the association between market power and efficient structure, this study seeks to understand how banking firm competitiveness affects performance. Using market share as a surrogate for efficient structure and data collected for the years 2005–2020, this study compares Singapore with Pakistan. Having a

monopolistic competitive environment, the results showed that the Singaporean market is extremely concentrated. However, the banking sector in Pakistan shows that there is full competition. Keep digging; use Johansen co-integration and "Vector Error Correction Method" (VECM) to verify the long-term relationships and cointegration of the variables. Findings reveal a statistically significant association between market dominance and competitiveness and banks' bottom lines over the long term.

Nguyen Van Tuan (2016) compares the corporate governance systems and financial results of publicly traded businesses in Singapore and Vietnam over four years (2008–2011). In particular, within the institutional framework of each market, they analyse and analyse the comparable and dissimilarities in corporate governance frameworks and financial results of the firms. The average size, makeup, and diversity of boards in these two marketplaces are notably different from one another. On the other hand, the statistical evidence does not disprove the similarity between the two markets' businesses in terms of ownership, board leadership, or financial performance. Their comparative study of the corporate governance structures-financial performance nexus further supports the idea that these effects are country-specific since they differ substantially between the two marketplaces. For future cross-national comparative studies of corporate governance, it is recommended that data at the national level be included in models of the association between corporate governance and business performance.

Ridzuan et al. (2019) examined the association between GINI and financial development in Singapore, as measured by DC and MS, two proxies for the country's overall monetary base. The research spanned the years 1970–2016 and made use of "Autoregressive Distributed Lag Model" (ARDL) estimation. Empirical evidence suggests that more financial development leads to a more equitable distribution of income in Singapore. One suggestion for policymakers is to make financial products more accessible

so that income distribution can be improved over time. This might make banks and other financial institutions more effective in helping to narrow the income divide. Maybe the country's income disparity problem could be alleviated if the financial industry was more inclusive of all areas of society.

According to this work, Lai and Daniels (2015), the strategic methods the state actively mobilizes enterprises to implement financialization scripts for political-economic ends have been under-emphasized in contemporary financialization studies. It lays forth a model of state-led financialization in which states and businesses work together to create acceptable business practices, which leads to an increase in the financialization of company strategy and operations. An empirical examination of two prominent Singaporean banks and their transition into financial services organizations reveals how the state can influence the financialization of businesses. In the last section, they talk about how state-firm relations, financialized modes of production, and capitalist processes could be better understood if we put more emphasis on the state's role in financialization.

Josyula (2021) looked at how Fintech has changed the banking industry, how it has affected consumer experiences, financial inclusion, regulatory frameworks, and more. Examining the development of Fintech and how it has interacted with conventional banking is the first step of this examination. This study explores the revolutionary insinuations of blockchain, AI, and mobile apps—disruptive technologies that are driving innovation in the financial technology industry—on the accessibility, efficiency, and breadth of banking services. The article goes on to examine how Fintech has changed consumer experiences, highlighting the growth of online marketplaces, tailored assistance, and instantaneous payments. Examines how financial technology has levelled the playing field by making banking solutions more accessible and encouraging financial inclusion, especially for marginalized communities. Critical to this analysis is the regulatory

landscape, which looks at how authorities are changing to accommodate Fintech's ever-changing nature. Finding a happy medium between easing the way for innovation and mitigating risk is the focus of this analysis of the possibilities and threats presented by regulatory frameworks. This article also delves into the topic of emerging banking models, such neobanks, and how conventional banks and Fintech companies are working together. While dealing with issues like competitiveness, data security, and regulatory compliance, it delves into how these collaborations have worked together to provide novel solutions. Last but not least, the article predicts where banking services will go from here in this age of Fintech domination. Constant adaptation and cooperation are essential in this ever-changing ecosystem, which is why it addresses the possible effects on job descriptions, company models, and the general security of the financial system. Looking at the possibilities, threats, and revolutionary power of this technological revolution from every angle, this article sheds light on the complex role that Fintech will play in determining the future of financial services.

Barroso and Laborda (2022) Organizations are well-equipped with technology necessary to surpass conventional financial institutions, according to this paper's analysis of new technology's application to financial and investing activities. Moreover, a thorough literature analysis is conducted to examine and evaluate three of the most crucial and contentious aspects of this field: difficulties, regulation, and collaboration. The various keywords have been sorted according to their co-citation using gathering techniques in the VOS Viewer software. Previous studies have allowed us to organize supply and trends in the financial industry in a comprehensible way, while also highlighting areas that may need further investigation in the future.

2.5. Public Financial Management in Singapore: Key Characteristics and Prospects

Asher, Bali and Chang (2015) researched the planned PFM approach for Singapore and identified its salient characteristics. It has come up again and again that PFM needs to be in sync with Singapore's location-based growth strategy. In addition, the government takes part in economic activities outside of the usual budget, leases out a lot of land, generates tax-like revenue from property and usage rights, and does not use social risk pooling to pay for healthcare and pensions as a nation. As a result, the public sector plays a much larger role than what is shown in the budget. The current PFM practices in Singapore will have to drastically change to reflect a more citizen-centric focus on governance when the country's business-location-based strategy runs out of steam and its wealthy and ageing population demands more social and economic security, more openness, and a bigger say in public policymaking. Budgetary constraints and inadequacies in institutional and organisational capacity will not limit policymakers' ability to respond.

Shao, Yang and Si (2023) Singapore is strategically located to serve as a world-renowned centre for supply chain management and logistics. There are five defining features of Singapore's contemporary logistics sector: power, concentration of services, professionalism, sturdy technology, and great efficiency. The economic model of Singapore is based on international trade. Companies in Singapore's logistics business are looking to diversify their supply chains, expand their logistics financing options, and take advantage of the country's thriving cross-border trade. The major focusses of this research are the positive effects of Singapore's expanding financial sector on logistics industry funding and advantages of the country's logistics industry development. Developing logistics financing in Singapore is being propelled by factors such as IoT, blockchain technology, intelligent management, talent cultivation, and governmental assistance. The

blockchain platform stands out as the most promising and emblematic of these options; it enhances the security of multi-agent collaboration, broadens the scope of credit transfer, and provides technological support for the Internet of Everything. Logistics financing has great potential as a powerful merger of the logistics and financial sectors, even though there are still certain dangers associated with its development in Singapore.

Wang (2021) With the advent of Internet-based financial institutions, the world has formally entered the information era, which has greatly improved people's lives and the way they work. By building information platforms, financial organizations can integrate information resources effectively the utilization of blockchain technology in supply chain financing and realization of acceptable resource allocation are two areas of intense research activity at the moment. From this, the essay draws a brief overview of blockchain technology's importance before delving into its practical applications and explorations in supply chain finance to offer helpful recommendations.

Albert Lusha, Xhelal Mziu (2015) Providing general governance institutions with the right to utilize "Government Financial Informatics System" (GFIS) in the implementation of their budget has been and will be a priority in context of improving financial management, to decentralising responsibility management in public finance. Additionally, when public monies are being procured, the entities directly employ GFIS in tandem with the incorporation of internal controls. Government financial management oversight is critical for two reasons: first, it has an immediate impact on how tax dollars are spent, and second, it helps to foster a long-term culture of responsible spending. With membership in the European Union as a long-term goal, the country's administration has made improving the efficiency and effectiveness of financial management a top priority. There is a renewed focus on the development and consolidation of the newly established

legal framework, units, and organizations responsible for overseeing public financial management.

Latkovska (2019) Current issues in the public financial system are discussed in this study. Some legal principles give weight to the idea of a financial system, which the author identifies as belonging to economic categories. It should be mentioned that the present financial laws do not define the financial system, even if legal documents employ phrases like budget, tax, banking, monetary, credit, and monetary system. Still, you won't find any legislative definitions of them either. A new view of the concept's content and structure emerges because of this divergence in interpretation. Financial law regulation is a public right, and the financial and legal substance of public economic relations about realm of money, finance, and credit is substantially determined by their public nature. Some contend that different legal entities play different but complementary roles in the monetary system of different countries. No financial system can operate without the budgeting system, taxes, banking, and monetary systems, all of which are important legal and financial organizations. All legal and financial entities must work together in harmony to ensure the long-term health of the public financial system. The public financial system encompasses both public and private money, both centralized and decentralized, as well as those of individuals and companies, and is a multi-faceted financial and legal phenomenon. The idea of the public financial system is necessary because it has proven to be the most susceptible to the global financial crisis and is increasingly showing the consequences of globalization.

2.6. Summary

The literature on traditional banks, Neobanks, and FinTech startups' competitiveness highlights how digital disruption has greatly affected the financial services industry. New financial technology (FinTech) companies and neobanks are rivals to be reckoned with, providing customers with easy, affordable, and tailored banking services using innovative tools like blockchain, AI, and statistical modelling. In contrast, traditional banks face challenges stemming from their reliance on legacy systems, slower adoption of new technologies, and regulatory complexities that restrict their agility. Moreover, changing consumer behaviour and expectations, driven by the demand for real-time and seamless digital experiences, have further accentuated this competitive landscape. While Neo banks and FinTechs are well-positioned to cater to tech-savvy demographics, traditional banks often struggle to meet these evolving demands.

In response, traditional banks have implemented various strategies, including forging partnership with FinTech companies, undertaking digital transformation initiatives, and investing in innovation hubs. However, the success of these strategies has been inconsistent, often influenced by organizational culture, leadership commitment, and the bank's technological readiness. Another critical dimension explored in the literature is the regulatory environment. Neo banks and FinTech firms often benefit from regulatory sandboxes that allow for experimentation, while traditional banks are subject to more stringent compliance requirements that can limit their flexibility to innovate. Despite these challenges, traditional banks remain critical players in the financial ecosystem, necessitating deeper exploration of how they can sustain their relevance in the face of rising competition.

Although existing research provides valuable insights into the dynamics between traditional banks, Neo banks, and FinTechs, several gaps remain unaddressed. First, much of the research is focused on global or Western markets, with limited studies examining the unique financial ecosystem of Singapore. This gap is significant, as Singapore combines a highly tech-savvy population with a stringent regulatory framework that shapes the competitive landscape differently. Second, there is a lack of comparative analyses that evaluate how traditional banks in Singapore perform against Neo banks and FinTechs in terms of innovation, customer satisfaction, and operational efficiency. Third, while various strategies have been discussed in the literature, few studies propose comprehensive, actionable frameworks that traditional banks can adopt to systematically assess and enhance their competitiveness. Finally, mixed-methods studies that combine quantitative and qualitative techniques to explore the possibilities and threats that conventional banks confront are noticeably lacking. Filling in these blanks will help us understand Singapore's financial ecosystem better and provide conventional banks a leg up in the increasingly digital banking landscape.

CHAPTER III:

METHODOLOGY

3.1. Overview of the Research Problem

Singapore's traditional banks, which were previously hegemonic in the country's financial industry, are currently faced with stiff competition from Neo banks and FinTech companies. They are making use of advanced technologies and customer-oriented approaches, open banking principles to challenge traditional players and obtain a portion of the consumers looking for more advanced, liberal, customized services. Therefore, many traditional banks have experienced relatively increased competitive commoditization threats that put their market share, customers' loyalty and overall profitability to a real test.

Several pressing concerns have recently arisen for Singapore's conventional banking industry, including the need to assess the influence of neo-banks and FinTechs on the industry as a whole, identify the dangers that new organizations represent to existing businesses, and determine the success of current efforts to boost client happiness and performance. A loss of competitiveness or even obsolescence due to the emergence of new customer-oriented and adopting digital financial technology are hazards that can result from ignoring these issues.

This research seeks to address current issues by analysing the potential of Neo banks and FinTechs, as well as traditional banks in Singapore. It attempts to identify methods in which these institutions may assess threats and develop plans to strengthen their competitive position in the banking industry. Traditional banks in Singapore will need to understand these dynamics and create the framework if they want to survive.

3.2. Operationalization of Theoretical Constructs

This research indicates that the word operationalization implies converting the constructs that are used in theories to the operational (measurable) variables, which can be tested empirically. While there are many concepts in this study, there are few of them that are critical such as competitive threat perception, drivers of Neo bank and FinTech success, strategic responses by traditional banks, customer satisfaction and external factors.

Some theoretically important constructs were operationalized in measurable variables for systematically analysing the competitive dynamics between the traditional banks and the digital challenger banks. For an assessment of perceptions of the banking services, Likert scale questions were answered by the customers regarding the factors of customer satisfaction (CS), service quality and the one of trust. This competitive landscape analysis made use of Porter's Five Forces model, which includes the following constructs: "Bargaining Power of Customers" (BPC), "Threat of Substitutes" (TS), "Rivalry Among Competitors" (RC), and "Threat of New Entrants" (TNE). To measure the impact of each of these on banking competition, these were measured on a 5-point scale.

This is in addition to tying in the strategic aspects as it influenced the banking sector such as: Digital Transformation Strategy (DTS), Product Innovation (PI), Technology Integration (TI) and Diversification of Services (DS). The results of these variables gave hints about how banks use digital progress to stay competitive. Additionally, Market Performance (MP) was incorporated during this part to evaluate these strategies effectiveness in terms of growth enhancing and sustainability. The results of questionnaire responses were statistically analyzed using mean, mean deviation and variance for getting meaningful insights. By operationalizing this way, there was a structured way of evaluating how traditional and digital banking dynamics happen and empirically validated their

assumptions. In this way, the study provides for reliable and actionable data by matching constructs to indicators to address the research objectives.

3.3. Research Purpose and Questions

The goal of this study is to identify current issues to appraise the potential of Neom banks and Fintech and to determine how traditional banks can assess the risks and develop strategies to improve their competitive position in the cutthroat banking market of Singapore. For Singapore's traditional banks to survive, it was essential to comprehend these dynamics. But the results would be useful for more than just assessing how long Singapore's traditional banks can survive.

How can traditional banks in Singapore effectively assess and compete with the rising threat of neo-banks and FinTech companies?

- **RQ1:** What are the key factors driving the entry and success of Neo banks and FinTech in the Singaporean banking market?
- **RQ2**: What are the primary competitive pressures that Neo banks and FinTech exert on traditional banks in Singapore?
- **RQ3:** What are the outcomes of strategic initiatives on customer satisfaction and market performance for traditional banks in Singapore?

3.4. Research Design

This study uses qualitative and quantitative data together to design better research for this study to explore how traditional banks in Singapore can evaluate the threat and competition from neobanks and fintech companies. As a first step in preparing the work, further bibliographic analysis was made to define the main factors influencing the neobanks and fintech success, as well as the competitive pressure on traditional banking institutions (Papathomas & Konteos, 2024). As a next step, the quantitative survey will be administered among consumers to examine the overall satisfaction, customer loyalty and the impact of digital strategies with traditional banks neobanks and fintech. The quantitative data that will be collected will be used to investigate the relation between variables with the use of statistical techniques (Kotronoulas et al., 2023). In contrast, the qualitative data will be used to look for patterns which will be referred to as themes. Such research design methodology will make identifying dynamics within the Singapore banking sector easier and offer strategic measures through which traditional banks can improve competitiveness.

3.5. Population and Sampling

The target population for this research includes senior management, financial analysts, and Information Technology specialists in Singapore traditional banks. These employees are selected because they are closely associated with various elements that influence the organization's competitive reaction to Neo banks and FinTech organizations, including strategic planning, financial management, and the integration of technology.

Given the scope of the research and accessibility constraints, a "convenience sampling technique" (Etikan et al., 2016) is employed. This type of sampling allows the researcher to obtain an overwhelming response within the shortest time possible from the willing respondents. While convenience sampling has some drawbacks concerning

generality, it applies to explanatory research designed to investigate particular trends or associations in a particular setting.

For the quantitative part of the study, the sample size of 300 respondents has been set (Lakens, 2022). Such a sample size is considered reasonable enough to generalise the results from different roles in traditional banks as to provide sufficient statistical credibility. These participants were given structured questionnaires where data on their perceptions on competitive pressures, strategic responses and effects of external factors were obtained. The complication of the study is that a qualitative component of the research provides the primary data with the secondary data that is collected from industry reports, financial statements and relevant scholarly journals. The use of both primary and secondary data provides a rich and robust set of data that can be used to complement research findings, hence giving the researcher a well-grounded angle on the research problem.

This approach guarantees the research captures insights into the challenges and opportunities faced by traditional banks in Singapore by targeting a strategically relevant population and using a large and representative sample that is not overwhelming.

3.6. Participant Selection

Table 3.1 Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Age	Participants aged 18 years and older	Participants younger than 18 years
Use of Financial Services	Individuals who actively use financial services from traditional banks, neobanks, and/or fintech companies	Individuals who do not engage with any financial services
Geographic Location	Residents of Singapore	Non-residents of Singapore
Income Level	Participants from various income levels (low, middle, high)	No specific exclusion based on income level, but income data is necessary
Digital Literacy	Participants with basic to advanced digital literacy	Individuals with no digital literacy
Engagement with Digital Banking	Participants who use online or mobile banking services	Individuals who exclusively use in-person banking services
Education Level	Participants with any level of formal education	No specific exclusion based on education level

Employment in the Financial Sector	Individuals not directly employed by traditional banks, neobanks, or fintech companies to avoid potential bias	Employees of traditional banks, neobanks, or fintech companies to avoid conflicts of interest
Willingness to Participate	Individuals who voluntarily consent to participate and complete the study	Individuals who do not consent or who withdraw from the study

3.7. Instrumentation

The primary tool used in the study to collect data was a structured questionnaire, which allowed for the validity and reliability of the answers. The detail was paid to the designing of the questionnaire, aiming at highlighting the key insights towards customer satisfaction, service quality, and trust in financial institutions with an emphasis on digital and conventional banking services. The instrument mainly consisted of closed questions with the use of Likert scales and multiple choices, to improve accuracy and consistency of response. The advantages of this structured approach were in being able to perform quantitative analysis and minimizing the way the procedure was responded to. In addition, clarity and logical flow of questions were also considered to make the questions easy to understand and respond to by respondents. The design process included the adherent part of the research principles that will make the instrument work like it was expected of it in the study.

3.8. Data Collection Procedures

The primary data is a key tool of the framework for benchmarking traditional banks in Singapore against the encroaching nonbanks and fintech firms so that a precursor can be

formed against them. The method of data collection used in the study was a self-developed structured questionnaire that was administered through various social media platforms. This method was used to maximize coverage in the diverse and digitally connectivity-oriented population, especially in light of the proposed digitally centred study

- **Questionnaire Design:** To achieve the purpose of the study and to ensure respondents were in a position to answer the proposed questions to the best of their abilities, questionnaire had to be constructed in a way that called for specific information on customer satisfaction, service quality and trust in financial institutions to deliver the perceived value of the various forms of banking that are digital and the traditional. Most of the questions posed were closed questions that used Likert scales and multiple choice. In designing the questionnaire, much attention was taken to make sure that the questions and answers were well outlined to enable easy and proper completion of the same (Chirk et al., 2006).
- **Sampling and Target Audience:** Due to the nature of the study targeting the emerging opportunities in the financial sector within Singapore, the target respondents within this study comprised individuals in Singapore who are potential users of finance/ banking, both the conventional as well as the emerging fintech sub-sectors. The survey aimed at a generalized population based on their age, income, educational level and others, to achieve a better understanding of the consumer's habits (Slabá, 2020). The convenience sampling technique was adopted in this study due to the time constraint and resource limit even though it does not allow for a general sample selection.
- **Survey Distribution via Social Media Platforms:** The targeted interest groups were asked to complete the survey through mainstream social media forums including Facebook, Instagram, Linked and Twitter. These platforms were selected

because of their huge following and the capacity to post to targeted audiences through organic and paid posts. To increase the response rates, the survey link was posted in the relevant groups, communities, and pages concerning finance, technology, and the consumer. Additionally, the sample population was increased with the coverage of the whole population of digitally exposed Singapore through the use of digital advertisements (Odai et al., 2023).

- **Incentives for Participation:** A small incentive was given to the participants so that they could increase response rates. The incentive in this case was to win a gift voucher and it was communicated in the survey invitation. This is because the use of incentives increased the number of respondents thus making the collected data of better quality and reliability(Ichimiya et al., 2023).
- **Data Security and Anonymity:** This survey went out of the way to ensure anonymity of respondents with no personally identifiable information collected unless respondents volunteered their email address when playing for the incentive draw. By storing the data securely and only accessible by the research team, it was in accordance to different ethical research standards and data protection regulations (Anaya et al., 2019).

3.9. Data Analysis

By analyzing the data on a quantitative basis, IBM, “Statistical Package for Social Science” (SPSS) Statistics was used to evaluate the effectiveness measure of traditional banks in Singapore in countering the rise of nonbanks and fintech. IBM purchased SPSS Statistics in 2009 and it is recognized as an enriched affluent tool for statistical analysis and presents high performance and the stability of the analysis for any type of research problems (Raja et al., 2024). To explore some insights into consumer preferences behavior

and competition factors, different statistical operations were done using SPSS within this context.

- **Descriptive Analysis:** The foremost approach to approaching the collected data is to do a descriptive analysis and give an initial description of the data collected (Ganesha & Aithal, 2022). These were used to give a summary of key variables; customer satisfaction, perceived trust in financial institutions and perceived relevance of HOs in digital banking. Such analysis was useful for defining general trends and patterns in the sample, for example, the level of satisfaction with traditional banking services and with fintech alternatives, and the most preferred solutions offered by neobanks, mobile application interface/technology and advisory/consulting services. These insights are, therefore, very important in deciphering the general state of Customer experiences and their expectations.
- **Ordinal Regression:** For testing the hypothesis about multiple independent variables and an ordinal dependent variable, ordinal regression was used. The dependent variable for this study was the level of customer satisfaction with the first-choice bank in the sense of the ordinal scale such as very dissatisfied, dissatisfied, neutral, satisfied, and very satisfied. The research control variables included factors like service quality, trust, ease of use, technological enhancement, and customer care support. This helped ordinal regression to estimate the effect of each of these factors on customer satisfaction. For example, it may show that two factors, technological innovation and ease of use, play large roles in boosting customer satisfaction so established banks should work hard to expand their digital services. The regression coefficient helps in identifying the intensity and direction of these relationships to aid the banks in identifying areas that need strategic focus (Gutiérrez et al., 2015).

- **Correlation Analysis:** Covariance analysis is also used to describe the nature of the relationship between various variables of interest like the covariance between trust in conventional banking and the tendency of the customer to move to a fintech firm or the difference between the frequency of the usage of digital banking and overall satisfaction. Spearman correlation coefficients were used to establish the nature and the extent of these linkages. For instance, if there is a positive relationship between the frequency of using fintech services and better satisfaction levels than the traditional banks have a challenge of not improving their digital service provision for customers. Also, the negative relationship between the perceived trust in traditional banks and the perceived willingness to switch to the fintech provider could imply that traditional banks should pay more attention to endearing themselves to customers through trust through the supply of relevant and accurate information with excellent services (Mergel, 2012).

3.10. Research Design Limitations

The research design for assessing how traditional banks in Singapore can compete with rising neobanks and fintech faces several limitations that may impact the study's findings and generalizability:

1. **Sampling Bias:** Many biases may be brought about by convenience sampling and stratified sampling within convenience sample. Nonprobability Convenience sampling may not capture broad data from the banking population hence the subgroups that were left out by the stratified approach. This can somewhat hamper the possibility of making generalizations concerning the entire population.
2. **Survey Method Limitations:** The survey is conducted online through social media, and this causes a problem of self-selection bias. It can be assumed that people who attend these sites may possess different attributes and habits of banking

than those who do not. This could be the result towards the young or the more embracing of the digital channel hence resulting in leaving out the old or the less embracing of the digital channel.

3. **Response Bias:** However, in their endeavour to provide a clear and structured questionnaire that covers all aspects of what they are measuring, the authors might have fallen into response bias such as social desirability bias or acquiescence bias. The respondents might give answers that they expect will meet the expectations of those who will be reading the answers and not their genuine feelings about that particular subject.
4. **Data Accuracy and Reliability:** This might be one of the major drawbacks since the data is self-reported and may be sourced from surveys and interviews. The participants might give a false picture of their use pattern, satisfaction levels or perceptions, which would distort the results obtained.
5. **Technological Constraints:** However, judging from the analysis above, one could argue that SPSS is a very robust tool for statistical analysis, although the nature of the software could have a way or the other that can limit the depth of analysis that can be done. For instance, some complexities may be left out in the analysis by SPSS, or some specific methods of analysing a given study may be restricted in their application.
6. **External Factors:** The research may not have considered key environmental influences that are likely to affect competition between traditional banks and fintech such as abrupt changes in regulations, economic conditions and developments in technologies. Problems such as these can affect the generalisability and the timeliness of the results in one way or the other.

