IMPACT ON REVENUE FROM E-BANKING IN INTERNATIONAL BANKS IN INDIA DURING COVID-19

by

Bhavya Sankhala

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

FEB 2025

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by

Bhavya Sankhala

Supervised by

Dr. George Iatridis

APPROVED BY

Vasiliki Grougiou

_____

Dissertation chair

RECEIVED/APPROVED BY:

_____

Admissions Director

Dedication

This thesis is sincerely dedicated to my supportive mother who encouraged and inspired me in conducting this study. She has never left my side throughout the process and gave me strength and hope when I thought of giving this up. She provided me with a great sense of enthusiasm and perseverance in continuing this. Without her love and assistance, this research would not have been made possible.

Moreover, I dedicate this thesis to my subject teacher, Dr. George Iatridis, who constantly guided and taught me to make this study even better, to my family for cheering up for me, and to my friends who have helped me in finishing this project. I really appreciate your words of advice and in continuously giving me moral, emotional, and financial support

And lastly, I dedicate this thesis to the almighty God who gives me strength, wisdom, guidance, power of thinking, security, competence, and for giving me good health while doing this. All of these, I offer to you.

ABSTRACT

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Bhavya Sankhala
2025

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

This study assesses the influence of e-banking on revenue generation by international banks in India during the COVID-19 pandemic. The outbreak of the COVID-19 pandemic led to a rush for financial institutions to shift quickly from traditional brick-and-mortar banking models to digital channels because physical branches experienced restrictions and lockdowns. With the advancement of technology, electronic banking platforms and other electronic financial services have become the mode of banking for customers. This shift caused unprecedented growth in digital transactions, which raises questions about how these changes affect the financial performance and revenue streams of international banks in India.

Based on extensive analysis of transactions, customer behavior patterns, and financial reports by some of India's international banks, this thesis explores the various ways e-banking influenced three key revenue drivers: transactional fees, new product offerings that are digital, and customer acquisition/retention. In that regard, significant increases in digital banking services' adoption were discovered, with various customers choosing to use mobile and online transactions on account of ease, safety, and social distancing measures.

Consequently, this hike in digital engagement translated into high transaction volumes for the banks involved and boosted fee-based revenues while further reducing operational costs in terms of fewer physical infrastructural requirements.

However, the study also highlights several challenges international banks in India face during this period that includes the cybersecurity threats because of the increase in digital transactions, the issues of the digital divide that might affect the unbanked and underbanked population, and the need for continuous investment in digital infrastructure. Despite these inhibitive factors, the study concluded that revenues from e-banking services contributed positively to the financial performance of international banks. This underscores the role of digital transformation in future development and sustainability in the banking sector.

The study acknowledges that to take advantage of the long-term revenue potential that e-banking offers, as well as to reduce the risks connected with digital adoption, global banks must keep coming up with new ideas and improving their digital banking strategies. Furthermore, it recommends that banks engage in digital literacy training, cybersecurity measures, and infrastructure improvements to promote inclusive growth and profitability in a post-pandemic economy.

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Advances (₹ Crore) Advances represent the total loans and credit facilities extended by a bank to individuals and businesses. It is a key indicator of a bank's lending operations and credit risk exposure (Mohan, 2002).

Business per Employee (₹ Crore) Business per employee measures the total business (deposits and advances) handled by each employee in a bank. It is a productivity metric indicating operational efficiency in terms of workforce utilization (Indian Banks' Association, n.d.).

Capital Adequacy Ratio (CAR) (%) (Basel III) The capital adequacy ratio (CAR) is a measure of a bank's financial strength, expressed as the ratio of its capital to risk-weighted assets. Basel III norms require banks to maintain a minimum CAR to ensure financial stability (Bank for International Settlements, 2019).

Credit Deposit Ratio (Per Cent) The credit-deposit ratio measures the proportion of total deposits that are used for lending. A higher ratio indicates aggressive lending, while a lower ratio suggests conservative credit policies (Reserve Bank of India, 2021).

Deposits (₹ Crore) refer to the total funds held by customers in savings, current, and fixed deposit accounts. They serve as a primary source of funds for lending and investment activities (RBI, 2022).

Interest Income (₹ Crore) Interest income is the revenue earned by a bank from loans and other interest-bearing assets. It is the primary source of income for banks and directly impacts profitability (RBI, 2022).

Investment Deposit Ratio (Per Cent) The investment-deposit ratio represents the percentage of total deposits invested in government securities and other financial instruments. It indicates the bank's investment strategy and liquidity management (Basel Committee on Banking Supervision, 2017).

Operating Expenses as % to Total Expenses (Per Cent) This ratio measures the proportion of a bank's total expenses that are attributed to operating costs, including salaries, rent, and IT expenses. A lower ratio indicates better cost efficiency (Reserve Bank of India, 2021).

Operating Profit (₹ Crore) Operating profit is the surplus generated from a bank's core activities before deducting provisions and taxes. It is a key indicator of operational efficiency (Indian Banks' Association, n.d.).