7. **Limited Scope of Qualitative Insights:** Despite the value of qualitative interviews, they are limited by their failure to encompass all the facts or the provision of all angles of the issue in question. The results might be affected by the biases of the interviewees as well as by their sex or nationality and the profession.

3.11. Conclusion

In conclusion, the study selects a purposeful population of senior management, financial analysts, and IT professionals in traditional banks because they have the key information regarding competition with Neo banks and FinTech companies in Singapore. Convenience sample of 300 participants combined with a purposive sampling technique allows the research to collect the wide range of relevant and useful insights, while staying reasonable in terms of implement ability. Also, the use of secondary data from reliable and authoritative sources increases the credibility and coverage of the study.

Thus, the choice of population and sampling of the study, accompanied by sound methodological procedure minimizes the research's limitation in meeting its objectives. Based on the above analysis, outlines a clear line of sight of analysing the competitive forces, strategic initiatives and external factors governing the banking industry in the context of Singapore's banking system with several imperative suggestions for the response strategies of traditional banks.

CHAPTER IV:

RESULTS

4.1. Reliability Analysis

Table 4.1 Reliability Statistics

Cronbach's Alpha	N of Items
.851	19

The reliability data for a 19-item scale evaluated using Cronbach's Alpha are displayed in Table 4.1. The calculated value of 0.851 suggests that the items are reliable measures of the same underlying construct and have a high degree of internal consistency.

4.2. Frequency Analysis

Demographic Details of Respondents

Table 4.2 Age Group

	Frequency	Percent
18–24 Years	29	9.7
25–34 Years	73	24.3
35–44 Years	125	41.7
45–54 Years	66	22.0
55 Years and above	7	2.3
Total	300	100.0

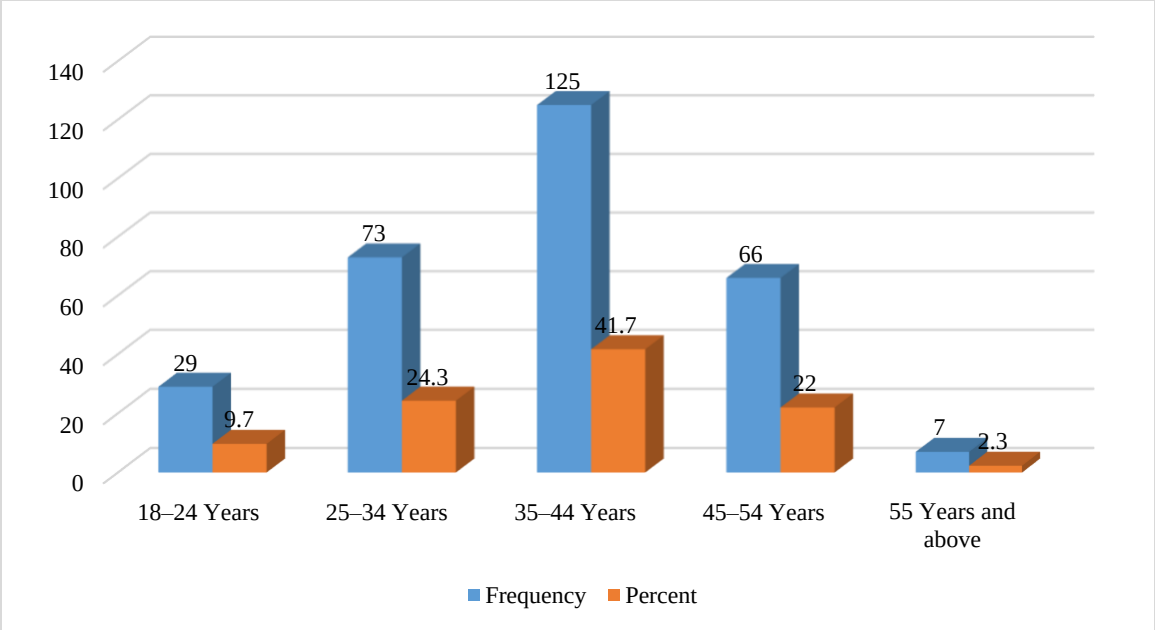

Figure 4.1 Age Group Distribution of Respondents

The age distribution in Figure 4.1 above shows a wide range of age groups. Respondents in the 35–44 age range make up the largest percentage of the sample (41.7%), followed by those in the 25–34 age range (24.3%). Of the total, 9.7% are in the 18–24 age range, while 22.0% are in the 45–54 age range. Respondents aged 55 and over comprise the smallest category at 2.3%.

Table 4.3 Gender

	Frequency	**Percent**
Male	182	60.7
Female	118	39.3
Total	300	100.0

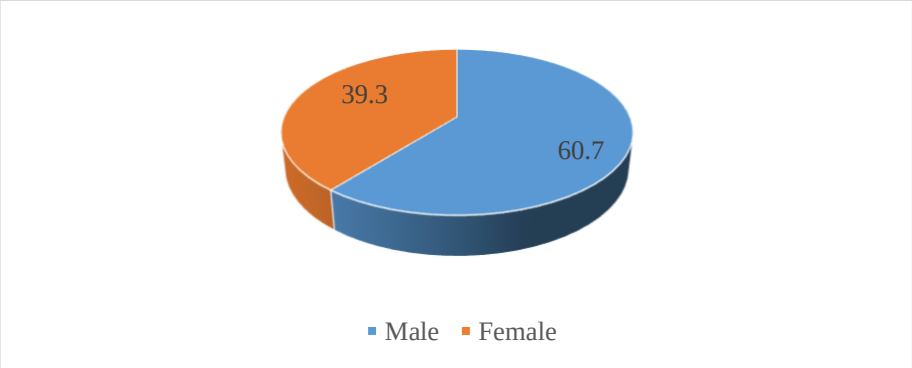

Figure 4.2 Gender

According to the gender distribution of respondents (Figure 4.2), males comprise the majority of the sample (60.7%), while females comprise 39.3%. This suggests that there is a major male preponderance in the sample.

Table 4.4 Primary Bank Account

	Frequency	**Percent**
Traditional Bank	135	45.0
Digital Bank	164	54.7
Other	1	.3
Total	300	100.0

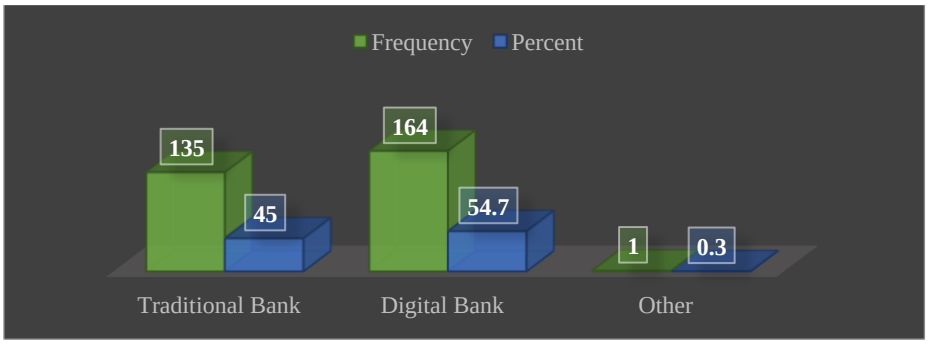

Figure 4.3 Primary Bank Account

The distribution of respondents by primary bank account type is shown in Figure 4.3 above. According to this, 54.7% of the sample used digital banks, followed by traditional banks with 45.0%. Just 0.3% of those surveyed said they used other kinds of financial institutions.

Table 4.5 Customer Vintage

	Frequency	**Percent**
Less than 1 year	34	11.3
1–3 years	127	42.3
4–6 years	86	28.7
7–10 years	10	3.3
More than 10 years	43	14.3
Total	300	100.0

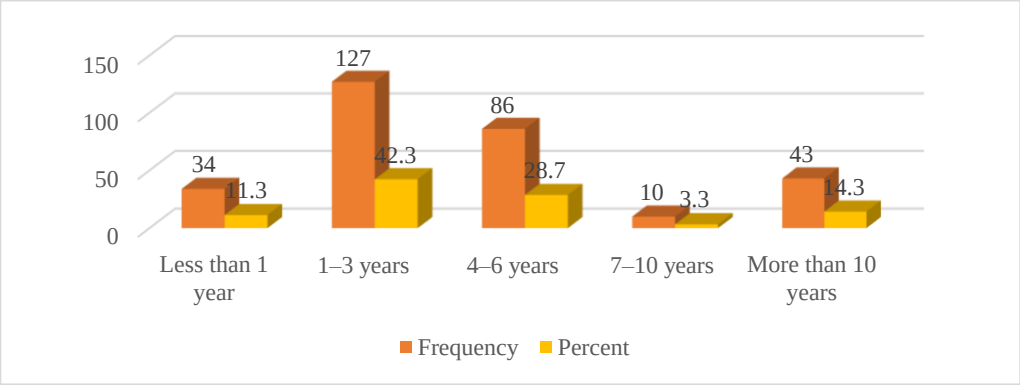

Figure 4.4 Customer Vintage

The above Figure 4.4 shows the respondents' duration as bank customers. The majority, 42.3%, have been with their bank for 1–3 years, followed by 28.7% who have been customers for 4–6 years. A smaller proportion, 14.3%, have maintained their accounts for

more than 10 years, while 11.3% are relatively new customers with less than 1 year of banking experience. Only 3.3% have been customers for 7–10 years.

4.3.Factors Contributing to the Rise of Digital Banks

Table 4.6 Focus areas to compete with new challenger digital banks

	Frequency	Percent
AI & Data-Driven Personalized Customer Experience	65	21.7
Digital Focus with Mobile First Strategy	18	6.0
Innovative Product Offerings	121	40.3
Making Banking Fast and Secure	53	17.7
All of the above	43	14.3
Total	300	100.0

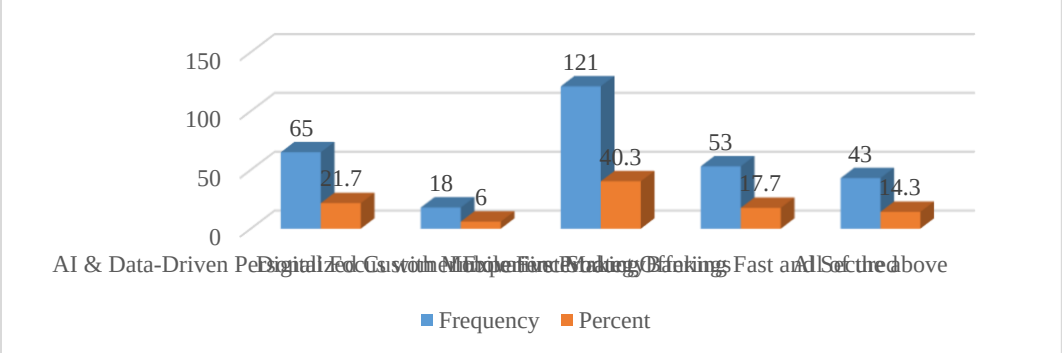

Figure 4.5 Focus areas to compete with new challenger digital banks

The focus areas for traditional banks to remain competitive with new challenger digital banks as shown in Figure 4.5 above. The most underlined area is “Innovative Product Offerings,” known by 40.3% of respondents, followed by “AI & Data-Driven Personalized

Customer Experience" at 21.7%. "Making Banking Fast and Secure" is arranged by 17.7%, while 6.0% consider a "Digital Focus with Mobile First Strategy" crucial. Additionally, 14.3% of respondents believe that a combination of all these focus areas is essential.

Table 4.7 Key Benefits of Digital Banks over Traditional Banks

	Frequency	**Percent**
Lower fees	51	17.0
Better customer service	63	21.0
Easier account setup and management	67	22.3
Convenience	1	.3
Different starting point, No baggage	1	.3
Use of Advanced Technology - Cloud / Machine Learning / AI / Blockchain	78	26.0
All of the above	39	13.0
Total	300	100.0

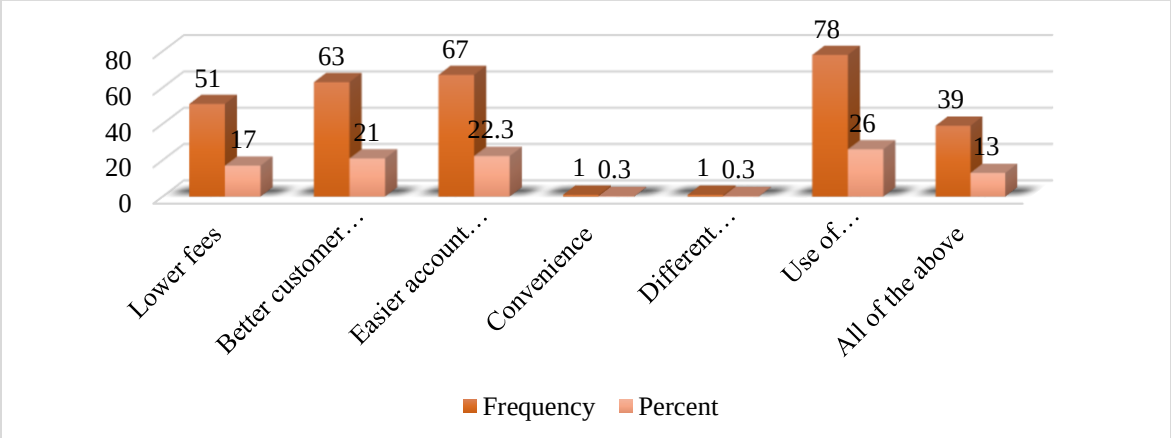

Figure 4.6 - Key Benefits of Digital Banks over Traditional Banks

The primary benefits of digital banks over traditional banks are shown in Figure 4.6 above. The biggest benefit, mentioned by 26.0% of respondents, is "Use of Advanced Technology – Cloud/Machine Learning/AI/Blockchain," which is followed by "Easier account setup and management" (22.3%). "Lower fees" are cited by 17.0%, while "Better customer service" is noticed by 21.0%. Just 13.0% of respondents think all of them are equally beneficial. "Convenience" and "Different starting point, no baggage," at 0.3%, receive the most replies.

Table 4.8 Appealing services of Digital Banks over traditional banks

	Frequency	**Percent**
Personalized Financial & Wealth Management Product Offerings	84	28.0
AI-based product recommendation, customer support & engagement	15	5.0
Attractive user interface	1	.3
Digital Client Onboarding, Digital Engagement and Support	65	21.7
Extensive Rewards, attractive incentives, and low fees	117	39.0
All of the above	18	6.0
Total	300	100.0

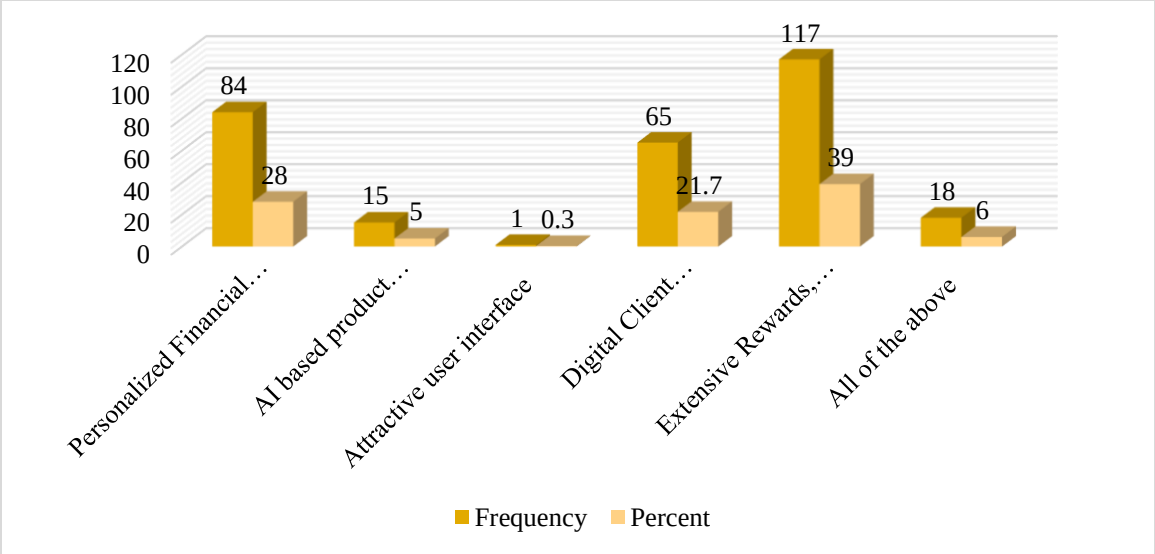

Figure 4.7 Appealing services of Digital Banks over traditional banks

The services that respondents find most appealing in digital banks and neobanks, as shown in Figure 4.7 above. The most popular service is "Extensive Rewards, attractive incentives, and low fees," chosen by 39.0% of respondents, followed by "Personalized Financial & Wealth Management Product Offerings" at 28.0%. "Digital Client Onboarding, Digital Engagement, and Support" is preferred by 21.7%, while 6.0% of respondents find all the listed services appealing. A small proportion (5.0%) values AI-based product recommendations, customer support, and engagement, and an even smaller percentage (0.3%) highlights the "Attractive user interface" as their most appealing feature.

Table 4.9 Top services offered by Digital Banks / Neo banks

	Frequency	Percent
Anytime, anywhere access	1	.3
Both provide similar levels of service	153	51.0
Digital banks provide better self-serve customer service journeys	1	.3
New Digital banks provide better service	101	33.7
Traditional banks provide better service	26	8.7
No opinion	18	6.0
Total	300	100.0

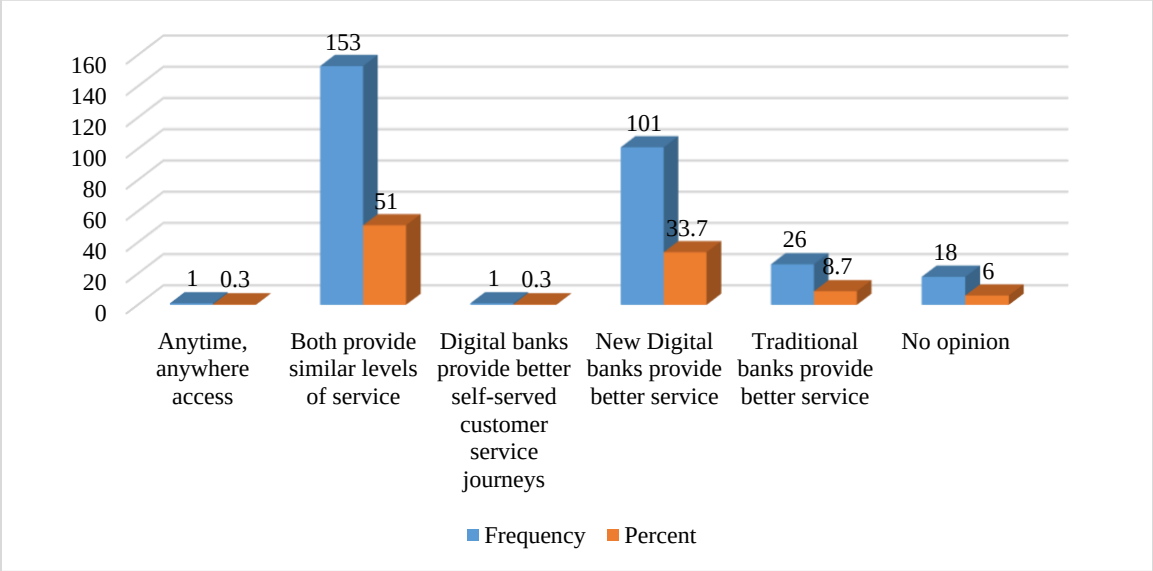

Figure 4.8 Top services offered by Digital Banks / Neo banks

The above Figure 4.8 shows the customer service between traditional banks and neobanks or fintechs. The majority, 51.0%, believe that both traditional banks and digital banks provide similar levels of service. However, 33.7% of respondents feel that New Digital banks offer better service, while 8.7% consider Traditional Banks to Provide Better Service. A very small proportion, 0.3%, perceive digital banks as offering better self-serve customer service journeys, and another 0.3% appreciate the anytime, anywhere access to digital services. Additionally, 6.0% of respondents had no opinion on the matter.

Table 4.10 Recommend a traditional bank or a new digital bank to friends and family

	Frequency	**Percent**
Traditional bank	53	17.7
Digital Bank	221	73.7
It depends	26	8.7
Total	300	100.0

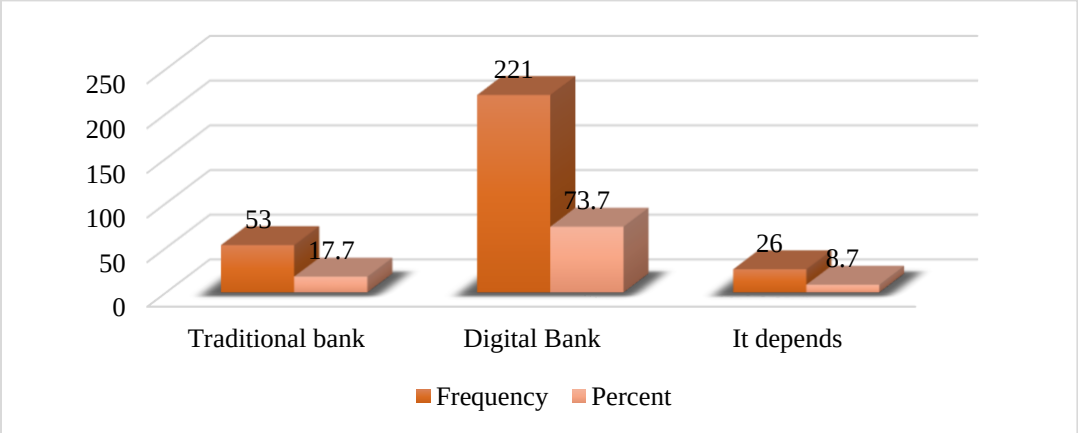

Figure 4.9 Recommend a traditional bank or a new digital bank to friends and family

The respondents' likelihood of recommending a traditional bank or a new digital bank to friends and family is shown in Figure 4.9. A majority, 73.7%, showed a high preference for digital banking services and would suggest a digital bank. Just 17.7% said they would suggest a traditional bank, and 8.7% said it would depend on specific facts.

4.4.Factors Should Be Considered by Traditional Banks

i. Threat of New Entrants

Table 4.11 Long-term risk for traditional banks

	Frequency	**Percent**
Losing significant market share	17	5.7
Becoming irrelevant to younger generations	70	23.3
Struggling with innovation	140	46.7
Facing regulatory and compliance disadvantages	42	14.0
All of the above	31	10.3
Total	300	100.0

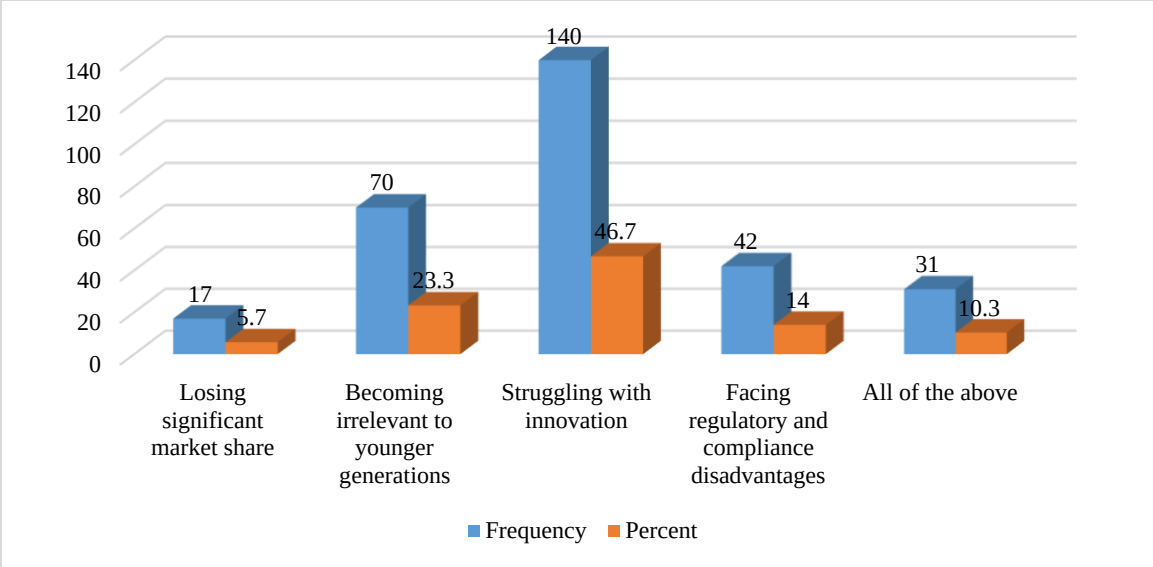

Figure 4.10 Long-term risk for traditional banks

The perceived long-term risks for traditional banks in the absence of a robust framework are shown in the above figure 4.10. The majority of respondents, 46.7%, believe that traditional banks will struggle with innovation, which could hinder their ability to remain competitive. A significant portion, 23.3%, perceive that traditional banks may become irrelevant to younger generations. Additionally, 14.0% of respondents think that these banks may face regulatory and compliance disadvantages. Only 5.7% view the loss of significant market share as the primary risk, while 10.3% consider all the listed factors to be potential risks.

ii. Bargaining Power of Customers

Table 4.12 Changing customer needs is essential for traditional Banks

	Frequency	**Percent**
Strongly Disagree	7	2.3
Disagree	127	42.3
Neutral	92	30.7
Agree	49	16.3
Strongly Agree	25	8.3
Total	300	"100.0"

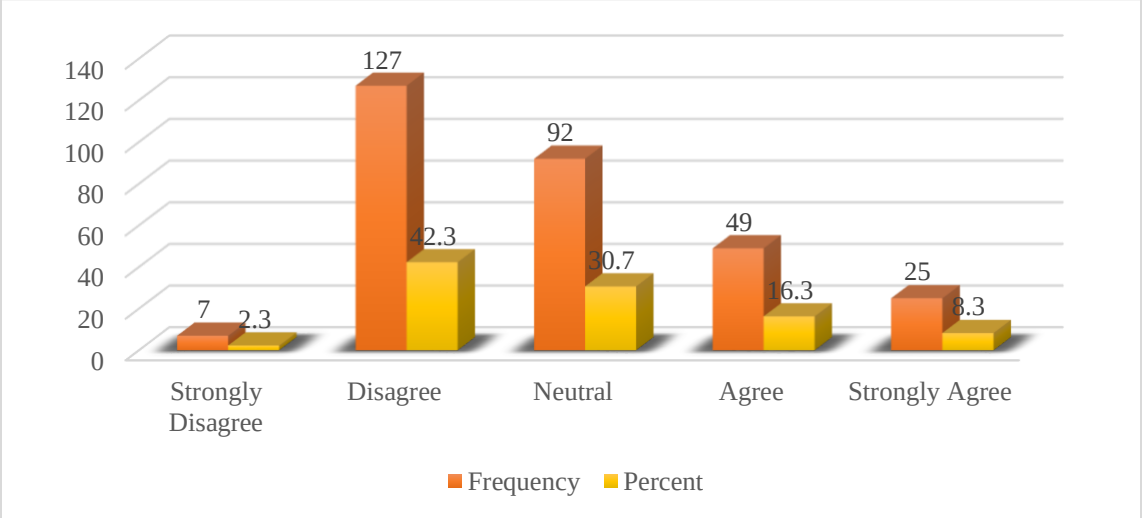

Figure 4.11 Changing customer needs essential for traditional *banks*

The importance of understanding changing customer needs for traditional banks to compete with new digital banks is seen in Figure 4.11 above. The majority, 42.3%, disagree with the statement. A significant portion, 30.7%, remains neutral, while 16.3% agree and 8.3% strongly agree. Only 2.3% strongly disagree.

Bargaining Power of Suppliers

Table 4.13 Diversifying services to meet a broader range of changing customer needs

	Frequency	**Percent**
Strongly Disagree	2	.7
Disagree	91	30.3
Neutral	109	36.3
Agree	73	24.3
Strongly Agree	25	8.3
Total	300	100.0

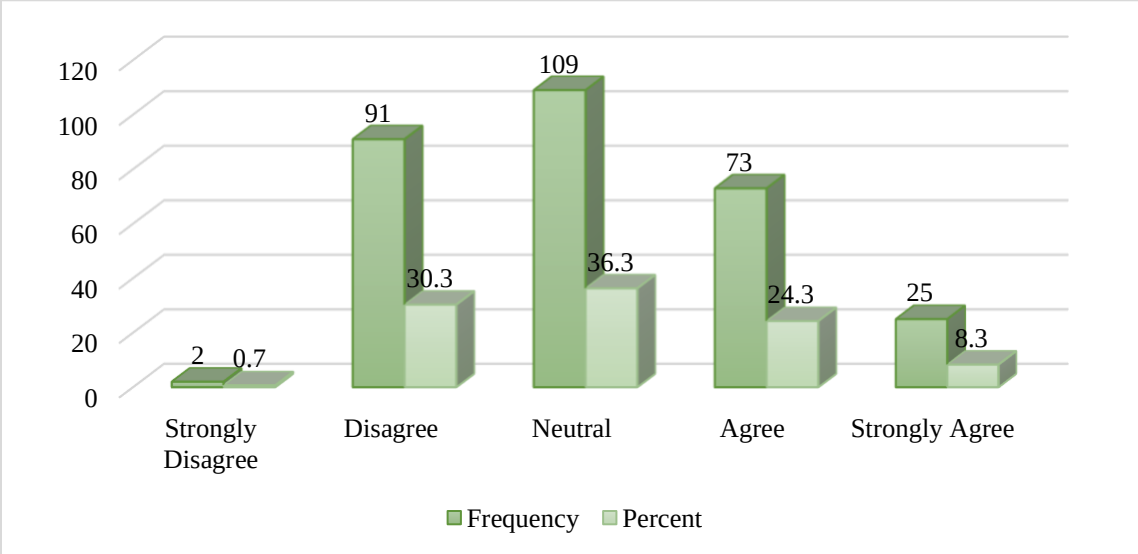

Figure 4.12 Diversifying services to meet a broader range of changing customer needs

The above Figure 4.12 shows respondents on whether diversifying services with digital partners can help traditional banks meet a broader range of changing customer needs. A

significant portion, 36.3%, remains neutral. 30.3% disagree with the statement, while 24.3% agree, and 8.3% strongly agree. A small minority, 0.7%, strongly disagree.

Threat of Substitutes

Table 4.14 Critical to highlight the unique benefits of banking services over substitutes

	Frequency	Percent
Strongly Disagree	7	2.3
Disagree	119	39.7
Neutral	99	33.0
Agree	54	18.0
Strongly Agree	21	7.0
Total	300	100.0

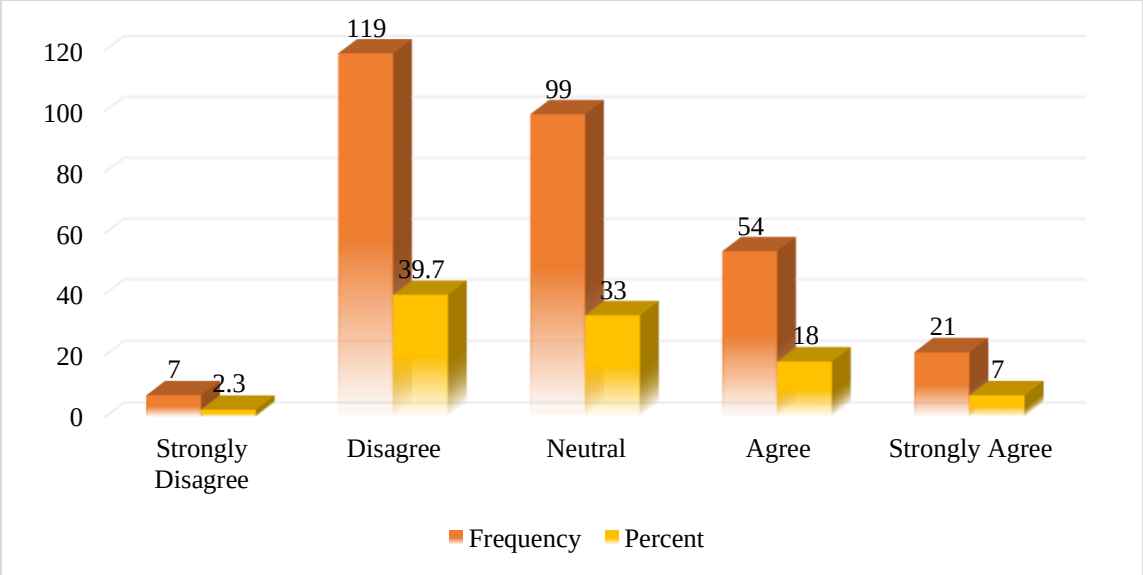

Figure 4.13 Critical to highlight the unique benefits of banking services over substitutes

The digital marketing for traditional banks to highlight the unique benefits of their services over substitutes as shown in Figure 4.13 above. The majority, 39.7%, disagree with the statement. 33.0% remain neutral, while 18.0% agree and 7.0% strongly agree. Only 2.3% strongly disagree.

Rivalry Among Competitors

Table 4.15 speed-to-market capabilities to compete with new challenger banks

	Frequency	**Percent**
Strongly Disagree	10	3.3
Disagree	118	39.3
Neutral	110	36.7
Agree	37	12.3
Strongly Agree	25	8.3
Total	300	100.0

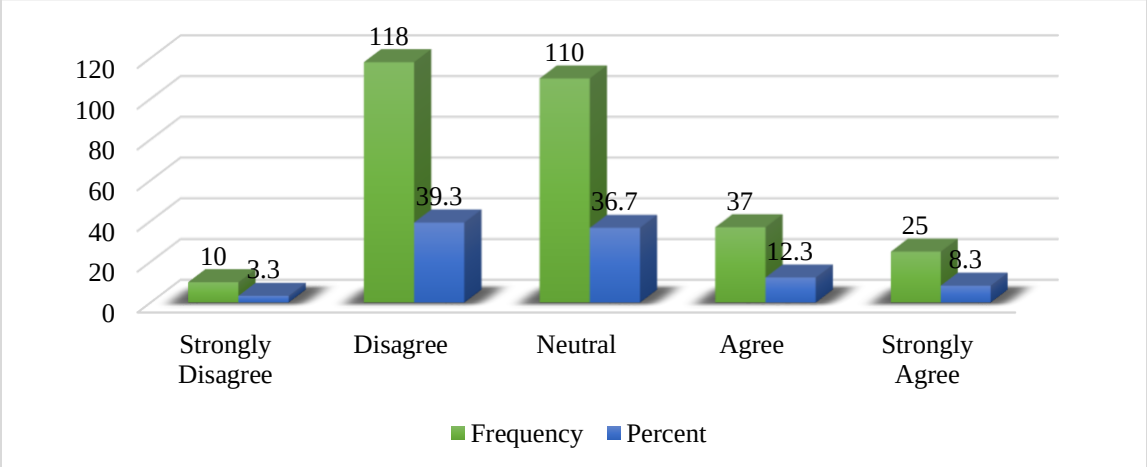

Figure 4.14 Speed-to-market capabilities to compete with new challenger banks

The above Figure 4.14 shows that traditional banks should increase their speed-to-market capabilities to compete with new challenger banks. A significant portion, 39.3%, disagree with the statement. 36.7% remain neutral, while 12.3% agree and 8.3% strongly agree. A small minority, 3.3%, strongly disagree.

Table 4.16 Flexible & customizable pricing strategy to compete with new digital banks

	Frequency	Percent
Strongly Disagree	6	2.0
Disagree	125	41.7
Neutral	102	34.0
Agree	45	15.0
Strongly Agree	22	7.3
Total	300	100.0

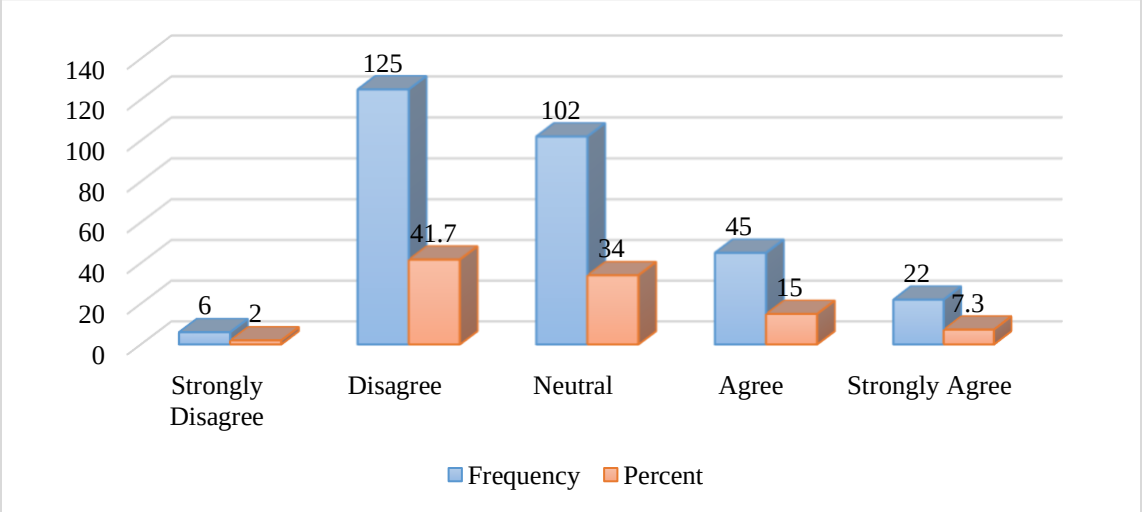

Figure 4.15 customizable pricing strategy to compete with new digital banks

Traditional banks should adopt flexible and customizable pricing strategies to effectively compete with emerging digital banks, as shown above in Figure 4.15. The majority, 41.7%,

disagree with the statement. A substantial portion, 34.0%, remains neutral. Meanwhile, 15.0% agree, and 7.3% strongly agree, reflecting some support for the idea. Only 2.0% strongly disagree.

Digital Transformation Strategy

Table 4.17 Training is necessary for successful transformation initiatives

	Frequency	Percent
Strongly Disagree	3	1.0
Disagree	106	35.3
Neutral	81	27.0
Agree	73	24.3
Strongly Agree	37	12.3
Total	300	100.0

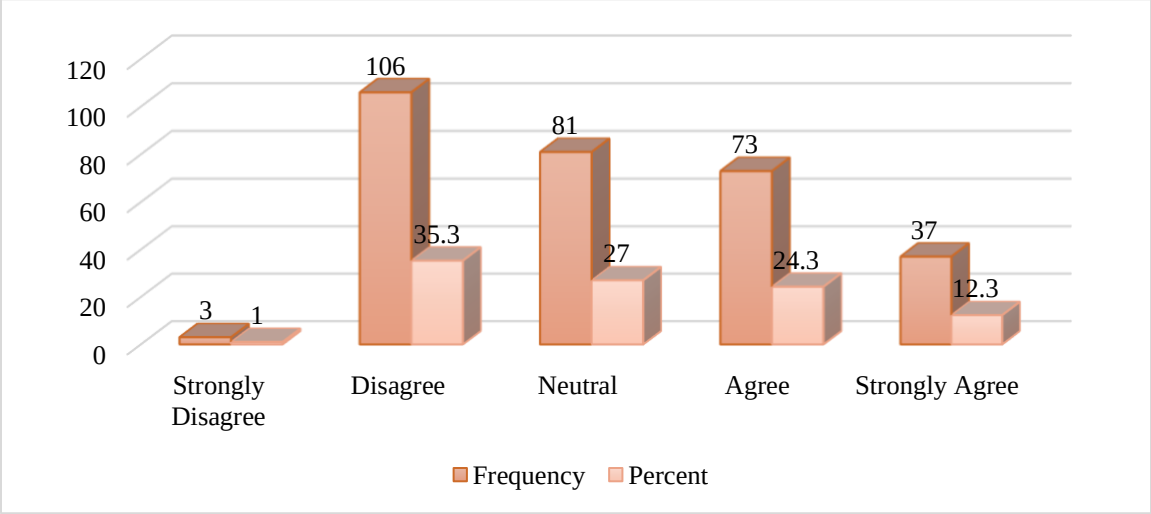

Figure 4.16 Training is necessary for successful transformation initiatives

Training employees in digital competencies is essential for the success of transformation projects, as evidenced by the statistics in Figure 4.16. When it comes to the significance of

such training, a sizable majority (35.3%) disagree, and 0.1% strongly disagree or are neutral (27.0%). In contrast, 12.3% strongly agree and 24.3% agree.

Table 4.18 Investing in cloud, AI/ML technology, data platforms

	Frequency	Percent
Strongly Disagree	38	12.7
Disagree	122	40.7
Neutral	88	29.3
Agree	32	10.7
Strongly Agree	20	6.7
Total	300	100.0

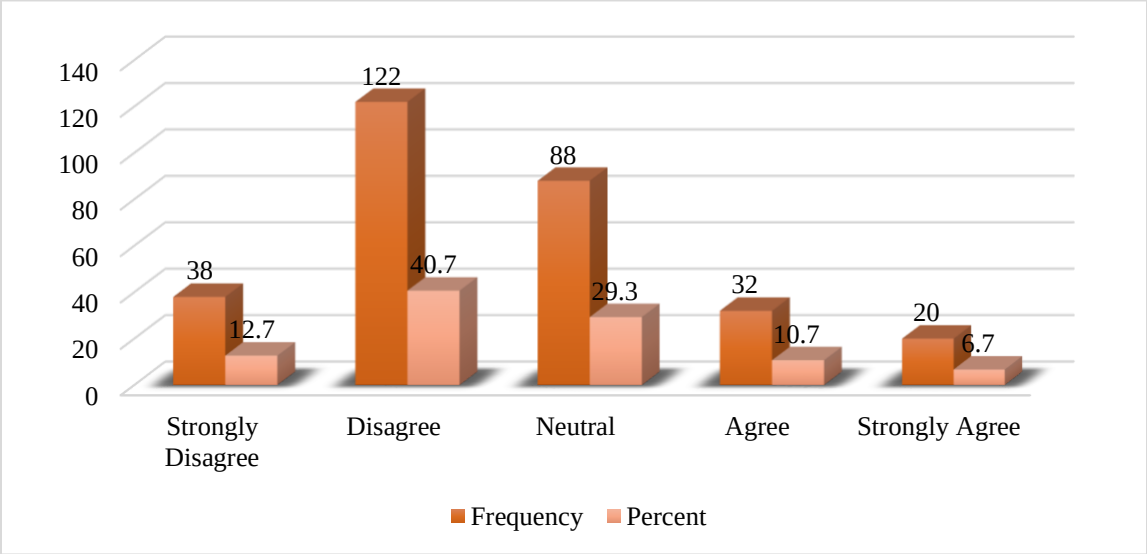

Figure 4.17 Investing in cloud, AI/ML technology, data platforms

The significance of investing in cloud, AI/ML, and data platforms for improving customer happiness and engagement is shown in Figure 4.17. 40.7% of respondents disagree with the statement. 12.7% strongly disagree, while 29.3% are neutral. Just 10.7% of respondents

agree, and 6.7% strongly agree. This distribution shows that although some respondents believe that these investments.

iii. Product Innovation

Table 4.19 Innovative Product offerings are key to addressing competition from digital banks

	Frequency	Percent
Strongly Disagree	4	1.3
Disagree	101	33.7
Neutral	97	32.3
Agree	69	23.0
Strongly Agree	29	9.7
Total	300	100.0

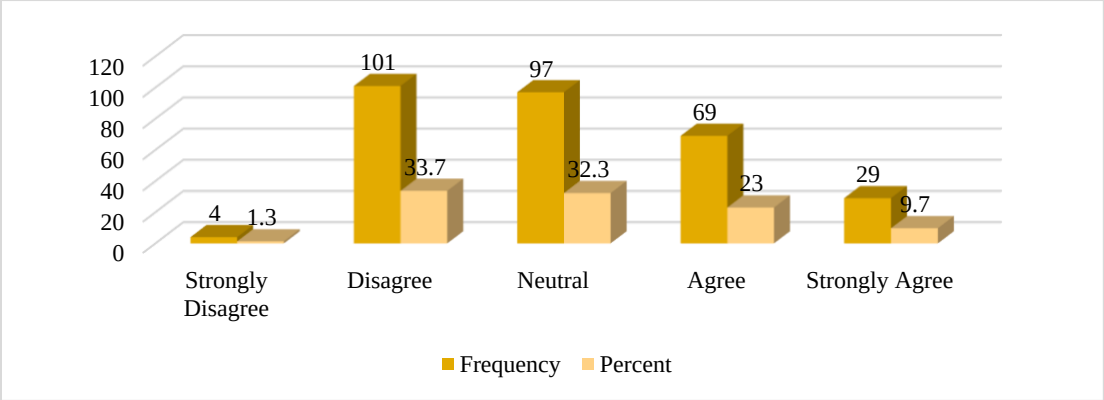

Figure 4.18 Innovative Product offering is key to addressing competition from digital banks

The factors that should be considered in a framework for traditional banks to compete with new digital banks, specifically focusing on customer centricity, innovative product offerings, flexible pricing frameworks, and leveraging advanced technology, as shown in Figure 4.18 above. Most responders are either neutral (32.3%) or disagree (33.7%). However, 9.7% strongly agree and 23.0% agree. Just 1.3% strongly disagree.

iv. Technology Partnership / Integration

Table 4.20 Partnership and collaboration are important to compete with new digital banks

	Frequency	Percent
Strongly Disagree	4	1.3
Disagree	105	35.0
Neutral	94	31.3
Agree	72	24.0
Strongly Agree	25	8.3
Total	300	100.0

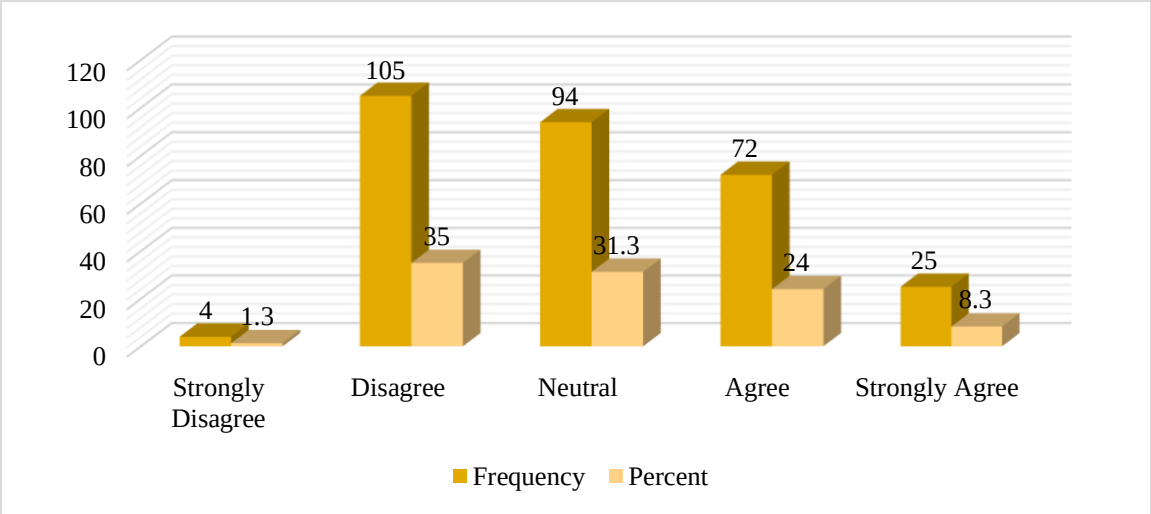

Figure 4.19 Partnership and collaboration is important to compete with new digital banks

The above Figure 4.19 shows the importance of partnership and collaboration to create a new digital ecosystem with innovative offerings and products for traditional banks to compete with new digital banks. A significant portion, 35.0%, disagrees with the statement. 31.3% remain neutral. Meanwhile, 24.0% agree, and 8.3% strongly agree. Only 1.3% strongly disagree.

V. Diversification of Services

Table 4.21: Enhance digital offerings to mitigate the threat from new digital banks.