Other Income (₹ Crore) Other income includes non-interest revenue such as fees, commissions, and trading income. It contributes to diversification and financial sustainability (Indian Banks' Association, n.d.).

Profit per Employee (₹ Crore) Profit per employee represents the net profit generated per employee in a bank. A higher ratio indicates better employee productivity and efficient cost management (Kumar and Gulati, 2014).

Provisions & Contingencies (₹ Crore) Provisions and contingencies refer to the funds set aside by banks to cover potential loan defaults and other financial risks. These are critical for maintaining financial stability and regulatory compliance (Basel Committee on Banking Supervision, 2017).

Return on Assets (ROA) (%) (Per Cent) Return on assets (ROA) measures a bank's profitability relative to its total assets. It is calculated as net income divided by total assets, reflecting how efficiently a bank utilizes its resources to generate profit (Reserve Bank of India, 2022).

Spread as % of Assets (Per Cent) Spread refers to the difference between the interest earned on loans and the interest paid on deposits, expressed as a percentage of total assets. It indicates a bank's profitability from its core lending activities (Mohan, 2002).

Total Assets (₹ Crore) Total assets refer to the sum of all financial and non-financial resources owned by a bank, including cash, loans, investments, and fixed assets. It is an indicator of the bank's size and financial strength (BIS, 2019).

Total Expenditure (₹ Crore) Total expenditure includes all operating costs, interest expenses, and provisions incurred by a bank. It reflects the overall cost structure and efficiency of financial operations (RBI, 2021).

Total Income (₹ Crore) Total income refers to the overall revenue earned by a bank from various sources, including interest income, fees, and other banking services. It serves as a key financial metric to evaluate the performance and profitability of a bank (Reserve Bank of India, 2022).

CHAPTER I:

INTRODUCTION

1.1 Introduction

The outbreak that was triggered by COVID-19 had a significant impact on industries all over the world, and the financial industry was not an exception to this rule. To fit the continuously altering environment in India, where the financial sector plays a vital role in strengthening the rising economy of the country, international financial institutions were required to make rapid modifications. This was done to suit the environment. The use of lockdowns, social distancing measures, and restrictions on physical movement all contributed to significant disruptions in the running of traditional financial institutions. These disruptions were severe enough to cause significant problems. There was a rapid increase in the number of customers who used electronic banking services because of their increased reliance on digital channels for the management of their financial resources.

Electronic banking, which includes services like mobile banking, online payments, digital cash transfers, and remote account management, emerged as the most essential component of financial services during the pandemic. This term incorporates a wide range of services. Because of their large resources and advanced digital infrastructure, international financial institutions in India found that they were in an unusual position to capitalize on this transition. These institutions are well known for their substantial resources and well-established digital infrastructure. The switch to electronic banking not only made it simpler to conduct financial transactions without any hassles during a period

of economic instability, but it also opened new prospects for the collection of money. There were no complexities involved.

On the other hand, even though technological advancements presented growth opportunities, electronic banking was also confronted with several challenges. Financial institutions were required to make investments in the expansion of their digital capabilities while simultaneously addressing the risks associated with the rising number of non-performing assets (NPAs) and the declining demand for credit. This was an essential need. When combined with the growing competition from fintech businesses and local banks, the issue became even more problematic. The revenue models of these international institutions were further complicated by the fluctuating economic situations, which further aggravated the dilemma. The purpose of this study is to investigate the influence that e-banking had on the income of multinational banks that were operating in India during the COVID-19 epidemic. Specifically, the study will investigate the primary drivers, difficulties, and overall results for the industry under this unusual circumstance.

The developments linked with the internet could have a significant impact on the operations of banks and the financial sector. One may theoretically find this. These technologies have revolutionized the possible ways in which banks could use other technology to offer sophisticated services to consumers who are either already clients or who might become customers in the future or have started to undergo reformation. The approaches that banks might use these technologies have either been revolutionized or are starting to transform because of these technologies. A system that has already impacted on financial markets is the creation and manufacturing of automated teller machines, which

are more often referred to as ATMs one of the most well-known illustrations of a system already changing financial markets is this one.

Furthermore, the supply of financial services to mobile consumers via the use of applications is an additional example of this technique. "E-banking" is a term that refers to the primary technological methods that are used in the process of providing electronic banking services. These forms of connection networks include, but are not limited to, the Internet, automated teller machines, landlines, and mobile phones. E-banking, in its broadest sense, refers to a wide range of banking transactions that consumers may do online rather than going to a physical branch of the financial institution. This is a significant departure from traditional banking. Transactions like checking, saving, and making payments are included in this category. The all-encompassing word "e-banking" embraces a broad range of services and technology, as expressed by this word that encompasses everything. These services and technologies cover a wide range of applications and are rather extensive.