	Frequency	Percent
Strongly Disagree	23	7.7
Disagree	138	46.0
Neutral	75	25.0
Agree	41	13.7
Strongly Agree	23	7.7
Total	300	100.0

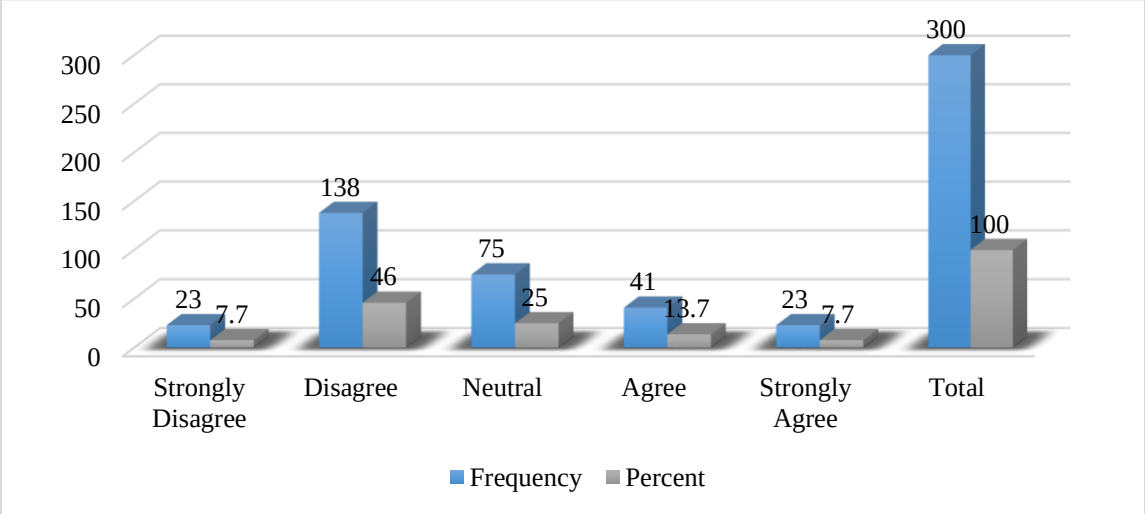

Figure 4.20: Enhance digital offerings to mitigate the threat from new digital banks.

The above Figure 4.20 shows that traditional banks need to enhance their digital offerings to mitigate the threat from new digital banks. The majority, 46.0%, disagree with the statement. 25.0% remain neutral, while 13.7% agree, and 7.7% strongly agree. A small portion, 7.7%, strongly disagrees.

VII. **Importance of Framework to Compete with Rising Digital Banks and Fintechs**

Market Performance

Table 4.22 A comprehensive Framework with an actionable strategy

	Frequency	**Percent**
Strongly Disagree	34	11.3
Disagree	112	37.3
Neutral	82	27.3
Agree	52	17.3
Strongly Agree	20	6.7
Total	300	100.0

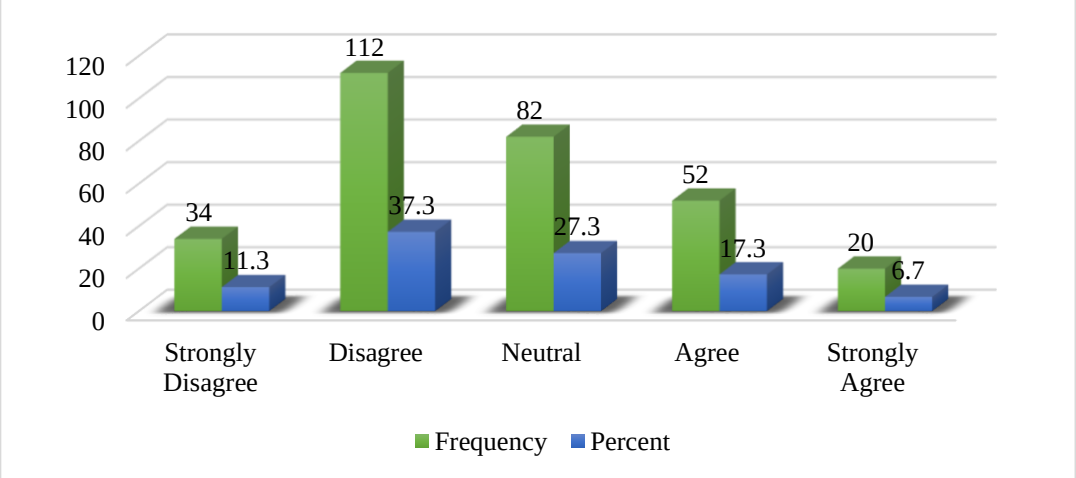

Figure 4.21 A comprehensive Framework with an actionable strategy

The above Figure 4.21 shows that a comprehensive framework would help traditional banks devise actionable strategies to address the threat of rising digital banks. A notable 37.3% of respondents disagree. Another 11.3% strongly disagree. However, 27.3% remain neutral. On the supportive side, 17.3% agree, and 6.7% strongly agree.

Table 4.23 Extremely critical to adapt to rapid regulatory and operational changes

	Frequency	Percent
Strongly Disagree	3	1.0
Disagree	107	35.7
Neutral	110	36.7
Agree	51	17.0
Strongly Agree	29	9.7
Total	300	100.0

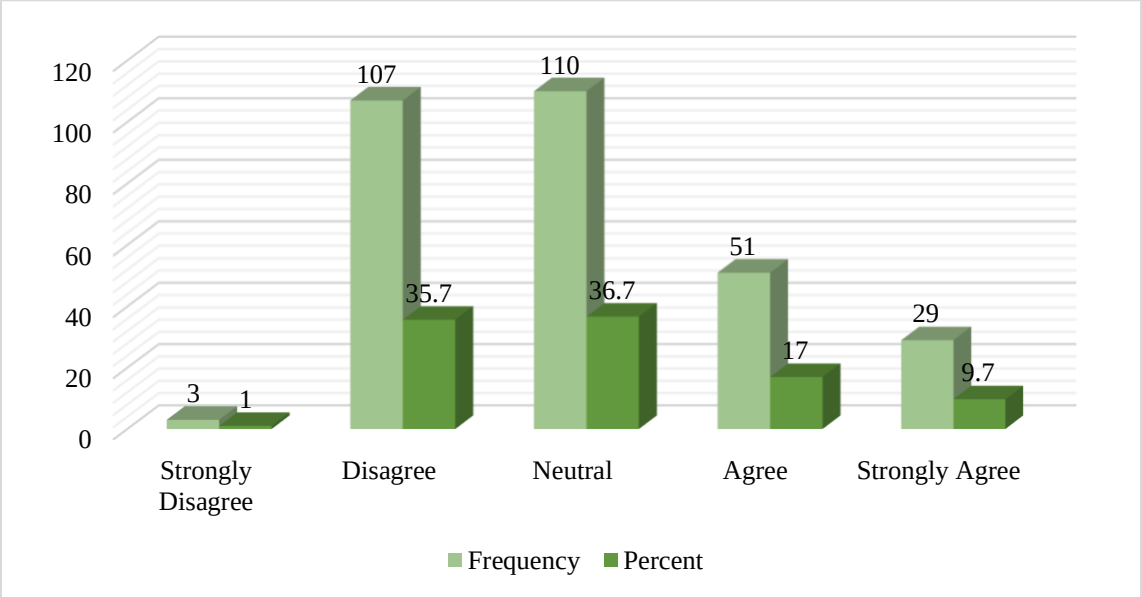

Figure 4.22 Extremely critical to adapt to rapid regulatory and operational changes

The criticality for traditional banks to adapt to rapid regulatory and operational changes is driven by fintech and digital banking innovations in Figure 4.22 above. 36.7% is the largest segment that is neutral. In contrast, 35.7% disagree. Alternatively, 17.0% agree and 9.7% strongly agree, indicating that adaptability is important. Just 1.0 percent strongly disagree.

Customer Satisfaction

Table 4.24 Focus on overall customer lifecycle management experience

	Frequency	**Percent**
Strongly Disagree	4	1.3
Disagree	116	38.7
Neutral	92	30.7
Agree	56	18.7
Strongly Agree	32	10.7
Total	300	100.0

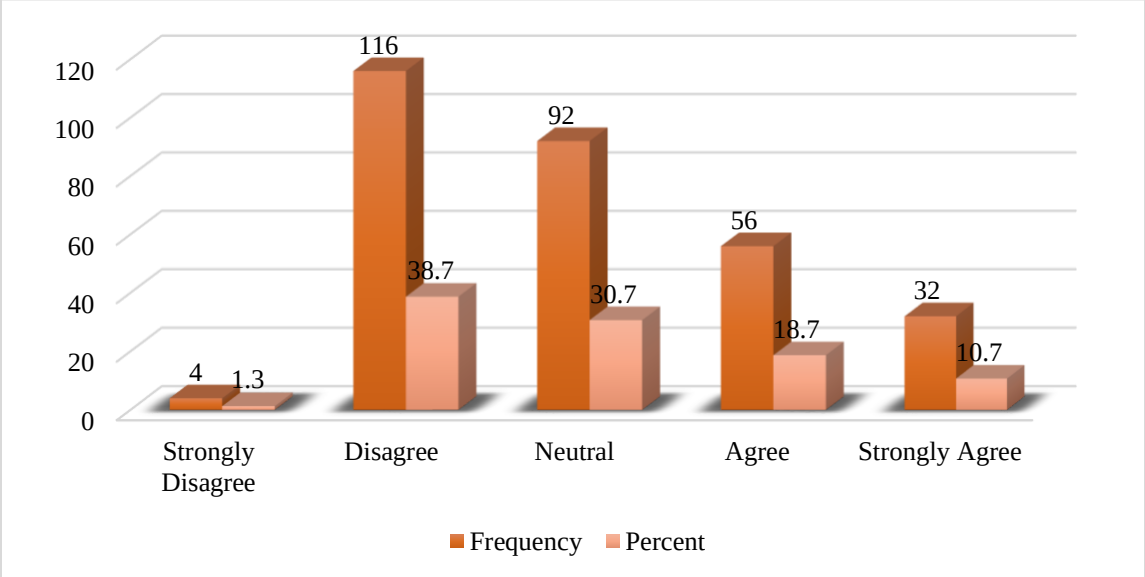

Figure 4.23 Focus on the overall customer lifecycle management experience

The overall customer lifecycle management experience is critical for traditional banks to compete with digital banks, as shown in Figure 4.23. A significant portion, 38.7%, disagrees with the statement. 30.7% remain neutral. On the other hand, 18.7% agree, and 10.7% strongly agree. Only 1.3% strongly disagree.

4.5. Descriptive Analysis

Table 4.25 Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Please indicate your age group	300	2.83	.055	.958	.917
Please indicate your gender	300	1.39	.028	.489	.239
Your primary Bank Account is with a,	300	1.55	.029	.505	.255
How many years have you been a customer with a bank?	300	2.67	.068	1.174	1.379
What are the focus areas for traditional banks to compete with new challenger digital banks?	300	2.97	.075	1.297	1.681
What do you perceive as the biggest advantage of Digital Banks over traditional banks?	300	3.76	.126	2.183	4.765
Which services do you find most appealing in Digital Banks / Neo banks?	300	3.57	.103	1.782	3.176
How do you perceive the customer service of traditional banks compared to Neo banks or FinTech's?	300	3.17	.076	1.312	1.722
Overall, would you recommend a traditional bank or a new digital bank to friends and family?	300	1.91	.029	.506	.256

Threat of New Entrants (TNE)	300	3.00	.058	1.008	1.017
Bargaining Power of Customers (BPC)	300	2.86	.058	.999	.997
Bargaining Power of Suppliers (BPS)	300	3.09	.055	.949	.901
Threat of Substitutes (TS)	300	2.88	.056	.968	.938
Rivalry Among Competitors (RC)	300	3.1100	.0421	.73008	.533
Digital Transformation Strategy (DTS)	300	3.1100	.0452	.78312	.613
Product Innovation (PI)	300	3.06	.058	1.003	1.006
Technology Integration (TI)	300	3.03	.057	.989	.979
Diversification of Services (DS)	300	2.68	.061	1.053	1.109
Market Performance (MP)	300	2.71	.063	1.088	1.185
Customer Satisfaction (CS)	300	2.99	.056	.978	.956

The descriptive statistics for the several factors evaluated in the study are shown in Table 4.25 above, with all responses valid for all 300 participants. The central tendencies of the participants' answers are shown by the mean scores. The age group mean (2.83), for example, shows that younger age groups are more prevalent. With a mean of 1.39, gender exhibits a bias in favor of one gender. Traditional banks have a minor advantage in primary banking relationships (1.55 mean). Strong attitudes in favor of these aspects were indicated by higher means for variables including the perceived benefits of digital banks (3.76), the attractive services offered by neo-banks (3.57), and competition among rivals (3.11). On the other hand, market performance (2.71) and the significance of service diversity (2.68) were given lower means, indicating somewhat neutral or moderate opinions. Variations are highlighted by standard deviations and variances; the greatest benefit of digital banking is the highest variability (SD = 2.183).

4.6. Hypothesis Testing

Hypothesis 1

H1: *There is a significant impact of the threat of new entrants (TNE) on the digital transformation strategy (DTS) of traditional banks in Singapore.*

Table 4.26 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	135.249			
Final	116.936	18.313	1	.000
Link function: Logit.				

The data used to fit the model in a logistic regression analysis with the logit link function is shown in Table 4.26 above. For the "Intercept Only" model, absence of predictors results in a -2 Log Likelihood value of 135.249. With the addition of predictors, the "Final" model significantly improves the fit by reducing the -2 Log Likelihood to 116.936. A Chi-Square value of 18.313 at a significance level of p =.000 and one degree of freedom indicates that the model fit is significantly improved by adding predictors.

Table 4.27 Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	70.342	11	.000
Deviance	70.116	11	.000

The logistic regression model based on the logit link function's goodness-of-fit statistics are shown in Table 4.27. The Deviance Chi-Square value is 70.116 when the number of

degrees of freedom is the same as the Pearson Chi-Square value, which is 70.342. The model clearly fails to accurately reflect the data, as evidenced by the p-value of.000 for both tests.

Table 4.28 Pseudo R-Square

Cox and Snell	**.059**
Nagelkerke	.069
McFadden	.032

Table 4.28 shows the pseudo-R-squared values, which show what proportion of the dependent variable's variance can be explained by the model. In that order, we have 0.059 for Cox and Snell, 0.069 for Nagelkerke, and 0.032 for McFadden.

Table 4.29 Parameter Estimates

		Estimate	**Std. Error**	**Wald**	**df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[DTS = 2.00]	-.146	.371	.154	1	.695	-.873	.582
	[DTS = 3.00]	3.325	.437	57.789	1	.000	2.467	4.182
	[DTS = 4.00]	3.964	.459	74.676	1	.000	3.065	4.863
Location	TNE	.550	.123	19.857	1	.000	.308	.792
Link function: Logit.								

Table 4.29 displays the model's parameter estimates. For the "Digital Transformation Strategy" (DTS) dependent variable, the threshold values demarcate the inter category boundaries. There appears to be no discernible difference at the level indicated by the non-significant criterion of [DTS = 2.00] (p = 0.695). However, thresholds for [DTS = 3.00]

(Estimate = 3.325) and [DTS = 4.00] (Estimate = 3.964) are highly significant (p = 0.000), indicating meaningful differences between response categories at these levels. The location parameter for TNE (Threat of New Entrants) is also significant (Estimate = 0.550, p = 0.000).

Hypothesis 2

H2: *The bargaining power of customers (BPC) has a significant influence on product innovation (PI) in traditional banks.*

Table 4.30 Model Fitting Information

Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Intercept Only	175.407			
Final	105.869	69.537	1	.000

Data used for model fitting in the logistic regression study may be found in Table 4.30 up there. With no predictors or the intercept-only model, the model's fit is 175.407 with a -2 Log Likelihood. The final model's -2 Log Likelihood drops to 105.869 after including the predictors, suggesting a better fit. There is statistical significance ($p < 0.05$) indicated by the model's p-value (Sig.) of 0.000 and Chi-Square value of 69.537 with one degree of freedom.

Table 4.31 Goodness-of-Fit

	Chi-Square	**Df**	**Sig.**
Pearson	51.432	15	.000
Deviance	58.778	15	.000

The goodness-of-fit statistics for the logistic regression model are displayed in Table 4.31 up top. There is statistical significance ($p < 0.05$) indicated by the Pearson Chi-Square

value of 51.432 with fifteen degrees of freedom and the corresponding p-value of 0.000. In a similar vein, the deviation statistic is 58.778 and the p-value is 0.000 with 15 degrees of freedom. The model does not provide an exact match, but these large p-values demonstrate that it is still statistically viable and provides useful information.

Table 4.32 Pseudo R-Square

Cox and Snell	**.207**
Nagelkerke	.222
McFadden	.086

The logistic regression model's Pseudo R-squared values, which indicate how well the model explains the data, are shown in Table 4.32. A Cox and Snell R-Square of 0.207 indicates that the model can account for about 20.7% of the variation in the outcome variable. At 0.222, the Nagelkerke R-Square is marginally higher. A McFadden R-Square of 0.086, which is frequently less than the other two, indicates a modest match.

Table 4.33 Parameter Estimates

		Estimate	**Std. Error**	**Wald**	**df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[PI = 1]	-1.817	.569	10.203	1	.001	-2.933	-.702
	[PI = 2]	2.006	.343	34.250	1	.000	1.334	2.678

	[PI = 3]	3.540	.383	85.273	1	.000	2.788	4.291
	[PI = 4]	5.418	.463	136.981	1	.000	4.511	6.325
Location	BPC	.985	.120	67.410	1	.000	.750	1.220
Link function: Logit.								

The results of Table 4.33 indicate a significant positive relationship between the bargaining power of customers (BPC) and product innovation (PI) in traditional banks. The estimated coefficient for BPC is 0.985 ($p < 0.001$), suggesting that as customer bargaining power increases, banks are more likely to enhance product innovation. The Wald statistic (67.410) further supports the strong influence of BPC on PI. The confidence interval (0.750–1.220) confirms the reliability of the estimate. These findings imply that traditional banks must respond to increasing customer demands by innovating their product offerings to remain competitive in a rapidly evolving financial landscape.

Hypothesis 3

H3: *The bargaining power of suppliers (BPS) significantly influences the technology integration (TI) initiatives of traditional banks.*

Table 4.34 Model Fitting Information

Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Intercept Only	183.003			
Final	118.489	64.515	1	.000

The logistic regression analysis model fitting data is shown in Table 4.34 above. The Intercept Only model's -2 Log Likelihood is 183.003, drastically lower than the Final

model's 118.489 -2 Log Likelihood. The resulting model shows a significant improvement in fit compared to the intercept-only model with a Sig. of 0.000 and a Chi-Square value of 64.515.

Table 4.35 Goodness-of-Fit

	Chi-Square	**df**	**Sig.**
Pearson	74.154	15	.000
Deviance	72.673	15	.000
Link function: Logit.			

Table 4.35 shows the Goodness-of-Fit statistics for the logistic regression model. A Pearson Chi-Square value of 74.154 with 15 df and a corresponding significance level (Sig.) of 0.000 show that the model fits the data extraordinarily well. There is a strong match with a Sig. value of 0.000, as shown by the Deviance Chi-Square value of 72.673 with 15 degrees of freedom.

Table 4.36 Pseudo R-Square

Cox and Snell	**.193**
Nagelkerke	.208
McFadden	.080

The logistic regression model's pseudo-R-squared values in Table 4.36 demonstrate a modest level of explanatory power, with a Cox and Snell value of 0.193. The model accounts for approximately 20.8% of the dependent variable's variation, as shown by the somewhat higher Nagelkerke value of 0.208. The mode often explains a lesser proportion of the variation when the McFadden value is less than 0.080.

Table 4.37 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[TI = 1]	-1.532	0.593	6.673	1	0.01	-2.695	-0.37
	[TI = 2]	2.382	0.389	37.48	1	.000	1.619	3.145
	[TI = 3]	3.87	0.429	81.238	1	.000	3.028	4.711
	[TI = 4]	5.858	0.505	134.377	1	.000	4.867	6.848
Location	BPS	1.01	0.126	64.585	1	.000	0.764	1.256
Link function: Logit.								

The parameter estimates for a logistic regression model are displayed in Table 4.37 above. Significant estimates are displayed for the threshold values for the various dependent variable (TI) levels, with diminishing values as the threshold rises. The estimate for TI = 4 is 5.858 and highly significant ($p < 0.001$), whereas the values for the threshold from TI = 1 to TI = 4 are gradually higher. With a positive and significant estimate of 1.01 and a Wald statistic of 64.585 ($p < 0.001$), the location variable (BPS) appears to be a significant predictor in the model.

Hypothesis 4

H4: *The threat of substitutes (TS) has a significant impact on the diversification of services (DS) offered by traditional banks.*

Table 4.38 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	170.885			
Final	133.649	37.237	1	.000
Link function: Logit.				

The logistic regression analysis's Model Fitting Information is shown in Table 4.38 above. The quality of fit in the absence of any predictors is shown by the intercept-only model's -2 Log Likelihood, which is 170.885. The final model with the predictors included reduces the -2 Log Likelihood to 133.649. With a significance level (Sig.) of 0.000 and one df, the final model's Chi-Square score is 37.237, showing a significant improvement in fit compared to the intercept-only model.

Table 4.39 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	80.655	15	.000
Deviance	80.746	15	.000

The logistic regression model's goodness-of-fit statistics are displayed in Table 4.39 up there. With 15 degrees of freedom (df) and a significance level (Sig.) of 0.000, the Pearson test's Chi-Square statistic is at 80.655, indicating that the model does not precisely match the data. The deviation statistic is 80.746 with 15 degrees of freedom and a significance level of 0.000, suggesting that the model's fit is similarly suboptimal.

Table 4.40 Pseudo R-Square

Cox and Snell	**.117**
Nagelkerke	.125
McFadden	.045
Link function: Logit.	

Table 4.40 above displays the logistic regression model's pseudo R-squared values. 0.045 is the McFadden value, 0.117 is the Cox and Snell value, and 0.125 is the Nagelkerke value. These numbers show that a comparatively small percentage of the outcome variable's volatility can be explained by the model.

Table 4.41 Parameter Estimates

		Estimate	**Std. Error**	**Wald**	**Df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[DS = 1]	-.512	.366	1.961	1	.161	-1.228	.205
	[DS = 2]	2.236	.359	38.720	1	.000	1.532	2.941
	[DS = 3]	3.475	.394	77.958	1	.000	2.703	4.246
	[DS = 4]	4.813	.446	116.521	1	.000	3.939	5.687
Location	TS	.743	.117	40.426	1	.000	.514	.972

Table 4.41 above displays the parameter estimates for a logistic regression model that looks at the association between predictor variables and several categories of the dependent variable (DS). There is no substantial effect, as indicated by the threshold estimates for [DS = 1], which are -0.512 and not statistically significant (p = 0.161). The estimates, however, are 2.236, 3.475, and 4.813 for [DS = 2], [DS = 3], and [DS = 4], respectively, with highly significant p-values (p = 0.000). Furthermore, there is a substantial positive

correlation between the location parameter (TS) and the result (estimate = 0.743, p = 0.000).

Hypothesis 5

H5: *The digital transformation strategy (DTS) has a significant impact on the market performance (MP) of traditional banks in Singapore.*

Table 4.42 Model Fitting Information

Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Intercept Only	210.245			
Final	55.661	154.584	1	.000
Link function: Logit.				

Table 4.42 displays the data from the logistic regression analysis's model fitting. Compared to the intercept-only model, which had a -2 Log Likelihood value of 210.245, the final model had a value of 55.661. The model considerably beats the intercept-only model with a Chi-Square value of 154.584 and a p-value (Sig.) of 0.000, both with one degree of freedom.

Table 4.43 Goodness-of-Fit

	Chi-Square	**Df**	**Sig.**
Pearson	10.869	11	.454
Deviance	13.385	11	.269

Table 4.43 displays the goodness-of-fit statistics for the logistic regression model. With 11 df and a p-value of 0.454—higher than the typical significance threshold of 0.05—and a

Pearson Chi-Square value of 10.869, the model fits the data well. A similar Chi-Square value of 13.385 is obtained when there are 11 df and a p-value of 0.269.

Table 4.44 Pseudo R-Square

Cox and Snell	**.403**
Nagelkerke	.426
McFadden	.177

Table 4.44 shows the pseudo-R-squared values for the logistic regression model. The Cox and Snell R-Square value of 0.403 shows that the model accounts for approximately 40.3% of the variation in the dependent variable. Nagelkerke R-Square, after correction for the maximum value, suggests somewhat more explanatory power at 0.426. It is common for logistic regression models to have an McFadden R-Square of 0.177, which indicates a lower but still acceptable fit.

Table 4.45 Parameter Estimates

		Estimate	**Std. Error**	**Wald**	**Df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[MP = 1]	3.894	.545	50.977	1	.000	2.825	4.963
	[MP = 2]	6.386	.593	115.956	1	.000	5.223	7.548
	[MP = 3]	8.016	.646	154.042	1	.000	6.750	9.282
	[MP = 4]	10.555	.855	152.389	1	.000	8.879	12.231
Location	DTS	2.129	.193	121.813	1	.000	1.751	2.507
Link function: Logit.								

Table 4.45 shows the estimated parameters for the ordinal logistic regression model. In this case, the thresholds are the locations on the latent variable that demarcate neighboring MP categories. All thresholds are statistically significant ($p < 0.001$), and the estimates vary between 3.894 ([MP = 1]) to 10.555 ([MP = 4]). At 2.129 ($p < 0.001$), the location parameter for DTS is significant. A 95% confidence range for DTS ranging from 1.751 to 2.507 confirms the robustness of this impact, suggesting that higher levels of DTS are related to increased likelihoods of advancing into the next category of MP.

Hypothesis 6

H6: *There is a significant influence of product innovation (PI) on customer satisfaction (CS) in traditional banks.*

Table 4.46 Model Fitting Information

Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Intercept Only	174.180			
Final	127.999	46.181	1	.000
Link function: Logit.				

The Model Fitting Information for determining whether traditional banks need to adjust to operational and regulatory changes is displayed in Table 4.46 above. The intercept-only model has a -2 Log Likelihood of 174.180, whereas the final model has 127.999. With one degree of freedom, the final model provides a considerably better fit than the intercept-only model, as confirmed by a p-value of.000 and a Chi-Square value of 46.181.

Table 4.47 Goodness-of-Fit

	Chi-Square	**df**	**Sig.**
Pearson	86.407	15	.000
Deviance	81.447	15	.000
Link function: Logit.			

Table 4.47 displays the model's goodness-of-fit statistics; these statistics assess the necessity of operational and regulatory adjustments by conventional banks in response to developments in fintech and digital banking. Both the Pearson Chi-Square and Deviance variables have values of 86.407 and 81.447, respectively, with 15 df and a p-value =.000.

Table 4.48 Pseudo R-Square

Cox and Snell	**.143**
Nagelkerke	.154
McFadden	.059
Link function: Logit.	

Table 4.48 shows the model's Pseudo R-Square values, which evaluate the degree to which conventional banks have embraced digital banking and fintech. The values for Nagelkerke, McFadden, and Cox and Snell are 0.059, 0.154, and 0.143, respectively. Findings like these suggest that the model does a decent job of explaining the dependent variable's variation.

Table 4.49 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[CS = 1]	-2.402	.644	13.913	1	.000	-3.665	-1.140
	[CS = 2]	1.739	.356	23.823	1	.000	1.041	2.437
	[CS = 3]	3.439	.400	74.035	1	.000	2.656	4.222
	[CS = 4]	4.865	.450	117.117	1	.000	3.984	5.746
Location	PI	.794	.115	48.003	1	.000	.570	1.019
Link function: Logit.								

The ordinal regression model that looks at how important it is for traditional banks to respond to changes brought by fintech is shown in Table 4.49 as Parameter Estimates. All four of the threshold coefficients— [CS = 1], [CS = 2], and [CS = 4]—have p-values below 0.05, indicating that they are statistically significant. There is a highly significant Wald statistic (48.003, $p < 0.001$) and a standard error of 0.115 for the location parameter of PI (Predictor Indicator), which is 0.794. The estimate is robust, as the 95% confidence interval for PI falls between 0.570 and 1.019.

Hypothesis 7

H7: *Strategic partnerships and collaborations have a significant impact on the customer lifecycle management experience, enhancing traditional banks' ability to compete with digital banks.*

Table 4.50 Correlations

Spearman's rho	Partnership and collaboration to create a new digital ecosystem with innovative offerings & products is important to compete with new digital banks.	Correlation Coefficient	1.000	.362**	.293**
		Sig. (2-tailed)	.	.000	.000
		N	300	300	300
	Focusing on the overall customer lifecycle management experience is critical for traditional banks to compete with digital banks	Correlation Coefficient	.362**	1.000	.391**
		Sig. (2-tailed)	.000	.	.000
		N	300	300	300
	A comprehensive Framework would help traditional bank to assess and come up with an actionable strategy to address the threat of rising new banks	Correlation Coefficient	.293**	.391**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	300	300	300
**. Correlation is significant at the 0.01 level (2-tailed).					

The Spearman's rho correlation analysis, demonstrating significant positive relationships between key strategies for traditional banks to address competition from digital banks as shown in above Table 4.50. Partnership and collaboration is moderately correlated with focusing on the overall customer lifecycle management experience ($\rho = 0.362$, $p < 0.001$) and developing a comprehensive framework for actionable strategies ($\rho = 0.293$, $p < 0.001$). Furthermore, focusing on the customer lifecycle management experience exhibits a stronger correlation with a comprehensive framework ($\rho = 0.391$, $p < 0.001$).

Hypothesis 8

H8: *The digital adaptation efforts of traditional banks have a significant impact on their ability to comply with rapid regulatory and operational changes in response to fintech and digital banking innovations.*

Table 4.51 Correlations

			Traditional banks need to enhance their digital offerings to mitigate the threat from new digital banks.	Focusing on the overall customer lifecycle management experience is critical for traditional banks to compete with digital banks	Traditional banks must adapt to rapid regulatory and operational changes caused by fintech and digital banking innovations.
Spearman's rho	Traditional banks need to enhance their digital offerings to mitigate the threat from new digital banks.	Correlation Coefficient	1.000	.335**	.349**
		Sig. (2-tailed)	.	.000	.000
		N	300	300	300
	Focusing on the overall customer lifecycle management experience is critical for traditional banks	Correlation Coefficient	.335**	1.000	.655**
		Sig. (2-tailed)	.000	.	.000
		N	300	300	300

	to compete with digital banks				
	Traditional banks must adapt to rapid regulatory and operational changes caused by fintech and digital banking innovations.	Correlation Coefficient	.349**	.655**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	300	300	300

The above Table 4.51 shows the Spearman's rho correlation analysis among three critical strategies for traditional banks to address competition from digital banks. The need for traditional banks to enhance digital offerings is significantly correlated with focusing on the overall customer lifecycle management experience ($\rho = 0.335$, $p < 0.001$) and adapting to rapid regulatory and operational changes caused by fintech and digital banking innovations ($\rho = 0.349$, $p < 0.001$). Additionally, a strong correlation exists between focusing on customer lifecycle management and adapting to regulatory and operational changes ($\rho = 0.655$, $p < 0.001$). These findings emphasize the interdependence of enhancing digital capabilities, prioritizing customer lifecycle management.

4.7. Summary of Findings

This study examined key strategic factors influencing the digital transformation and competitive positioning of traditional banks in Singapore. The results reveal that the threat of new entrants (TNE) has a significant impact on banks' digital transformation strategies (DTS), highlighting the need for innovation and agility to maintain market leadership. Similarly, the bargaining power of customers (BPC) plays a crucial role in driving product innovation (PI), indicating that customer expectations and preferences significantly shape banks' innovation efforts.

The findings also confirm that the bargaining power of suppliers (BPS) influences technology integration (TI) initiatives in banks, suggesting that supplier dynamics affect the adoption of advanced banking technologies. Additionally, the threat of substitutes (TS) was found to significantly impact banks' diversification of services (DS), reinforcing the necessity for traditional banks to expand their offerings to remain competitive.

Furthermore, the study demonstrates that a strong digital transformation strategy (DTS) significantly enhances market performance (MP), underscoring the direct link between digital initiatives and competitive advantage. Product innovation (PI) was also found to be a major driver of customer satisfaction (CS), emphasizing the importance of continuous product enhancement to meet evolving customer needs.

The role of strategic partnerships and collaborations emerged as a key enabler in enhancing the customer lifecycle management experience, helping traditional banks compete more effectively with digital banks. The study also highlights the critical importance of digital adaptation in ensuring compliance with evolving regulatory and operational changes driven by fintech advancements.

Overall, the results show that to maintain growth and compete in a financial environment that is changing quickly, traditional banks must embrace innovation, digital transformation, and strategic partnerships.

4.8. Conclusion

This chapter offers empirical evidence regarding the critical factors affecting the digital transformation of traditional banks in Singapore. The results highlight how competitive pressures, including new entrant threats, supplier and consumer negotiating power, and replacement risk, greatly impact banks' strategic decision-making. Strategies for digital transformation, new product development, and the integration of technology are key factors in driving market performance and customer happiness. Furthermore, strategic

partnerships and collaborations enhance customer lifecycle management, allowing traditional banks to compete effectively with digital banks.

The results underscore the necessity for banks to continually adapt to digital advancements, diversify their services, and improve regulatory compliance to effectively navigate fintech-driven disruptions. As the banking landscape evolves, traditional banks must embrace digitalization, innovation, and customer-centric strategies to remain competitive. These insights contribute to the larger conversation about banking transformation and offer actionable recommendations for achieving long-term growth in the digital era.

CHAPTER V:

DISCUSSION

5.1. Discussion of Findings

Research shows that traditional banking entities have an urgent need to change how they work because of digital banking and fintech marketplace competition. The findings of this study contribute to a better understanding of the digital transformation strategies of the traditional banks in Singapore. Fully integrated programs that can combine sophisticated digital technology with the approach of putting the client first in all operative activities are needed in organizations in the banking sector (Garrido-Moreno,2024). The concept of using mixed digital service strategies to allow financial institutions to create a cohesive bank experience, ensuring to keep their customers in this data-driven bank structure.

In the current banking landscape, the approach to customer management has to be a complete lifecycle, rather than just individual banking transactions (Onunka et al., 2023). Digital FIs allow consumers to get more out of their data and provide enhanced solutions more tailored to the traditional banks' touchpoints. Interaction has to be elevated across all points of contact, as another traditional bank must compete with this (Khadka, 2023). The power of artificial intelligence technology and predictive analytics, and omnichannel models is also the real-time delivery of solutions that accurately predict customer needs. Traditional banks that do not prioritize customer experience with as much enthusiasm as digital innovation may be at risk of displacement on the market by cost-effective competitors (Zulaikha, Mohamed, 2020).

This study's findings show the influence of the threat of new entrants on digital transformation strategies. The findings suggest that the threat of new competitors has an impact on digitalization. It indicates that traditional banks are under pressure from digital native Fintech to accelerate their digital technology adoption to gain market share. These

new entrants also realize their competitive advantage over banks in terms of speed to innovate, streamlining of operations, and the better customer experience they can deliver with their tech-led solutions. Additionally, product innovation is greatly affected by the bargaining power of customers in the traditional banking industry. The results underline the shift towards customer-centric banking services as banks are being pushed by the consumer demand for increased features, more personalized solutions.

Fintech has changed the game because of which traditional banks to respond quickly to financial regulations that are evolving rapidly. (Del Sarto et al., 2024). Traditional banks need to develop adaptable governance systems that incorporate sophisticated regulatory technologies because regulatory shifts require banks to manage complexities related to compliance, cybersecurity, and risk management responsibilities. (Samuel Onimisi Dawodu, 2023). The speed of operational strategy adjustments toward new regulatory mandates results in the dual benefits of strict compliance and market leadership. Banks that adopt technology-based solutions for blockchain transparency and AI fraud detection create trustworthy institutions that earn customer trust while optimizing their business processes (Jain et al., 2024).

Further, digital transformation strategies were found to significantly influence market performance. This relationship suggests that banks that actively invest in and implement digital transformation strategies are more likely to outperform their competitors in terms of market positioning. The relationship highlights that banks with superior market outcomes are those that have successfully aligned their digital strategy with their customers' needs and with the dynamics of the industry.

Due to the digital transformation, meeting customer experience meets regulatory agility requirements, it becomes essential to have a systematic framework to operate in the banking industry. Strategic fintech collaboration with the complicated institutional banking

technology upgrade and digital transformation planning has to be included in the framework (Rafiul Azim Jowarder, 2024). Strong partnerships between banks and fintech companies let traditional institutions acquire innovative solutions that help maintain competitive value against purely digital financial providers. In addition to continuous learning and technological innovations, companies should cultivate an adaptive corporate culture that boosts their resilience against ongoing changes in the financial field (Suprun et al., 2020).

Finally, the study reveals a strong association between product innovation and customer satisfaction. This finding highlights that innovative products directly contribute to customer satisfaction, enhancing loyalty and retention in an increasingly competitive market. Moreover, strategic partnerships and collaborations emerge as vital for enhancing customer lifecycle management and allowing traditional banks to compete with digital banks. Banks can bolster their competitive position by creating new ecosystems through strategic collaborations.

These findings underscore the necessity for traditional banks to remain flexible and adaptive in a rapidly changing environment. Digital transformation, innovation, and strategic alliances are central to ensuring sustainable growth in the face of rising competition from fintech and digital-native entrants.

5.2. Discussion of Research Question One

What are the key factors driving the entry and success of Neo banks and FinTechs in the Singaporean banking market?

Banking in Singapore experiences major disruption because of the expanding presence of neobanks, together with fintech companies. Digital financial institutions have rapidly gained market share through their use of modern technologies combined with customer-led strategies, along with supportive regulations (Bains et al., 2022). Multiple driving factors between neo-banking companies' success rate in Singapore's banking industry stem from regulatory developments and innovative technologies, together with shifting end-user tastes and strategic business collaborations.

The results show that technology developments and competitive factors are the main drivers of neo-banks' and FinTechs' emergence and success in the Singaporean banking system. Traditional banks' digital transformation initiatives are greatly impacted by the threat of new entrants, which forces them to improve and reinvent their service offerings. Programs such as the Singaporean open banking framework give digital-only banks regulatory backing, which also helps to lower their operating costs more effectively, further boosting the growth of digital-only banks. (Monetary Authority of Singapore, 2023).

Additionally, the bargaining power of their clients plays a major role in the success of Neo banks and FinTechs. As customers demand for financial services to be digitally first, efficient, and personalized, traditional banks are compelled to speed up the product innovation and technology integration (Bueno et al., 2024). Additionally, the bargaining power of their clients plays a major role in the success of Neo banks and FinTechs. As customers demand for financial services to be digitally first, efficient and personalized,

traditional banks are compelled to speed up product innovation and technology integration (Basdekis et al., 2022).

Furthermore, partnerships and collaborations play an important role in FinTech success. Neo banks can integrate and collaborate with digital ecosystems and digital technology firms to offer innovative financial solutions, thus strengthening their market position (PWC, 2023). The findings also confirm the effect of regulatory compliance and adaptation. Such firms that quickly get in line with regulatory changes and customer requirements have an edge in the market (Faour & Al-Sowaidi, 2023).

In general, the success of Neo banks and FinTechs in Singapore is due to their use of digital innovation, catching up with customer expectations, and leveraging partnerships. Digital transformation and strategic innovation must be initiated proactively by traditional banks if they want to remain relevant in this evolving financial landscape.

5.3. Discussion of Research Question Two

What are the primary competitive pressures that Neo banks and FinTech's exert on traditional banks in Singapore?

The Circular digital banks and fintech companies operating in Singapore have created a demanding banking environment that threatens the traditional banks' longtime position of dominance (Bakr, 2023). Through technology innovations combined with customer-focused strategies and economical business practices, digital-first financial institutions actively challenge traditional banking systems (Dwivedi, & Staresinic, 2022). Both neobanks and fintech firms create intense competition for traditional banks by forcing improvements in cost management and customer service alongside technological and regulatory adaptability and novel product development. According to this study, the primary competitive pressures are:

- **Cost Efficiency and Lower Fees:** All business operations at neobanks and fintech firms occur through digital channels because they do not need physical locations, which reduces their overhead expenses. By reducing their operational costs through digital models, neobanks provide banking services at minimal fees with free accounts along with feeless transactions and competitive money exchange rates (Turcan, & Gulieva, 2019). Traditional banks face difficulties in matching neobank pricing benefits because they carry high operational costs from their legacy systems, thereby creating a need to re-evaluate pricing models and further optimize budget figures (Janamolla, 2024).
- **Superior Customer Experience and Personalization:** The banking sector faces changing customer demands that favour user-friendly, accessible services with customizable solutions (Ulrich-Diener & Spacek, 2021). Through the use of AI technology together with machine learning and big data analytics, Neobanks deliver immediate financial data with personalized spending guidance and automated savings solutions (Ahmadi, 2024). Traditional banks battle digital transformation pressures by needing to improve their digital services and customers' interactive experiences because their strict system operations hold them back from achieving user-friendly customer solutions.
- **Rapid Innovation and Agile Product Development:** Fintech firms, together with neobanks, regularly launch creative offerings that include robo-advisors, digital lending services, decentralized finance platforms, and embedded financial features (Asimiyu, 2019). Traditional banks face hurdles in fast solution deployment through new technological approaches because compliance rules and existing system limitations force them to need extended development periods. Consolidation within the industry accelerated through digital transformation, now

compels banks relying on traditional methods to adopt agile best practices and team up with fintech solution providers for emerging technology investments throughout their operations (George, 2024).

- **Digital Payment Disruption and Embedded Finance:** Digital payments, along with mobile wallets and embedded finance innovations, have fundamentally changed customer purchasing behaviour (Hazar & Babuşcu, 2023). Survey data indicates how fintech organizations implemented financial solutions directly within existing digital consumer usage patterns through applications like ride-hailing solutions and e-commerce platforms, and subscription-based programs (Wu et al., 2024). Traditional financial institutions must maintain their position in a space where banking has become part of broader digital platforms rather than residing exclusively within bank-controlled interfaces. Firms in the finance technology field bring ongoing pressure on banks to update their payment systems for the digital age while finding cooperative arrangements with fintech companies.
- **Competitive Interest Rates and Better Savings Options:** Through their streamlined operations, neobanks and fintech firms deliver elevated interest rates on savings while offering investment products (Monis & Pai, 2023). Through technology-enhanced capital optimization and efficiency improvement, neobanks deliver superior returns to their customers than conventional banking institutions. Legacy banks need to raise their deposit rates and launch novel wealth management options because this competitive environment drives them to retain customers (Murinde, Murinde, 2022).

In conclusion, neo-banks and fintechs exert significant competitive pressures on traditional banks by leveraging technology, offering personalized services, reducing costs, enhancing accessibility, and adapting quickly to regulatory changes. These pressures force

traditional banks to accelerate their digital transformation and rethink their customer engagement strategies, or risk being sidelined in an increasingly digital financial ecosystem.

5.4. Discussion of Research Question Three

What are the outcomes of strategic initiatives on customer satisfaction and market performance for traditional banks in Singapore?

Traditional banks in Singapore launched different strategic initiatives that target customer satisfaction and market performance improvements as a response to fintech companies and Neobanks. The initiatives aim to enhance digital transformation services while improving customer experiences, meeting regulatory requirements, building ecosystem partnerships, and creating innovative products (Shanti et al., 2024). These strategies generated important impacts on customer loyalty coupled with revenue growth and acquired market share, which contributed to long-term organizational competitiveness. Based on the findings of this study, the major strategic initiatives are as follows:

- **Enhance Customer Satisfaction Through Digital Banking Transformation:** Digital transformation projects deliver major improvements in customer satisfaction, standing as their most crucial achievement. Traditional banks now employ artificial intelligence through chatbots alongside automated service functions and straightforward mobile banking applications to deliver uninterrupted digital banking to their customers (Agustiawan, 2024). The combination of better user interfaces and faster transactions, together with personalized financial tools, has successfully improved customer connection rates and decreased abandonment from their banks. Digitally transformed banks now achieve better customer satisfaction numbers as their users like how easily they can perform banking activities on different digital platforms.

- **Increase Customer Retention and Loyalty:** Through data analytics and machine learning, traditional banks deliver bespoke banking experiences together with targeted financial products and customized rewards programs to their customers (Adeniran et al., 2024). These strategic programs have produced better retention results that strengthen client commitment to operations. Financial institutions that adapted personalized planning solutions alongside AI-based spending analytics, together with loyalty incentives tied to customer usage, saw improved Net Promoter Scores, demonstrating enhanced advocacy from customers (Rane, 2023).
- **Expansion of Market Share Through Fintech Partnerships:** Many Singaporean traditional banks have formed strategic partnerships with fintech firms, digital payment providers, and technology companies to fight against fintech competition (Hoang Hai et al., 2024). Traditional banking institutions have accessed fintech capabilities to provide integrated financial solutions. At the same time, they offer real-time payments and AI-based investment advisory across their operations (Nkatekho, 2024). Banks achieved market share expansion by incorporating third-party financial solutions because they attracted users seeking sophisticated technology-based banking experiences.
- **Higher Revenue Growth Through Diversified Product Offerings:** Traditional banking institutions have increased their revenue numbers by pursuing initiatives that expand their product range. Digital wealth management operates alongside blockchain-enabled trade finance in addition to cross-border payment solutions, which traditional banks now present to their customer base (Al-Dmour, 2024). Through investments in digital insurance services together with robo-advisory solutions and BNPL platforms, traditional banks establish additional revenue streams, leading to improved profit margins (Yang, 2024).

- **Improve Competitive Positioning Against Neobanks:** The traditional banking sector increases its competitive advantage over neobank services and financial technology disruptors by continuously introducing innovative solutions. Traditional banks utilize hybrid banking models to provide enhanced customer services because these models unite personal in-branch support with digital convenience features (Sharma, 2024). The advantages of traditional bank models with two-channel service delivery have allowed banks to maintain client loyalty by offering digital convenience in addition to personal interactions, thus avoiding large-scale customer movement to neobanks (Yang, 2024).
- **Increased Operational Efficiency and Cost Reduction:** Installed automation across banking operations while implementing AI and cloud technology solutions, resulting in both operational streamlining and price reductions (Abdulsalam & Tajudeen, 2024). Traditional banking institutions improved service delivery and cut operational expenses through back-office optimization, which combined AI-based fraud management alongside digital operational processes. The efficient infrastructure enables banks to maintain profits even when fintech firms deliver affordable financial services to the market (Abbas, 2024).

In conclusion, the strategic initiatives undertaken by traditional banks in Singapore have led to improved customer satisfaction, better market performance, and greater operational efficiency. However, to sustain these positive outcomes, banks must continuously innovate, address customer concerns, and balance digital transformation with personalized human interactions.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1. Summary

The research sheds important light on changing banking competition patterns in Singapore because traditional banks encounter intensified competition from neo-banks and FinTech companies. The trends underscore that traditional banks need to speed up the digital transformation journey and improve customer experience as well as fledge with strategic innovations to prevail in the dynamic ecosystem of digitization in which the financial environment is currently going.

This research shows that traditional banks must undergo digital transformation to survive because it has become mandatory to continue operating in their field. Traditional banks, while on the one side, failed to gain market share in technology-dominated sectors, have, on the other, had to modernize their service to compete with newer banks in this world, which are digital natives. The research backs this up with the fact that to achieve digital transformation, the technologies have to be advanced, especially artificial intelligence (AI), predictive analytics, and omnichannel solutions in banking. The newly introduced innovations help banks supply solutions that directly serve their customers in real time and enhance both user retention and positive experiences.

Traditional banks experience substantial pressure from Neo banks and FinTech firms through their cost-effective operations alongside exceptional customer experiences, as well as quick innovation cycles and digital payment innovations, and their ability to set competitive interest rates. Neo banks deliver their banking services efficiently through digitization since they abstain from building physical locations, which helps lower their client costs. Additionally, these digital native firms leverage AI and major data analytics to supply tailor-made financial solutions that offer them an aggressive benefit in consumer

interaction. In particular, the findings show that these competitors can move fast and agile when traditional banks find it hard to keep up with them, mainly because of legacy systems and regulatory constraints.

This led the customers to expect seamless digital banking experiences. The trend is utilized by Neo banks and FinTech companies in areas such as offering mobile applications, AI-based financial management tools, and real-time digital transactions. Therefore, traditional banks have opted for customer-centric strategies like offering digital services with a higher degree of customer service by automation of support services as well as by customer-driven financial insights. However, the study points out that the nontechnological banks that do not give even the slightest priority to the customer experience are likelier to lose market share to the technologically enabled agile digital competitors.

Regulatory frameworks have an important function in the making of the banking environment. With such new financial technologies, traditional banks are hitting a recession and facing increasing regulatory scrutiny. The study indicates that adaptive governance systems and regulatory technologies need to be implemented to address the changing legal mandates. Those who register themselves fast to regulatory changes get a marketplace benefit, while conventional banks ought to enhance their cybersecurity, risk channels of communication, and adherence to the law.

It has been found that once again, the relationship that exists between digital transformation and market performance is very strong. Traditional banks that initiate the investment in digital banking solutions enjoy higher customer satisfaction, higher rates of customer retention, and wider market share. Innovative banking solutions to support, such as embedded finance and personalized financial planning, encourage greater customer loyalty. It was then shown that banks that concentrate on focusing on user experience,

providing digital convenience, and product diversification from a strategic perspective are more likely to gain sustainable growth.

Overall, the findings recommend that traditional banks in Singapore adopt digital transformation, customer-centric innovation, and regulatory agility. Consequently, the neo-banks and FinTech firms still work to disrupt the financial sector with cost-effective, agile, and technology-driven solutions. However, traditional banks that employ a proactive approach to such an ever-changing landscape by strategically partnering and being in regulatory compliance with digital transformation could remain competitive in the marketplace and achieve long-term success.

6.2. Implications

i. Theoretical Implications

By giving empirical insight into the challenges and potentials that traditional banks in Singapore encounter when encountering digital transformation, competitive strategy, and financial technology, this study contributes to the academic discourse on digital transformation, competitive strategy, and financial technology. Theories about disruptive innovation are extended by showing how neo-banks and FinTech do disrupt traditional banking models, leveraging technology-based services. The findings provide further support to resource-based and dynamic capability theories and stress the need for banks to capitalize on digital assets, technological competences, and adaptive types of capabilities if they want to stay at the top.

The study also discusses the rising significance that the customer experience has for the financial success of a service, in line with theories of consumer behaviour in digital finance. Thus, the initial exploration leads us to further search for the strategic digital transformation frameworks and FinTech bank collaborations.

ii. Managerial Implications

The finding meets the needs of banking executives and industry practitioners to have a proactive digital transformation strategy. To cater to the growing needs, traditional banks need to invest in AI-based analytics, seamless digital interface, and omnichannel banking solutions as well. Agility is a key managerial takeaway; banks have to be agile by adopting agile methodologies to keep pace with the speed of FinTech innovations. The study also indicates that banks and FinTechs must establish closer ties. To integrate innovative financial solutions, security through blockchain, and financial advisory through AI, banks should, on the contrary, form strategic alliances. Regulatory compliance should be embedded into digital transformation efforts as the telecommunications operators navigate the transition while retaining trust in credibility. So, finally, the end part, managers should always consider digital transformation as a continuing process instead of just a one-time achievement: using technology, partnerships, and regulatory alignment to sustain the growth in the financial ecosystem that is getting increasingly fast.

6.3. Recommendations for Future Research

There are many recommendations on which further research can be conducted:

- **Comparative Analysis of Global Markets:** Future research should compare the influence of FinTech and Neo banks on traditional banks across different financial hubs (e.g., Singapore, Hong Kong, London, and New York) to understand regional variations in digital banking adoption.
- **Longitudinal Studies on Digital Transformation:** A longitudinal study can assess how traditional banks' digital strategies evolve and their long-term impact on market performance and customer retention.

- **Impact of AI and Emerging Technologies:** Further research should explore how AI, blockchain, and decentralized finance (DeFi) reshape banking operations and whether these technologies provide a sustainable competitive advantage.
- **Consumer Behavior and Trust in Digital Banking:** Investigating consumer perceptions, trust factors, and security concerns in digital banking ecosystems will provide insights into the adoption rates of FinTech services.
- **Regulatory and Policy Frameworks:** Future studies should analyze how regulatory frameworks in different jurisdictions influence the growth of neo-banks and FinTech firms and how traditional banks navigate compliance challenges.
- **Sustainability and ESG in Banking Digitalization:** Future studies can examine how digital transformation aligns with "Environmental, Social, and Governance" (ESG) principles and the role of sustainable banking initiatives in a digital economy.
- **Financial Inclusion and Digital Banking**: Investigating how FinTech solutions impact financial inclusion, particularly for underbanked or unbanked populations, will help assess the broader socio-economic benefits of digital banking.
- **Cybersecurity Risks and Digital Fraud in FinTech:** Further research should assess the rising cybersecurity threats in digital banking, the effectiveness of fraud detection mechanisms, and customer risk mitigation strategies.
- **Post-Pandemic Digital Banking Strategies:** Examining how traditional banks have adapted their digital strategies post-pandemic can provide insights into the lasting influence of COVID-19 on banking digitalization.

6.4. Conclusion

The focus of this study was on the effect of FinTech and Neobanks on traditional banking institutions and how digital transformation is redefining financial services.

Contrary to traditional banks, findings indicate that digitally native firms, offering innovative solutions to customers, are increasingly competing the traditional banks. But many traditional banks don’t fail due to the deployment of such technologies as AI, blockchain, and data analytics; rather, they adapt to them. This also leads to the fact that customers expect to have a seamless, fast, and personalized banking experience, which forces traditional banks to modernize banks delivery models.

Theoretically, this study adds to the expanding corpus of information on the banking industry's strategic adaptability, competition, and adoption of financial technology. However, it also provides managerial insight that traditional banks should engage more agile, more collaborative, and more digitally invested banks to continue competing. The study proposes that banks’ strategic partnership with FinTech firms is possible, which can foster innovation and help traditional institutions to make use of emerging technologies.

Even though the FinTech firms are rapidly growing, regulatory issues, cybersecurity risks and financial inclusion are present with a fair number of concerns that are worth looking into. As we know, the future of banking will mostly be a hybrid model, with traditional banks and FinTech being there, each party creating the technological bank that both can fully engage.

This study, in a sense, highlights the imminent necessity of continuous innovation and regulatory flexibility in order for digital transformation in banking to bring about sustainable and customer-driven financial services.

REFERENCES

Aalbers, M. B., Engelen, E., & Glasmacher, A. (2011). “Cognitive closure” in the Netherlands: Mortgage securitization in a hybrid European political economy. *Environment and Planning A*. https://doi.org/10.1068/a43321

Abbas, A. (2024). *The Role of AI in Disrupting Traditional Banking and Financial Services: Harnessing Data Analytics and Machine Learning for Competitive Advantage*. https://doi.org/10.13140/RG.2.2.32110.22087

Abdulsalam, T. A., & Tajudeen, R. B. (2024). Artificial Intelligence (AI) in the Banking Industry: A Review of Service Areas and Customer Service Journeys in Emerging Economies. *Business & Management Compass*, *68*(3), 19–43. https://doi.org/10.56065/9hfvrq20

Abshire, J. E. (2011). THE HISTORY OF SINGAPORE. In *The History of Singapore*. https://doi.org/10.5040/9798400665349

Adel, Z., Hasan, A. Bin, Othman, A. H. A., & Redhouane, L. (2023). Research Advances on Financial Technology: A Bibliometric Analysis. *Lecture Notes in Networks and Systems*. https://doi.org/10.1007/978-3-031-26953-0_45

Adeniran, A., Obiki-Osafiele, Osundare, Agu, Efunniyi, P., & Abhulimen, A. (2024). Data-Driven approaches to improve customer experience in banking: Techniques and outcomes. *International Journal of Management & Entrepreneurship Research*, *6*, 2797–2818. https://doi.org/10.51594/ijmer.v6i8.1467

Agarwal, S., & Zhang, J. (2020). FinTech, Lending and Payment Innovation: A Review. *Asia-Pacific Journal of Financial Studies*. https://doi.org/10.1111/ajfs.12294

Agustiawan, D. (2024). Digital Banking Transformation AI Enhances Efficiency And Customer Experience Seminar Perspective Industry. *WACANA: Jurnal Ilmiah Ilmu Komunikasi*, *23*, 191–200. https://doi.org/10.32509/wacana.v23i1.4130

Ahmadi, S. (2024). A Comprehensive Study on Integration of Big Data and AI in Financial Industry and its Effect on Present and Future Opportunities. *International Journal of Current Science Research and Review*, *7*, 66–74. https://doi.org/10.47191/ijcsrr/V7-i1-07

Al-Ansi, A., Riyadh, H. A., Garad, A., & Beshr, B. (2024). *Unlocking Financial Innovation through Strategic Investments in Information Management: A Systematic Review*. https://doi.org/10.21203/rs.3.rs-4682715/v1

Al-Dmour, A., Al-Dmour, R., Al-Dmour, H., & Al-Adwan, A. (2024). Blockchain applications and commercial bank performance: The mediating role of AIS quality. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(2), 100302. https://doi.org/https://doi.org/10.1016/j.joitmc.2024.100302

Al-Dmour, H., Asfour, F., Al-Dmour, R., & Al-Dmour, A. (2022). Validation of the impact of marketing knowledge management on business performance via digital financial innovation as a mediating factor. *VINE Journal of Information and Knowledge Management Systems*. https://doi.org/10.1108/VJIKMS-05-2020-0085

Albert Lusha, Xhelal Mziu, F. B. (2015). *FINANCIAL MANAGEMENT IN THE PUBLIC SECTOR.*

Alekseenko, A. P. (2023). Model Framework for Consumer Protection and Crypto-Exchanges Regulation. *Journal of Risk and Financial Management*, *16*(7). https://doi.org/10.3390/jrfm16070305

Allahrakha, N. (2023). Legal Challenges for International Fintech Startups. *International Journal of Law and Policy*, *1*. https://doi.org/10.59022/ijlp.148

Amalia, F. (2016). THE FINTECH BOOK: THE FINANCIAL TECHNOLOGY HANDBOOK FOR INVESTORS, ENTREPRENEURS AND VISIONARIES. *Journal of Indonesian Economy and Business*. https://doi.org/10.22146/jieb.23554

Anaya, E. A., Garcia, G. G., & García, M. B. (2019). *Anonymity and Privacy Security Scheme on Location Based Services*. *23*(4), 1549–1568. https://doi.org/10.13053/CyS-23-4-3291

Andreff, W. (2020). *CRISIS AS UNEXPECTED TRANSITION . . . TO A GREED-BASED ECONOMIC SYSTEM* (pp. 1–48).

Anifa, M., Ramakrishnan, S., Joghee, S., Kabiraj, S., & Bishnoi, M. M. (2022). Fintech Innovations in the Financial Service Industry. *Journal of Risk and Financial Management*, *15*(7), 287. https://doi.org/10.3390/jrfm15070287

Anis, I., Gani, L., Fauzi, H., Hermawan, A. A., & Adhariani, D. (2023). The sustainability awareness of banking institutions in Indonesia, its implication on profitability by the mediating role of operational efficiency. *Asian Journal of Accounting Research*. https://doi.org/10.1108/AJAR-06-2022-0179

Anyfantaki, S. (2020). *THE EVOLUTION OF FINANCIAL TECHNOLOGY (FINTECH). December*, 02–17.

Arner, D. W., Buckley, R. P., & Zetzsche, D. A. (2018). Fintech for Financial Inclusion: A Framework for Digital Financial Transformation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3245287

Asher, M. (2003). ASIAN STATES, ASIAN BANKERS: Central Banking in Southeast Asia. *Pacific Affairs*.

Asher, M. G. (1986). Measurement of the overall budget balance in Singapore. *Asean Economic Bulletin*. https://doi.org/10.1355/ae3-2h

Asher, M. G., Bali, A. S., & Chang, Y. K. (2015). Public financial management in Singapore: Key characteristics and prospects. *Singapore Economic Review*. https://doi.org/10.1142/S0217590815500320

Asimiyu, Z. (2019). *The Evolution of Digital Finance: From Traditional Banking to*

FinTech Innovation.

Attaran, M., & Gunasekaran, A. (2023). *Applications of Blockchain Technology in Business Challenges and Opportunities* (Issue June). https://doi.org/10.1007/978-3-030-27798-7

Bains, P., Ehlers, T., Mok, J., Sugimoto, N., Tsuruga, T., Yuan, Z., & Natalucci, F. (2022). *he Rapid Growth of Fintech Vulnerabilities And Challenges For Financial Stability. In Global Financial Stability Report Shockwaves from the War in Ukraine Test the Financial System's Resilience*. *April*, 65–83.

Bakar, S. (2020). *Fintech Investment And Banks Performance In Malaysia, Singapore & Thailand*. https://doi.org/10.15405/epsbs.2020.12.05.66

Bakr, S. (2023). *Unleashing Collaborative Potential: Exploring the Dynamics between Banks and Fintechs in the Era of PSD2 and Open API Technologies*. https://doi.org/10.13140/RG.2.2.15436.80009

Bangarwa, P., & Roy, S. (2023). Operational performance model for banks: a dynamic data envelopment approach. *Benchmarking: An International Journal*, *30*(10), 3817–3836. https://doi.org/10.1108/BIJ-08-2021-0498

Banna, H., & Alam, M. R. (2021). Impact of digital financial inclusion on ASEAN banking stability: implications for the post-Covid-19 era. *Studies in Economics and Finance*. https://doi.org/10.1108/SEF-09-2020-0388

Barroso, M., & Laborda, J. (2022). Digital transformation and the emergence of the Fintech sector: Systematic literature review. *Digital Business*, *2*(2), 100028. https://doi.org/10.1016/j.digbus.2022.100028

Basdekis, C., Christopoulos, A., Katsampoxakis, I., & Vlachou, A. (2022). FinTech's rapid growth and its effect on the banking sector. *Journal of Banking and Financial Technology*. https://doi.org/10.1007/s42786-022-00045-w

Bassens, D., van Meeteren, M., Derudder, B., & Witlox, F. (2013). No more credit to Europe? Cross-border bank lending, financial integration, and the rebirth of the national scale as a credit scorecard. *Environment and Planning A*. https://doi.org/10.1068/a4618

Basu, P. (2022). TO NEO BANKING FOR INCLUSIVE FINANCE. *DIGITAL TRANSFORMATION, December 2023*, 63–69.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*. https://doi.org/10.1007/s10887-007-9010-6

Belgavi, V. (2022). *The changing face of financial services : Growth of FinTech in India Message from PwC. June*.

Blöndal, J. R. (2006). Budgeting in Singapore. *OECD Journal on Budgeting*. https://doi.org/10.1787/budget-v6-art3-en

Boot, A., Hoffmann, P., Laeven, L., & Ratnovski, L. (2021). Fintech: what's old, what's new? *Journal of Financial Stability*, *53*, 100836. https://doi.org/10.1016/j.jfs.2020.100836

Boutabba, M. A. (2014). The impact of financial development, income, energy and trade on carbon emissions: evidence from the Indian economy. *Economic Modelling*, *40*, 33–41.

Brezina, P. R., Kutteh, W. H., Bailey, A. P., Ding, J., Ke, R. W., & Klosky, J. L. (2015). Fertility Preservation in the Age of Assisted Reproductive Technologies. *Obstetrics and Gynecology Clinics of North America*, *42*(1), 39–54. https://doi.org/10.1016/j.ogc.2014.09.004

Bris, A., Wang, T. Y. H., Zatzick, C. D., Miller, D. J. P., Fern, M. J., Cardinal, L. B., Gregoire, D. A., Shepherd, D. A., Westphal, J. D., Shani, G., Troster, C., Van Quaquebeke, N., Lanaj, K., Hollenbeck, J. R., Ilgen, D. R., Barnes, C. M., Harmon,

S. J., Feldman, E. R., DesJardine, M. R., … Sangiorgi, F. (2021). KNIGHTS, RAIDERS, AND TARGETS - THE IMPACT OF THE HOSTILE TAKEOVER - COFFEE,JC, LOWENSTEIN,L, ROSEACKERMAN,S. *JOURNAL OF BANKING & FINANCE*.

Bueno, L. A., Sigahi, T. F. A. C., & Anholon, R. (2023). Digital Banks in Brazil: Struggling to Reach the Breakeven Point or a New Evolution Wave? *FinTech*, *2*(3), 374–387. https://doi.org/10.3390/fintech2030021

Bueno, L. A., Sigahi, T. F. A. C., Rampasso, I. S., Leal Filho, W., & Anholon, R. (2024). Impacts of digitization on operational efficiency in the banking sector: Thematic analysis and research agenda proposal. *International Journal of Information Management Data Insights*, *4*(1), 100230. https://doi.org/10.1016/j.jjimei.2024.100230

Burton, S. I. & D. (2004). Singapore: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the following topics: Banking Supervision, Insurance Regulation, Securities Regulation, Payment and Settlement Systems, Monetary and Financial. *IMF Staff Country Reports*, *04*(104), i. https://doi.org/10.5089/9781451834222.002

Cao, L., Yang, Q., & Yu, P. S. (2021). Data science and AI in FinTech: an overview. *International Journal of Data Science and Analytics*, *12*(2), 81–99. https://doi.org/10.1007/s41060-021-00278-w

Cassis, Y. (2006). Capitals of capital: The rise and fall of international financial centres, 1780–2009. In *Capitals of Capital: The Rise and Fall of International Financial Centres, 1780-2009*. https://doi.org/10.1017/CBO9780511607424

CDI, & Z/Yen. (2017). The Global Financial Centres Index 21. *Financial Centre Futures*.

Chauhan, S., Akhtar, A., & Gupta, A. (2022). Customer experience in digital banking: a

review and future research directions. In *International Journal of Quality and Service Sciences*. https://doi.org/10.1108/IJQSS-02-2021-0027

Chen, C. C. (2019). Regulatory Sandboxes in the UK and Singapore: A Preliminary Survey. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3448901

Chirk, N., Mmed, J., & Care, P. (2006). *Designing a questionnaire*. *1*(1), 32–35.

CHOI, J., SANTHANAM, P., WRAY, P., SHUBHANKAR, S., & VANDENSTEEN, J. (2023). The Rise of Digital Banking in Southeast Asia. *BCG*.

CHOW, H. K. (2019). Institutional Knowledge at Singapore Management University Financial sector in Singapore Chapter 10 : Financial sector in Singapore. *Routledge Handbook on Banking and Finance in Asia (2018)*, 01–25.

Čihák, M., Demirgüč-Kunt, A., Feyen, E., & Levine, R. (2013). Financial Development in 205 Economies, 1960 to 2010. *Journal of Financial Perspectives, EY Global FS Institute,*.

Ciulla, F., & Mantegna, R. N. (2020). Dynamics of fintech terms in news and blogs and specialization of companies of the fintech industry. *Chaos*. https://doi.org/10.1063/5.0004487

Claessens, S., & Van Horen, N. (2015). The Impact of the Global Financial Crisis on Banking Globalization. *IMF Economic Review*. https://doi.org/10.1057/imfer.2015.38

Clark, G. L. (1998). Pension fund capitalism: A causal analysis. *Geografiska Annaler, Series B: Human Geography*. https://doi.org/10.1111/1468-0467.00036

Colaert, V. (2018). RegTech as a response to regulatory expansion in the financial sector. *RISF*.

Cook, M. (2008). Banking reform in Southeast Asia: The region's decisive decade. In *Banking Reform in Southeast Asia: The Region's Decisive Decade*.

https://doi.org/10.4324/9780203926833

de Andrés, P., Arroyo, D., Correia, R., & Rezola, A. (2022). Challenges of the market for initial coin offerings. *International Review of Financial Analysis*, *79*, 101966. https://doi.org/10.1016/j.irfa.2021.101966

Del Sarto, N., Ramirez, I. C., & Gai, L. (2024). Impacts of FinTech funding announcements on traditional banks: An event study analysis. *Journal of Economics and Business*, 106231. https://doi.org/10.1016/j.jeconbus.2024.106231

Dharmadasa, P. D. C. S. (2021). "Fintech Services" and the Future of Financial Intermediation: A Review. *Sri Lanka Journal of Economic Research*. https://doi.org/10.4038/sljer.v8i2.135

Diéguez, A. I., Martín, F. V., & Camacho, M. A. (2023). Predicting Fintech Innovation Adoption : the Mediator Role of Social Norms and Attitudes. *Financial Innovation*, 02–23. https://doi.org/10.1186/s40854-022-00434-6

Dilnot, A. (2012). Numbers and Public Policy: The Power of Official Statistics and Statistical Communication in Public Policymaking. In *Fiscal Studies*. https://doi.org/10.1111/j.1475-5890.2012.00167.x

Dore, R. (2008). Financialization of the global economy. *Industrial and Corporate Change*. https://doi.org/10.1093/icc/dtn041

Dwivedi Ph.D., R., Alrasheedi, M., Dwivedi, P., & Staresinic, B. (2022). Leveraging Financial Inclusion Through Technology Enabled Services Innovation: A Case of Economic Development in India. *International Journal of E-Services and Mobile Applications*, *14*. https://doi.org/10.4018/IJESMA.289633

El-Gohary, H., Thayaseelan, A., Babatunde, S., & El-Gohary, S. (2021). An Exploratory Study on the Effect of Artificial Intelligence-Enabled Technology on Customer Experiences in the Banking Sector. *Journal of Technological Advancements*.

https://doi.org/10.4018/jta.20210101.oa1

Emery, R. F. (1975). The Asian Dollar Market. *International Finance Discussion Paper*. https://doi.org/10.17016/ifdp.1975.71

Erturk, I., Froud, J., Johal, S., Leaver, A., & Williams, K. (2007). The democratization of finance? Promises, outcomes and conditions. In *Review of International Political Economy*. https://doi.org/10.1080/09692290701475312

Erturk, I., & Solari, S. (2007). Banks as continuous reinvention. *New Political Economy*. https://doi.org/10.1080/13563460701485599

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling. *American Journal of Theoretical and Applied Statistics*.

Evans, C. M., Healey, D., Nehme, M., Nicholls, R., & Penel, C. (2015). Competition in Financial Services. *SSRN Electronic Journal*, *June 2023*, 01–155. https://doi.org/10.2139/ssrn.2655378

Fan, P. S. (2018). Singapore Approach to Develop and Regulate FinTech. In *Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1* (pp. 347–357). Elsevier. https://doi.org/10.1016/B978-0-12-810441-5.00015-4

Fang, C. C. X. (2023a). *FINANCE AND TECHNOLOGY: WHY FINTECH IS THE FUTURE OF FINANCE*. *August*, 431.

Fang, C. C. X. (2023b). *FINANCE AND TECHNOLOGY: WHY FINTECH IS THE FUTURE OF FINANCE – A CASE STUDY OF SINGAPORE'S FINANCIAL SECTOR*.

Faour, A., & Al-Sowaidi, A. S. S. S. (2023). Fintech Revolution: How Established Banks Are Embracing Innovation to Stay Competitive. *Journal of Business and Management Studies*. https://doi.org/10.32996/jbms.2023.5.5.14

Feyen, E., Frost, J., Gambacorta, L., Natarajan, H., & Saal, M. (2021). Fintech and the

digital transformation of financial services: implications for market structure and public policy. In *BIS Papers*.

Feyen, E., Natarajan, H., & Saal, M. (2023). Fintech and the Future of Finance: Market and Policy Implications. In *Fintech and the Future of Finance: Market and Policy Implications*. https://doi.org/10.1596/978-1-4648-1914-8

Froud, J., Johal, S., Leaver, A., & Williams, K. (2006). Financialization and strategy: Narrative and numbers. In *Financialization and Strategy: Narrative and Numbers*. https://doi.org/10.4324/9780203414941

Fung, D. W. H., Lee, W. Y., Yeh, J. J. H., & Yuen, F. L. (2020). Friend or foe: The divergent effects of FinTech on financial stability. *Emerging Markets Review*. https://doi.org/10.1016/j.ememar.2020.100727

Galvin, J., Han, F., Hynes, S., Qu, J., Rajgopal, K., & Shek, A. (2018). Synergy and disruption: Ten trends shaping fintech. In *McKinsey and Company, Global Banking*.

Ganesha, H. R., & Aithal, P. S. (2022). *How to Choose an Appropriate Research Data Collection Method and Method Choice Among Various Research Data Collection Methods and Method Choices During Ph . D . Program in India ? How to Choose an Appropriate Research Data Collection*. *7*(2), 455–489.

Garrido-Moreno, A., Martín-Rojas, R., & García-Morales, V. J. (2024). The key role of innovation and organizational resilience in improving business performance: A mixed-methods approach. *International Journal of Information Management*. https://doi.org/10.1016/j.ijinfomgt.2024.102777

George, A. S. (2024). *Finance 4.0: The Transformation of Financial Services in the Digital Age*. *02*, 104–125. https://doi.org/10.5281/zenodo.11666694

Giglio, F. (2021). Fintech: A Literature Review. *International Business Research*, *15*(1), 80. https://doi.org/10.5539/ibr.v15n1p80

Glushchenko, M., Hodasevich, N., & Kaufman, N. (2019). Innovative financial technologies as a factor of competitiveness in the banking. *SHS Web of Conferences*. https://doi.org/10.1051/shsconf/20196900043

Gorton, G., & Metrick, A. (2012). Securitized banking and the run on repo. *Journal of Financial Economics*. https://doi.org/10.1016/j.jfineco.2011.03.016

Gotham, K. F. (2016). Re-anchoring capital in disaster-devastated spaces: Financialisation and the Gulf Opportunity (GO) Zone programme. *Urban Studies*. https://doi.org/10.1177/0042098014548117

Greene, R., & Chuen, D. (2019). Singapore's Open Digital Token Offering Embrace: Context & Consequences. *The Journal of the British Blockchain Association*, *2*(2), 1–11. https://doi.org/10.31585/jbba-2-2-(3)2019

Group, D. B. S., & Report, A. (2022). *A Different Kind of Bank DBS*. 02–115.

Grout, P. A., & Zalewska, A. (2004). The impact of regulation on Financial Intermediation. *Financial Policy and Systems*, *November*, 1–64.

Gupta, S., Kushwaha, P. S., Badhera, U., Chatterjee, P., & Gonzalez, E. D. R. S. (2023). Identification of benefits, challenges, and pathways in E-commerce industries: An integrated two-phase decision-making model. *Sustainable Operations and Computers*. https://doi.org/10.1016/j.susoc.2023.08.005

Gutiérrez, P. A., Sánchez-monedero, J., Antonio, P., Member, S., & Javier, S. (2015). *Ordinal Regression Methods : Survey and Ordinal regression methods : survey and experimental study*. *03*(July), 01–21. https://doi.org/10.1109/TKDE.2015.2457911

Haddad, C., & Hornuf, L. (2019). The emergence of the global fintech market: economic and technological determinants. *Small Business Economics*. https://doi.org/10.1007/s11187-018-9991-x

Harasim, J. (2021). FinTechs, BigTechs and Banks—When Cooperation and When

Competition? *Journal of Risk and Financial Management*. https://doi.org/10.3390/jrfm14120614

Hardie, I., Howarth, D., Maxfield, S., & Verdun, A. (2013). Banks and the false dichotomy in the comparative political economy of finance. *World Politics*. https://doi.org/10.1017/S0043887113000221

Harsono[1], I., Ayu, I., & Suprapti[2], P. (2024). The Role of Fintech in Transforming Traditional Financial Services Peran Fintech dalam Transformasi Layanan Keuangan Tradisional. *Accounting Studies and Tax Journal (COUNT)*, *1*(1), 81–91.

Hasan, R., Hassan, M. K., & Aliyu, S. (2020). Fintech and Islamic Finance: Literature Review and Research Agenda. *International Journal of Islamic Economics and Finance (IJIEF)*. https://doi.org/10.18196/ijief.2122

Hazar, A., & Babuşcu, Ş. (2023). Financial Technologies: Digital Payment Systems and Digital Banking. Today's Dynamics. *Journal of Research, Innovation and Technologies (JoRIT)*, *2*, 162. https://doi.org/10.57017/jorit.v2.2(4).04

Heckel, M. (2023). *The Future of Financial Systems in the Digital Age Perspectives from Europe and Japan*.

Hendrikse, R. P., & Sidaway, J. D. (2014). Financial wizardry and the Golden City: Tracking the financial crisis through Pforzheim, Germany. *Transactions of the Institute of British Geographers*. https://doi.org/10.1111/tran.12024

Hew, D. (2002). *Singapore As a Regional Financial Centre*. *March*, 1–25.

Hoang Hai, Y., H., N., Vu, N., Nguyen, D., & Tran, L. (2024). Toward Successful Bank-Fintech Partnerships: Perspectives from Service Providers in an Emerging Economy. *Asian Social Science*, *17*, 19. https://doi.org/10.5539/ass.v17n6p19

Hopkinson, G., Klarova, D., Turcan, R., & Gulieva, V. (2019). *How neobanks' business models challenge traditional banks*.

Hornuf, L., & Schwienbacher, A. (2017). Should securities regulation promote equity crowdfunding? *Small Business Economics*, *49*(3), 579–593. https://doi.org/10.1007/s11187-017-9839-9

Horváth, D., & Szabó, R. Z. (2019). Driving forces and barriers of Industry 4.0: Do multinational and small and medium-sized companies have equal opportunities? *Technological Forecasting and Social Change*. https://doi.org/10.1016/j.techfore.2019.05.021

Huang, J., Jie, Y., & Wu, S. (2023). The Impact of Fintech on Economic Growth in Singapore. *Frontiers in Business, Economics and Management*, *10*(2), 330–340. https://doi.org/10.54097/fbem.v10i2.11066

Huff, W. G. (1989). Policy Options for the Singapore Economy. By Lim Chong Yah Singapore: McGraw-Hill Book Co., 1988. xvi, 499 pp. S$39.90. *The Journal of Asian Studies*. https://doi.org/10.2307/2058224

Huong, A. Y.-Z., Puah, C.-H., & Chong, M.-T. (2021). Embrace Fintech in ASEAN: A Perception Through Fintech Adoption Index. *Research in World Economy*. https://doi.org/10.5430/rwe.v12n1p1

Ichimiya, M., Muller-tabanera, H., Cantrell, J., Bingenheimer, J. B., Gerard, R., Hair, E. C., Donati, D., Rao, N., & Evans, W. D. (2023). *EvaluatioAguirre, E., Gallegos-García, G., García, M., Salinas, M., Torres, G., & Escamilla-Ambrosio, P. J. (2019). Anonymity and Privacy Security Scheme on Location Based Services. Computación y Sistemas, 23. https://doi.org/10.13053/cys-23-4-3291n of re*. *9*, 01–11. https://doi.org/10.1177/20552076231178430

Imam, T., McInnes, A., Colombage, S., & Grose, R. (2022). Opportunities and Barriers for FinTech in SAARC and ASEAN Countries. *Journal of Risk and Financial Management*. https://doi.org/10.3390/jrfm15020077

Indriasari, E., Prabowo, H., Gaol, F. L., & Purwandari, B. (2022). Intelligent Digital Banking Technology and Architecture: A Systematic Literature Review. *International Journal of Interactive Mobile Technologies*. https://doi.org/10.3991/ijim.v16i19.30993

Institute for State Effectiveness. (2011). Singapore: From Third World to First. *Citizen-Centered Approaches to State and Market*.

Ioannou, S., Wójcik, D., & Dymski, G. (2019). Too-Big-To-Fail: Why Megabanks Have Not Become Smaller Since the Global Financial Crisis? *Review of Political Economy*, *31*(3), 356–381. https://doi.org/10.1080/09538259.2019.1674001

Jain, V., Balakrishnan, A., Beeram, D., Najana, M., & Chintale, P. (2024). Leveraging Artificial Intelligence for Enhancing Regulatory Compliance in the Financial Sector. *International Journal of Computer Trends and Technology*, *72*, 124–140. https://doi.org/10.14445/22312803/IJCTT-V72I5P116

Janamolla, K. R. (2024). *The Rise and Impact of Neobanks on the Financial Sector*. *12*(12), 1–8. https://doi.org/10.17148/IJIREEICE.2024.121201

Javaid, M., Haleem, A., Singh, R. P., & Sinha, A. K. (2024). Digital economy to improve the culture of industry 4.0: A study on features, implementation and challenges. *Green Technologies and Sustainability*. https://doi.org/10.1016/j.grets.2024.100083

Javaid, M., Haleem, A., Singh, R. P., Suman, R., & Khan, S. (2022). A review of Blockchain Technology applications for financial services. In *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*. https://doi.org/10.1016/j.tbench.2022.100073

Jenweeranon, P. (2023). Digitalisation in Finance: Regulatory Challenges in Selected ASEAN Countries. *Banking & Finance Law Review*, *39*(3).

Johnson, G., Scholes, K. and Whittington, R. (2008). *Exploring Corporate Strategy: Text*

and Cases.

Josyula, H. P. (2021). THE ROLE OF FINTECH IN SHAPING THE FUTURE OF BANKING SERVICES. *The International Journal of Interdisciplinary Organizational Studies*, *16*, 187–201.

KALYTA, O., GORDIIENKO, T., & ERKES, O. (2024). Neobanking regulation. *Scientia Fructuosa*, *155*(3), 105–124. https://doi.org/10.31617/1.2024(155)07

Kamuangu, P. K. (2024). *Journal of Economics, Finance and Accounting Studies Advancements of AI and Machine Learning in FinTech Industry (2016-2020)*. 23–31. https://doi.org/10.32996/jefas

Kauffman, R. J., Hu, Y., & Ma, D. (2015). Will high-frequency trading practices transform the financial markets in the Asia Pacific Region ? *Financial Innovation*, 1–27. https://doi.org/10.1186/s40854-015-0003-8

Khadka, A. (2023). *The Impact of Digital Transformation on Customer Experience in the UK Banking Sector" A Case Study of Lloyds Bank*. https://doi.org/10.13140/RG.2.2.19508.01921

Khan, A., & Shireen, S. (2020). Drivers of financial and operational efficiency of MFIs: empirical evidences from Eastern Europe and Central Asia. *Benchmarking*. https://doi.org/10.1108/BIJ-11-2019-0515

Khan, H. H., Khan, S., & Ghafoor, A. (2023). Fintech adoption, the regulatory environment and bank stability: An empirical investigation from GCC economies. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2023.10.010

Khurshid, A., TAN, D. Y. K., & TAN, G. L. K. (2024). *Catalysing Growth: State of ASEAN University Innovation and Entrepreneurship: Report 2024*.

Kingdom, U., Mwai, A., Memba, F. S., & Njeru, A. (2018). *THE RELATIONSHIP BETWEEN ATM BANKING AND FINANCIAL DEEPENING OF COMMERCIAL*

BANKS IN KENYA. *VI*(12), 496–514.

Knoblauch, L. M. (2021). *Singapore: The Leading Hub of Asia's FinTech Industry*.

Kokh, L., & Kokh, Y. (2020). Banks and Fintech-companies: Who's Catching up with Whom. *ACM International Conference Proceeding Series*. https://doi.org/10.1145/3446434.3446533

Kotronoulas, G., Miguel, S., Dowling, M., Fernández-Ortega, P., Colomer-Lahiguera, S., Bağçivan, G., Pape, E., Drury, A., Semple, C., Dieperink, K. B., & Papadopoulou, C. (2023). An Overview of the Fundamentals of Data Management, Analysis, and Interpretation in Quantitative Research. *Seminars in Oncology Nursing*, *39*(2), 151398. https://doi.org/https://doi.org/10.1016/j.soncn.2023.151398

Kumari, A., & Devi, N. C. (2022). The Impact of FinTech and Blockchain Technologies on Banking and Financial Services. *Technology Innovation Management Review*. https://doi.org/10.22215/timreview/1481

Lai, K. P. Y. (2013). The Lehman Minibonds crisis and financialisation of investor subjects in Singapore. *Area*. https://doi.org/10.1111/area.12040

Lai, K. P. Y. (2020). *Singapore Connecting Asian Markets with Global Finance*. 154–181.

Lai, K. P. Y., & Daniels, J. A. (2015). Banking on finance in Singapore: The state-led financialization of banking firms. *GPN Working Paper Series. Global Production Networks Centre, Singapore, July*, 01–45.

Lai, K. P. Y., & Daniels, J. A. (2017). Financialization of Singaporean Banks and the Production of Variegated Financial Capitalism. In *Money and Finance After the Crisis*. https://doi.org/10.1002/9781119051374.ch9

Lai, K. P. Y., & Tan, C. H. (2015). "Neighbours First, Bankers Second": Mobilising financial citizenship in Singapore. *Geoforum*. https://doi.org/10.1016/j.geoforum.2015.05.023

Lakens, D. (2022). Sample Size Justification. In *Collabra: Psychology*. https://doi.org/10.1525/collabra.33267

Langley, P. (2006). The making of investor subjects in Anglo-American pensions. *Environment and Planning D: Society and Space*. https://doi.org/10.1068/d405t

Latkovska, T. (2019). The current state and topical issues of the public financial system. *Lex Portus*, *4*. https://doi.org/10.26886/2524-101X.4.2019.3

LEE, David K. C., K. F. P. (2014). *Singapore's Financial Market: Challenges and Future Prospects*.

Lee, D. K. C. (2014). Financial Market : Challenges and Future Prospects. *Handbook of Asian Finance: Financial Markets and Sovereign Wealth Funds*, *2014*, 171–194.

Leong, E. (2020). Open Banking: The Changing Nature of Regulating Banking Data - A Case Study of Australia and Singapore. *Banking & Finance Law Review*.

Luo, C., Fan, S., & Zhang, Q. (2017). Investigating the Influence of Green Credit on Operational Efficiency and Financial Performance Based on Hybrid Econometric Models. *International Journal of Financial Studies*, *5*(4), 27. https://doi.org/10.3390/ijfs5040027

Lye, J. J. (2011). Scholarly commons the practice of private wealth management in Singapore. *The Practice of Private Wealth Management in Singapore*.

Mah-Hui, M., & Maru, J. (2010). Financial Liberalization and the Impact of the Financial Crisis on Singapore. In *TWN Global Economy Series* (Vol. 9, Issue 4).

Martin, R. (2003). Financialization of daily life. *Choice Reviews Online*, *40*(09), 40-5307-40–5307. https://doi.org/10.5860/CHOICE.40-5307

MAS. (2012). *Consultation Paper on Proposed Amendments to the Securities and Futures Act and the Financial Advisers Act*. 01–09.

Maysami, R. C., & Tan, S. (2003). *The Monetary Authority of Singapore: its establishment,*

growth and changing role. 02–14.

Mergel, I. (2012). OpenCollaboration in Public Sector: The case of social codign on Github. *Government Information Quarterly*.

Milliman. (2013). *Recommendations of the Financial Advisory Industry Review Panel in Singapore 1 . Raising the competence of financial advisory representatives 2 . Raising the quality of financial advisory firms 3 . Making financial advice a dedicated service*. 2011–2013.

Mirahmedov, J., Uzsanoatkurilishbank, ", Jcb, ", Bank, A., & Center, S. (2024). *Innovation Junction: Collaborative Solutions At the Intersect Singapore Experience of Banking Services*. *January*, 71–74.

Mohapatra, S. (2012). *IT and Porter's Competitive Forces Model and Strategies*. https://doi.org/10.1007/978-1-4419-6108-2_14

Monetary Authority of Singapore. (2023). *Finanicial Stability Review*.

Monis, E., & Pai, R. (2023). Neo Banks: A Paradigm Shift in Banking. *International Journal of Case Studies in Business, IT, and Education*, *7*(2), 318–332. https://doi.org/10.47992/ijcsbe.2581.6942.0275

MUHUNI, N., & Ouma, C. (2024). Influence of Innovation Approach on Competitive Structure of Tier 1 Commercial Banks in Kenya. *Kabarak Journal of Research & Innovation*, *14*, 44–60. https://doi.org/10.58216/kjri.v14i01.380

Murinde, V., Rizopoulos, E., & Zachariadis, M. (2022). The impact of the FinTech revolution on the future of banking: Opportunities and risks. *International Review of Financial Analysis*. https://doi.org/10.1016/j.irfa.2022.102103

Musabegovic, I., Djukovic, S., Jovanovic, S., & Technology, F. (2019). *INFLUENCE OF FINANCIAL TECHNOLOGY (FINTECH)*. 1003–1022. https://doi.org/10.5937/ekoPolj1904003M

Neil Lee, Metta Ni, A. B. (2024). *The Scale-up State: Singapore's Industrial Policy for the Digital Economy*.

Nguyen, T., Tripe, D., & Ngo, T. (2018). Operational efficiency of bank loans and deposits: A case study of vietnamese banking system. *International Journal of Financial Studies*. https://doi.org/10.3390/ijfs6010014

Nguyen Van Tuan, N. A. T. (2016). *CORPORATE GOVERNANCE STRUCTURES AND PERFORMANCE OF FIRMS IN ASIAN MARKETS: A COMPARATIVE ANALYSIS BETWEEN SINGAPORE AND VIETNAM*.

Nkatekho, B. (2024). The Impact of Fintech Innovations on Traditional Banking Systems. *International Journal of Finance*, *9*, 48–61. https://doi.org/10.47941/ijf.2116

Nurbaev Cheuk Hang Au Chih-Yuan Chou, V. (2022). Exploring the Critical Success Factors of Different Types of FinTech: A Beginning Case of Neobank. *Diffusion Interest Group in Information Technology (DIGIT)*.

Odai, B., Mohammed, M., Alaaba, B., Alhassan, S., & Fuseinii, M. (2023). *The Effect of Social Media Advertisement on Brand Awareness and Purchase Intention on Home Solar Products (A Case of Peg Ghana Solar Limited)* (pp. 123–143). https://doi.org/10.1007/978-981-19-9888-1_10

On-Piu Chan, J. (2020). Digital Transformation in the Era of Big Data and Cloud Computing. *International Journal of Intelligent Information Systems*. https://doi.org/10.11648/j.ijiis.20200903.11

Onunka, T., Raji, A., Nkemchor Osafiele, A., Daraojimba, C., Afeyokalo Egbokhaebho, B., & Chinazo Okoye, C. (2023). BANKING: A COMPREHENSIVE REVIEW OF THE EVOLUTION AND IMPACT OF INNOVATIVE BANKING SERVICES ON ENTREPRENEURIAL GROWTH. *Economic Growth and Environment Sustainability*, *2*(2), 66–78. https://doi.org/10.26480/egnes.02.2023.66.78

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2017.12.003

Pandey, M. K., Mittal, M., & Subbiah, K. (2021). Optimal balancing & efficient feature ranking approach to minimize credit risk. *International Journal of Information Management Data Insights*, *1*(2), 100037. https://doi.org/10.1016/j.jjimei.2021.100037

Papathomas, A., & Konteos, G. (2024). Financial institutions digital transformation: the stages of the journey and business metrics to follow. *Journal of Financial Services Marketing*, *29*(2), 590–606. https://doi.org/10.1057/s41264-023-00223-x

Paul, M., Maglaras, L., Ferrag, M. A., & Almomani, I. (2023). Digitization of healthcare sector: A study on privacy and security concerns. In *ICT Express*. https://doi.org/10.1016/j.icte.2023.02.007

Pilipinas, B. S. ng. (2022). *Strategies and Initiatives on Digital Financial Inclusion: Lessons from Experiences of APEC Economies Finance Ministers' Process*. *December*, 1–56.

Pio, P. G. C., Sigahi, T., Rampasso, I. S., Satolo, E. G., Serafim, M. P., Quelhas, O. L. G., Leal Filho, W., & Anholon, R. (2024). Complaint management: comparison between traditional and digital banks and the benefits of using management systems for improvement. *International Journal of Productivity and Performance Management*. https://doi.org/10.1108/IJPPM-08-2022-0430

Planellas, M., & Muni, A. (2019). Porter's Five Forces. In *Strategic Decisions*. https://doi.org/10.1017/9781108665797.015

Polat, A., Shahbaz, M., Rehman, I. U., & Satti, S. L. (2015). Revisiting linkages between financial development, trade openness and economic growth in South Africa: fresh evidence from combined cointegration test. *Quality and Quantity*.

https://doi.org/10.1007/s11135-014-0023-x

Poon, J. P. H. (2021). Regulating the global illicit economy: Singapore's role in United States' spatial financial surveillance. *Political Geography*. https://doi.org/10.1016/j.polgeo.2021.102493

Porter, M. E. (1989). How Competitive Forces Shape Strategy. In *Readings in Strategic Management*. https://doi.org/10.1007/978-1-349-20317-8_10

Prodanova, N., & Bondarenko, T. (2023). The Modern Market of Neo Banks and their Role of Fintech Companies' Financing. *Cadernos de Educação, Tecnologia e Sociedade*, *16*(4), 1238–1247. https://doi.org/10.14571/brajets.v16.n4.1238-1247

PwC. (2019). Global Fintech Report 2019. *PwC Global Fintech Report*.

PWC. (2023). *Digital Banking Survey 2023: Southeast Asia landscape*. PWC.

Rafiul Azim Jowarder. (2024). Navigating digital transformation in financial services: Strategic management: concepts and cases for sustainable growth and innovation. *World Journal of Advanced Engineering Technology and Sciences*, *13*(1), 319–329. https://doi.org/10.30574/wjaets.2024.13.1.0420

Raiblev, M. (2013). *Industrial Organization theory and its contribution to decision-making in purchasing*.

Raja, C., Manickam, R., Nanjundan, P., & Rajamanickam, J. (2024). *Industrial Engineering Using IBM SPSS Statistics*. 35–47. https://doi.org/10.46632/jeae/2/3/4

Ramavarapu, K. K. (2023). *Unleashing the Power of Cloud Computing in Financial Services : Enabling Unleashing the Power of Cloud Computing in Financial Services : Enabling Security Compliance and Innovation*. *December*, 2–5. https://doi.org/10.13140/RG.2.2.18460.26243

Rane, N. (2023). Enhancing Customer Loyalty through Artificial Intelligence (AI), Internet of Things (IoT). *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4616051

Ridzuan, A. R., Saad, R. M., Subramaniam, G., Amin, S. M., & Borhan, H. (2019). The link between financial sector development and income distribution: Evidence from Singapore. *International Journal of Business and Society*, *20*(2), 627–640.

Rupeika-Apoga, R., & Thalassinos, E. I. (2020). Ideas for a regulatory definition of FinTech. *International Journal of Economics and Business Administration*. https://doi.org/10.35808/ijeba/448

Samuel Onimisi Dawodu, Adedolapo Omotosho, Odunayo Josephine Akindote, Abimbola Oluwatoyin Adegbite, & Sarah Kuzankah Ewuga. (2023). CYBERSECURITY RISK ASSESSMENT IN BANKING: METHODOLOGIES AND BEST PRACTICES. *Computer Science & IT Research Journal*, *4*(3), 220–243. https://doi.org/10.51594/csitrj.v4i3.659

Sardar, S., & Anjaria, K. (2023). THE FUTURE OF BANKING: HOW NEO BANKS ARE CHANGING THE INDUSTRY. *International Journal of Management, Public Policy and Research*. https://doi.org/10.55829/ijmpr.v2i2.153

Schepinin, V., & Bataev, A. (2019). Digitalization of financial sphere: Challenger banks efficiency estimation. *IOP Conference Series: Materials Science and Engineering*. https://doi.org/10.1088/1757-899X/497/1/012051

Schwartz, H., & Seabrooke, L. (2008). Varieties of Residential Capitalism in the International Political Economy: Old Welfare States and the New Politics of Housing. *Comparative European Politics*. https://doi.org/10.1057/cep.2008.10

Sehrawat, M., & Giri, A. K. (2018). The impact of financial development, economic growth, income inequality on poverty: evidence from India. *Empirical Economics*. https://doi.org/10.1007/s00181-017-1321-7

Shahrokhi, M. (2017). *E-finance : status , innovations , resources and future challenges* (Issue May 2008). https://doi.org/10.1108/03074350810872787

Shaikh, I., & Anwar, M. (2023). Digital bank transactions and performance of the Indian banking sector. *Applied Economics*. https://doi.org/10.1080/00036846.2022.2094880

Shanti, R., Siregar, H., & Zulbainarni, N. (2024). *Revolutionizing Banking : Neobanks ' Digital Transformation for Enhanced Efficiency*.

Shao, S., Yang, Z., & Si, W. (2023). An analysis of logistics financing prospects in Singapore. *SHS Web of Conferences*, *163*, 03032. https://doi.org/10.1051/shsconf/202316303032

Sharma, S. (2024). Digital Disruption in Banking: A Comparative Analysis of Neo Banks and Traditional Institutions. *International Journal of Management and Development Studies*, *13*(3), 01–12. https://doi.org/10.53983/ijmds.v13n3.001

Singh, V., Chen, S. S., Singhania, M., Nanavati, B., kar, A. kumar, & Gupta, A. (2022). How are reinforcement learning and deep learning algorithms used for big data based decision making in financial industries–A review and research agenda. In *International Journal of Information Management Data Insights*. https://doi.org/10.1016/j.jjimei.2022.100094

Sipakoly, S. (2024). *Impact of Government Policies on Entrepreneurial Ecosystems: A Comparative Analysis of Developing and Developed Economies*.

Slabá, M. (2020). The impact of age on the customers buying behaviour and attitude to price. *Littera Scripta*, *12*(2), 01–14. https://doi.org/10.36708/Littera_Scripta2019/2/11

Slater, S. F., & Olson, E. M. (2002). A fresh look at industry and market analysis. *Business Horizons*, *45*(1), 15–22. https://doi.org/10.1016/S0007-6813(02)80005-2

Stability, F., & Institute. (2020). Policy responses to fintech: a cross-country overview. *Bank for International Settlements*.

Suprun, A., Petrishina, T., & Vasylchuk, I. (2020). Competition and cooperation between

fintech companies and traditional financial institutions. *E3S Web of Conferences*, *166*, 13028. https://doi.org/10.1051/e3sconf/202016613028

Suthar, D. K., Negussie, D., Vaghela, J., Parmar, N., & Rahevar, M. (2024). Unveiling Multifaceted Impacts Of Crowdfunding In Finance, Innovation, And Sustainability– Systematic Literature Review. *Educational Administration: Theory and Practice*, *30*(5), 10551–10564. https://doi.org/10.53555/kuey.v30i5.4781

Talpur, A. B. (2023). Market power and concentration-performance analysis of the banking sector: A comparative study of Singapore and Pakistan. *Social Sciences and Humanities Open*. https://doi.org/10.1016/j.ssaho.2022.100383

Temelkov, Z. (2020). *DIFFERENCES BETWEEN TRADITIONAL BANK MODEL AND FINTECH BASED DIGITAL BANK AND NEOBANKS MODELS*.

Thomsett Michael. (2020). Disruptions and Digital Banking Trends. *Journal of Applied Finance & Banking*, *10*(6), 1792–6599.

Truong, N. H. (2024). *A Literature Review on the Development of Fintech in Southeast Asia*.

Ulrich-Diener, F., & Spacek, M. (2021). Digital Transformation in Banking: A Managerial Perspective on Barriers to Change. *Sustainability*, *13*, 2032. https://doi.org/10.3390/su13042032

Vaganova, O. (2021). *Growth Points Of Fintech Industry In The Perception Of Financial Market Transformation*. https://doi.org/10.15405/epsbs.2021.03.54

van der Zwan, N. (2014). Making sense of financialization. *Socio-Economic Review*. https://doi.org/10.1093/ser/mwt020

Wang, Y. (2021). The Exploration of Blockchain Technology in Supply Chain Finance. *Academic Journal of Business & Management*, *3*(2), 20–23. https://doi.org/10.25236/AJBM.2021.030204

Wang, Y., Xiuping, S., & Zhang, Q. (2021). Can fintech improve the efficiency of commercial banks? —An analysis based on big data. *Research in International Business and Finance*. https://doi.org/10.1016/j.ribaf.2020.101338

Wewege, L., & Thomsett, M. C. (2019). The digital banking revolution: How fintech companies are transforming the retail banking industry through disruptive financial innovation. In *The Digital Banking Revolution: How Fintech Companies are Transforming the Retail Banking Industry Through Disruptive Financial Innovation*. https://doi.org/10.1515/9781547401598

Williams, K. (2000). From shareholder value to present-day capitalism. *Economy and Society*. https://doi.org/10.1080/030851400360532

Winasis, S., Wildan, U., & Sutawidjaya, A. H. (2020). Impact of digital transformation on employee engagement influenced by work stress on indonesian private banking sector. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 1238–1250.

Wojtera, A. (2013). The foreign dimension of Singapore's economic growth. *Norges Handleshoyskole*, 21.

Woo, J. J. (2016). Singapore as an International Financial Centre. In *Singapore as an International Financial Centre*. https://doi.org/10.1057/978-1-137-56911-0

Wu, Z., Pathan, S., & Zheng, C. (2024). FinTech adoption in banks and their liquidity creation. *The British Accounting Review*, 101322. https://doi.org/https://doi.org/10.1016/j.bar.2024.101322

Xu, M., David, J. M., & Kim, S. H. (2018). The fourth industrial revolution: Opportunities and challenges. *International Journal of Financial Research*. https://doi.org/10.5430/ijfr.v9n2p90

Yang, J. (2024). *Harnessing FinTech for Sustainable Finance in Developing Countries :*

An Integrated SWOT – Multi-Level Perspective Analysis of Mongolia.

Yunus, U. (2019). A Comparison Peer to Peer Lending Platforms in Singapore and Indonesia. *Journal of Physics: Conference Series*. https://doi.org/10.1088/1742-6596/1235/1/012008

Zulaikha, S., Mohamed, H., Kurniawati, M., Rusgianto, S., & Rusmita, S. (2020). CUSTOMER PREDICTIVE ANALYTICS USING ARTIFICIAL INTELLIGENCE. *The Singapore Economic Review*, 1–12. https://doi.org/10.1142/S0217590820480021

APPENDIX A:

DATASET

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How do	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
2	4	1	1	5	5	7	6	4	2	4	4	4	4	4	4	5	5	5	5	5	4	4	5
3	4	1	1	5	5	2	4	2	2	4	4	4	5	4	4	5	5	5	4	5	5	5	3
4	4	1	1	5	4	2	1	4	2	4	4	4	4	4	4	4	5	5	5	5	5	5	3
5	5	1	2	3	2	1	6	6	2	4	4	4	4	4	3	5	4	5	4	5	2	4	4
6	3	1	1	5	5	6	6	2	1	5	5	4	5	5	5	4	5	4	5	5	4	4	5
7	4	1	1	5	5	2	6	4	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8	3	1	1	5	5	2	4	2	3	4	4	4	4	4	5	4	4	4	5	4	4	4	5
9	5	1	1	5	5	7	5	6	3	5	3	4	5	4	4	3	5	4	3	5	4	4	5
10	4	2	1	5	5	7	5	4	2	5	5	5	5	5	5	5	5	5	5	5	5	5	3
11	3	2	1	5	5	7	6	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5
12	3	1	1	5	5	7	6	2	1	3	3	3	3	3	3	4	4	3	3	3	3	3	5
13	4	2	1	5	5	3	4	2	3	4	5	5	4	4	4	4	5	5	4	4	4	5	1
14	4	1	1	5	5	7	4	5	1	4	4	3	4	4	5	3	4	5	4	3	4	4	5
15	4	1	1	5	5	7	4	5	1	5	5	5	4	4	5	4	5	5	4	4	4	5	2
16	3	1	1	5	5	7	6	5	1	5	4	4	5	5	5	4	5	5	5	5	5	5	5
17	3	2	1	5	5	3	4	4	2	3	4	3	4	4	5	4	4	3	4	4	4	5	5
18	2	1	1	5	2	3	2	2	2	4	5	5	5	4	4	4	5	4	4	5	4	4	2
19	2	2	1	5	5	3	3	5	3	3	5	5	4	5	4	3	5	5	5	5	5	5	5
20	3	1	2	4	5	2	4	6	2	5	5	4	4	4	3	3	4	4	4	4	4	4	5
21	5	1	1	5	5	7	4	5	1	5	3	3	5	5	5	5	5	5	5	5	5	5	5
22	4	2	1	5	5	4	1	5	1	4	5	5	4	4	4	5	5	5	5	4	5	5	4
23	4	1	1	5	5	5	6	4	2	3	3	5	5	5	4	4	5	5	5	5	3	4	5
24	3	2	1	5	5	3	4	5	1	2	2	2	2	2	2	2	2	2	2	2	2	2	5
25	4	2	1	5	5	1	5	6	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How do	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
26	4	1	2	5	1	7	6	4	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5
27	4	1	2	5	5	7	6	4	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	2	1	1	5	5	3	6	3	1	5	5	5	5	5	4	5	5	5	5	5	5	5	3
29	3	2	1	5	5	1	5	5	1	4	4	4	4	4	4	4	5	5	4	4	4	5	5
30	4	1	1	5	5	3	4	5	1	4	4	3	3	3	4	4	4	4	3	3	3	3	2
31	4	1	1	5	5	7	4	5	2	2	2	2	2	3	2	2	2	3	2	3	2	2	5
32	4	1	2	5	5	1	6	6	2	4	4	3	4	5	4	4	5	5	4	4	4	5	5
33	4	1	2	5	5	3	4	2	2	5	4	4	4	4	3	4	4	4	4	4	5	4	5
34	3	1	1	5	5	7	4	4	2	5	3	5	5	5	4	4	2	4	4	5	4	5	5
35	3	2	1	4	5	7	6	5	2	5	5	5	5	4	4	5	5	4	4	3	4	4	5
36	4	1	2	5	5	3	4	4	2	1	5	5	5	5	1	4	5	5	5	5	3	5	5
37	4	1	1	5	5	7	4	4	2	5	5	4	5	5	5	5	5	5	5	5	5	5	5
38	4	1	2	5	2	2	4	1	2	5	5	5	5	5	5	5	5	5	5	5	5	5	2
39	4	1	2	5	5	2	6	4	2	5	5	5	5	5	5	5	5	5	5	5	5	5	1
40	4	1	1	5	5	7	6	2	2	5	5	5	5	5	5	4	5	5	5	5	5	5	5
41	4	1	1	5	2	1	5	6	1	4	5	4	5	4	5	3	5	5	3	3	4	4	2
42	4	1	1	5	5	7	4	5	1	4	4	4	4	4	4	3	4	3	3	4	4	5	5
43	3	1	1	5	3	3	4	2	3	5	5	5	5	5	5	5	5	5	4	5	3	5	1
44	5	1	1	5	5	7	4	4	2	4	5	4	5	4	5	5	5	5	4	3	4	4	5
45	3	2	1	5	5	7	2	5	1	5	5	5	5	5	5	5	5	4	5	5	4	3	3
46	2	1	1	5	5	6	4	4	2	3	5	2	4	3	1	3	4	3	4	5	2	3	1
47	3	1	1	5	5	7	4	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	2
48	4	1	2	5	4	1	4	4	2	3	3	4	4	5	3	2	3	4	4	3	1	3	2
49	4	2	2	4	3	2	5	2	2	2	2	2	3	3	4	1	4	4	2	2	1	2	2
50	4	1	1	1	5	7	6	6	2	1	1	2	1	3	2	1	2	2	2	2	1	2	5
51	1	2	1	3	5	7	6	6	2	1	1	2	2	2	3	1	2	2	2	2	1	2	5
52	1	1	2	2	2	7	5	4	2	2	2	2	2	2	2	1	4	2	1	2	1	2	1
53	2	2	2	1	1	7	4	6	3	1	2	1	3	1	3	1	3	3	3	2	1	2	3
54	3	2	1	4	3	6	4	2	3	2	1	3	1	3	2	1	3	3	3	3	1	2	3
55	2	2	2	1	1	3	5	4	2	2	3	2	3	2	3	1	3	3	2	2	1	2	2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How do	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
56	3	1	2	2	2	1	4	4	1	1	2	1	2	2	2	1	2	2	2	2	1	2	2
57	2	2	2	2	1	3	4	4	2	1	1	1	1	1	2	1	2	2	2	3	1	2	2
58	5	2	1	1	2	1	4	5	2	1	1	1	3	3	1	1	2	1	3	3	1	2	4
59	2	2	2	1	4	3	1	4	2	1	2	2	2	2	3	1	3	2	2	3	1	3	3
60	4	2	1	1	2	1	4	5	2	1	2	1	2	2	2	1	2	1	4	2	2	2	1
61	2	1	1	1	2	1	5	4	1	1	2	2	2	2	2	1	2	2	2	3	1	1	2
62	1	2	1	1	3	6	4	2	2	1	2	2	2	2	3	1	3	3	2	4	1	3	2
63	4	2	1	1	4	6	4	5	2	1	2	3	2	2	2	2	2	3	3	4	1	2	3
64	3	1	3	2	3	6	1	4	2	2	1	3	3	2	4	1	3	4	3	4	1	3	3
65	3	2	2	2	4	7	5	2	2	1	2	2	2	2	2	2	2	2	2	2	1	3	4
66	2	1	2	2	4	2	4	4	2	2	3	2	3	2	3	1	3	5	2	3	1	4	2
67	1	2	1	1	3	6	1	2	3	3	2	3	2	4	2	1	3	3	2	2	1	3	3
68	1	2	2	3	4	1	2	6	2	1	2	3	4	5	4	1	5	5	3	4	1	3	3
69	5	2	1	4	4	6	5	2	2	4	2	3	2	3	2	2	3	2	3	4	3	3	3
70	2	2	1	2	2	6	1	2	2	3	4	2	3	4	2	1	5	4	3	4	2	3	2
71	3	1	2	2	2	6	5	2	2	1	3	3	3	3	2	1	4	4	2	3	4	1	3
72	3	2	1	1	1	6	4	2	3	2	3	2	4	4	2	1	3	3	2	4	1	4	2
73	5	1	2	2	3	1	4	4	2	2	3	3	3	3	2	2	3	2	3	3	1	3	2
74	4	1	2	1	4	7	4	2	2	2	3	3	3	3	2	2	4	4	5	2	1	4	2
75	4	1	1	2	1	1	4	2	2	3	2	4	2	4	2	1	4	4	3	3	2	5	2
76	3	2	1	2	3	1	2	5	1	2	3	3	2	4	3	1	4	3	2	4	1	4	2
77	3	1	1	2	1	1	4	2	1	1	3	2	2	3	3	1	5	2	5	5	1	4	3
78	2	1	2	1	2	3	4	2	2	2	3	2	3	3	2	1	4	3	3	3	2	3	3
79	3	2	2	3	3	1	4	6	2	2	3	2	3	3	3	1	4	3	4	3	2	3	3
80	3	2	2	2	2	6	4	2	3	4	3	4	3	4	3	2	3	2	3	3	2	3	3
81	3	2	2	2	1	6	5	2	2	2	2	2	3	4	2	1	4	2	4	3	1	4	2
82	3	1	1	1	2	6	4	2	2	1	2	3	2	2	2	2	3	2	3	2	2	3	3
83	2	1	1	1	1	3	5	2	2	2	3	2	3	4	2	1	3	3	3	3	1	4	3
84	1	2	1	2	3	1	4	4	2	2	3	2	3	3	2	2	3	2	3	3	2	2	2
85	3	1	2	2	4	6	1	2	3	2	2	3	3	3	3	1	3	3	3	3	2	3	4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How d	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
86	2	2	2	1	1	7	2	6	2	2	2	3	2	3	3	1	4	3	3	3	2	3	3
87	4	2	2	3	3	7	5	2	1	3	2	3	2	3	3	2	3	3	3	3	2	2	3
88	3	2	2	3	3	6	5	2	2	2	3	2	3	3	2	3	2	3	2	2	2	3	3
89	4	1	2	2	4	7	5	6	3	2	3	2	2	3	3	1	3	2	3	3	1	3	4
90	2	2	2	2	5	7	1	6	3	2	2	3	4	3	3	2	3	3	3	3	1	3	5
91	4	1	2	3	4	6	4	2	3	2	2	2	3	2	2	2	2	3	2	3	2	3	3
92	3	1	2	1	4	6	4	4	1	3	3	2	3	2	3	2	3	2	3	3	2	2	3
93	4	1	2	1	3	6	4	6	3	2	3	2	3	3	3	2	4	2	3	3	2	3	4
94	4	1	2	1	3	6	5	6	3	2	2	2	2	2	2	2	2	1	2	2	3	3	3
95	4	1	2	4	3	3	5	2	3	2	2	3	3	2	3	2	4	4	2	4	2	3	3
96	3	2	2	1	3	7	6	4	2	3	3	2	3	2	2	1	3	3	2	3	2	2	4
97	1	2	2	2	4	6	5	4	2	2	3	3	3	4	3	2	2	2	3	2	2	2	3
98	2	1	2	1	3	7	4	5	2	2	2	3	2	3	2	2	3	3	3	2	1	2	3
99	3	1	2	2	4	6	5	2	2	2	2	3	2	3	2	2	4	2	5	2	2	4	3
100	1	2	1	2	1	6	5	4	2	2	2	2	2	3	1	1	3	3	3	3	2	4	4
101	1	1	2	1	1	7	1	2	3	2	2	2	2	2	2	3	2	4	2	4	4	2	3
102	3	2	2	1	3	7	6	5	1	1	3	2	2	3	2	2	2	3	3	2	2	3	2
103	3	2	1	1	1	1	5	4	1	2	3	2	2	3	2	2	2	3	2	3	2	2	3
104	4	2	2	1	3	6	5	4	2	2	3	3	3	3	3	1	4	4	3	3	2	2	4
105	1	2	2	1	3	6	2	2	2	2	3	2	2	3	2	3	3	2	3	3	2	2	3
106	3	2	2	2	3	1	1	2	3	2	2	3	2	3	2	2	3	3	3	4	1	3	4
107	1	2	2	2	3	1	5	6	3	2	2	2	2	2	4	1	4	2	3	5	1	4	3
108	3	1	2	2	4	6	4	2	3	2	2	2	2	2	2	2	3	2	3	3	1	3	3
109	3	1	1	1	4	7	5	4	2	2	2	4	3	3	3	1	5	4	2	4	3	4	3
110	1	1	2	3	3	3	1	2	2	2	3	2	3	2	3	1	4	1	4	3	2	3	3
111	2	2	1	3	3	1	5	4	2	2	3	2	3	2	3	2	4	3	2	4	3	2	3
112	1	2	2	4	3	6	1	4	2	3	2	3	2	3	2	2	3	2	4	3	1	3	2
113	4	2	2	2	3	1	2	2	3	2	3	2	3	4	3	2	2	2	3	4	2	4	3
114	3	2	1	2	3	1	4	2	2	2	3	2	3	3	3	2	3	3	3	3	3	4	4
115	1	2	2	3	4	1	2	4	2	1	3	2	4	2	3	2	3	3	3	2	2	2	4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How d	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
116	4	2	2	2	4	1	1	2	2	2	3	2	4	2	4	4	2	4	3	3	4	2	3
117	4	2	1	3	4	2	1	2	2	2	3	2	2	2	4	2	3	3	4	3	4	3	3
118	3	1	2	2	4	2	5	2	2	2	4	2	4	2	4	2	4	2	4	2	3	2	4
119	3	1	2	4	4	1	1	2	2	2	3	2	3	4	2	2	3	2	3	2	3	2	4
120	3	2	2	2	2	2	5	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2
121	4	1	1	2	3	2	1	2	2	3	2	4	2	4	2	2	4	3	3	4	2	4	3
122	3	1	2	3	3	1	5	2	2	2	3	2	2	2	3	2	3	3	2	4	2	3	4
123	1	1	1	3	3	2	1	2	2	3	2	3	2	3	2	3	2	4	3	4	3	3	4
124	4	2	2	3	3	1	4	2	2	2	3	3	3	2	2	3	2	4	3	2	3	2	3
125	4	2	2	1	3	2	1	2	2	1	2	3	3	2	4	3	2	4	3	2	3	3	3
126	4	2	1	4	4	2	1	2	2	2	3	2	3	2	3	3	3	2	4	3	4	2	3
127	4	2	2	3	4	1	5	2	2	2	2	3	2	3	2	3	2	4	2	3	3	3	3
128	4	2	2	3	3	1	1	4	2	2	3	2	4	3	4	2	4	2	3	2	3	2	4
129	3	1	2	3	3	6	1	4	2	2	3	2	3	3	2	2	2	4	3	3	3	3	4
130	3	1	2	2	4	2	2	2	2	2	3	3	2	4	2	3	2	3	2	3	2	3	3
131	4	2	1	2	2	7	2	4	1	2	2	4	2	3	2	3	2	3	2	4	3	3	3
132	3	2	2	2	1	6	5	2	2	2	2	3	2	3	3	3	2	3	2	3	2	3	3
133	1	2	2	2	3	6	1	2	2	3	3	2	3	2	3	1	4	2	3	2	2	3	1
134	3	2	2	2	3	7	1	2	2	2	3	2	3	2	3	2	2	2	3	2	2	3	4
135	2	1	1	2	4	2	1	2	2	2	3	2	3	2	3	2	3	2	3	2	2	3	3
136	3	2	2	3	3	2	5	6	3	3	2	2	3	3	3	2	2	2	3	3	2	3	3
137	3	1	1	2	3	6	5	2	2	3	2	3	2	4	2	3	2	3	2	4	2	3	3
138	3	1	2	2	3	1	1	2	2	3	2	3	2	3	2	3	2	3	2	3	3	2	3
139	3	2	2	3	4	3	5	4	2	3	2	3	2	3	3	2	3	2	3	2	3	2	3
140	4	2	2	3	4	1	5	2	2	2	3	2	4	3	2	2	3	2	3	2	4	2	2
141	3	1	1	2	3	2	1	2	2	4	3	3	2	3	2	2	4	2	3	2	2	3	3
142	4	2	1	3	3	2	1	2	2	4	3	3	2	3	2	3	2	3	3	2	2	3	3
143	3	2	1	3	3	2	1	2	2	2	3	2	3	2	3	2	2	4	2	4	3	3	3
144	1	2	2	3	3	2	1	2	3	2	3	2	4	2	4	2	3	2	4	2	4	4	3
145	2	1	2	3	3	3	5	2	2	3	2	3	2	3	2	2	4	2	3	2	3	2	3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	Please	Please	Your p	How m	What a	What d	Which	How d	Overall	Traditio	Traditio	Traditio	Unders	Partner	Digital M	Investin	Training	Focusin	Diversif	It is extr	A comp	Custom	Without
146	4	2	1	2	1	7	2	2	2	4	3	3	2	4	2	4	2	4	2	4	4	2	3
147	3	1	2	3	3	2	5	2	2	3	2	3	2	3	3	3	2	3	3	3	3	2	3
148	4	1	2	2	3	6	5	4	2	3	2	3	2	4	2	3	3	3	3	3	3	3	3
149	4	2	2	2	5	2	1	2	3	2	3	2	3	3	2	3	2	4	3	2	3	2	3
150	4	1	2	2	3	1	5	6	1	3	2	4	2	3	2	2	3	2	3	2	4	5	3
151	4	1	1	3	3	2	1	2	1	2	3	2	3	2	3	3	2	3	2	3	3	2	3
152	3	2	2	3	4	6	1	2	2	3	2	3	2	4	2	3	2	3	2	3	2	4	4
153	4	1	2	2	3	2	5	2	2	2	3	3	2	3	2	3	2	3	2	3	2	3	3
154	3	2	2	2	3	6	5	2	2	3	2	3	2	3	2	2	4	2	3	3	3	2	3
155	3	1	2	3	3	1	4	2	2	2	2	3	2	3	2	2	3	2	3	2	2	2	4
156	2	1	1	3	3	3	1	4	2	3	2	3	2	3	2	2	2	4	3	2	2	1	3
157	4	1	1	2	1	6	5	4	3	4	2	3	2	4	3	2	5	3	4	4	4	3	2
158	2	1	1	2	3	2	5	2	2	2	3	3	2	4	3	3	3	4	4	3	2	3	2
159	4	2	1	2	1	1	4	2	2	3	2	3	2	4	2	3	3	2	4	3	4	3	3
160	3	2	2	4	1	3	5	2	2	3	2	4	2	3	3	1	4	3	4	3	3	2	2
161	2	2	2	2	3	6	5	2	2	2	2	4	2	3	3	2	2	3	3	2	3	3	3
162	3	1	2	2	1	6	5	2	2	2	2	3	2	3	2	3	2	3	2	3	3	2	3
163	3	1	2	2	1	7	5	2	2	2	3	2	3	2	3	2	2	2	3	3	3	2	2
164	3	1	2	2	3	3	4	2	2	2	3	2	3	3	2	3	2	3	2	3	4	4	3
165	3	1	1	2	3	2	5	2	2	4	2	4	2	4	2	3	2	4	2	4	3	3	3
166	2	1	1	2	3	1	5	2	2	2	3	3	2	3	2	3	2	4	2	3	2	3	4
167	1	1	2	2	3	1	5	2	2	2	4	3	3	2	3	2	4	3	4	3	2	4	3
168	3	2	2	2	1	7	1	2	2	2	2	4	2	4	4	3	4	4	2	1	3	2	3
169	3	1	1	3	1	1	5	2	2	3	2	3	2	4	3	2	4	2	4	3	3	4	3
170	3	2	2	2	1	6	2	2	2	3	2	4	2	4	2	2	3	2	3	2	2	3	3
171	4	1	1	3	5	1	5	2	2	3	2	3	2	3	2	3	2	3	2	3	2	3	3
172	4	1	2	3	4	2	1	2	2	3	2	3	2	3	2	3	3	2	3	2	3	3	3
173	3	2	1	2	4	6	5	2	2	2	3	2	3	2	3	2	4	2	4	3	4	3	3
174	3	1	2	2	3	6	5	2	2	2	3	2	3	2	2	3	2	3	2	4	3	2	4
175	3	2	2	3	3	6	1	2	2	2	3	2	3	2	2	2	2	4	3	2	2	4	3