Taking the example of automated teller machines (ATMs), these devices may be deemed to be the pioneering technology that financial institutions use to give birth to electronic banking. Certain financial institutions do not consider automated teller machines to be a part of the electronic banking network; nevertheless, there are a great number of institutions that do consider them to be a part of the network. This is because automated teller machines, which are often referred to as ATMs, were created and subsequently placed into operation several decades before the introduction of computerized banking. Because of this, their automated teller machine network is evaluated differently than their Internet

banking networks and services are. This is because of the situation described above. People are now compelled to conduct their financial transactions online as a direct result of the COVID-19 epidemic that has been going on. Because of COVID-19, there has been a rise in the number of individuals who make use of the services offered by online banking businesses. In today's world, cashless transactions, also known as electronic transactions, conducted online, are gaining more and more popularity among individuals. When compared to the buying and selling of real money, such as rupees and coins, this preference is more favorable.

This is because of the worries that have been raised about the COVID-19 virus. As a result of the fact that these online e-transactions may be carried out from a distance, there is no need for contact, and there is also no possibility that contact will take place. There is a possibility that the COVID-19 virus may become less stable. During times of lockdown and quarantine, individuals are adopting internet banking services for two reasons, as stated by Pawan Kumar Verma and Archna Tanwar (2022). The first reason is that it enables them to maintain their social distance, and the second reason is that it enables them to carry out financial activities. People are expanding their usage of Internet banking for both reasons, which are the reasons why people are using it more.

Even the banking business was affected by the epidemic that was created by COVID-19. This pandemic had a huge influence on the global financial system, reaching the point where it touched the banking sector. A growing number of people started using online banks to avoid coming into contact with the cashiers and, as a consequence, minimize the probability of being infected. The shift to digital banking was proceeding at

a faster pace than in the past, and an increasing number of people were using online banks. During this period, the banking business in India has also seen a significant shift in the attitude of customers. The effects of this trend have shown themselves in a variety of ways, such as a decrease in the number of transactions conducted via traditional banking institutions and an increase in the use of online banking environments (Kumar, P., P., and Kumar, R., 2021; Indah, C., and Rokhim, R., 2023).

Within the context of the COVID-19 epidemic, the primary purpose of this study is to get an understanding of the effect that electronic banking has had on the profits of foreign banks that operate in India. The pandemic caused by COVID-19 has triggered a tremendous crisis in the economy of the whole globe, which has been a big cause for worry for the financial sector from all over the world. The delay in economic activity that was caused by the pandemic has resulted in a decrease in the pace of payments, but it has also accelerated the use of digital financial technology. Because of this, the banking industry has become very dependent on the successful introduction of the mobile banking system. Because of this circumstance, the customers of these nations have been compelled to make use of online banking services in locations where the spread of the illness might occur in a relatively short amount of time (Awan, M. T., and Haq, U. I., 2020; Ashraf, M. A., A, et al., 2010; Bhattacherjee, A. 2002).

During the COVID-19 epidemic, the banking industry in India has shown a distinct shift in the behavior of its customers on many occasions. There has been a decline in the number of conventional banking transactions. For instance, some individuals do not go to a bank in person or withdraw money from an automated teller machine, while others are

putting money into the bank by transferring digital money. The Indian banking market has been left with both chances and drawbacks because of the complexity of the first development and the simplicity of the second development. To be more specific, the adoption of electronic banking by multinational banks, which is now extremely profitable, has become one of these big harbors. The use of Internet banking has been encouraged by customers. As an example, the number of consumers who make use of mobile banking apps has increased because of this growth. In addition, customers have access to online account management services as well as electronic banking services. The alteration in question suggests a possible path for the expansion of international banking institutions (Halim, A. N. and Saputra, A. P. M. 2020).

Despite this, the transition to electronic banking has come with several difficulties for global banks that are engaged in India. As the number of people using digital banking has increased, there has been a corresponding increase in the amount of money that has to be invested in technical infrastructure and the implementation of cybersecurity measures. Investments of this kind are essential to ensure that the services provided by online banking are reliable and secure. There has been a decrease in the performance of international banks because of the diversionary influence that the pandemic has had on the economy (Kumar, P. P. and Kumar, R., 2021; Haq, U. I. and Awan, M. T., 2020; Chen, M., et al., 2016; Dwyer. C., 2016). This is because the pandemic has caused a drop in the activities associated with payments.

While there are certain beneficial elements to the expanding trend of e-banking in India, there are also some negative factors that foreign banks must consider. The system of

the organizational bank must be significantly modified to keep up with the digitalization of banking services. This, in turn, has raised the cost of investment for the banks, which has caused them to spend more money to ensure that the electronic banking services are dependable and safe. In addition to this, the economic slowdown that was produced by the pandemic has led to non-payment activities, which operate as an additional blow to the revenue of international banks (Kumar, P. P. and Kumar, R., 2021; Haq, U. I. and Awan, M. T., 2020; Chen, M., et al., 2016; Dwyer. C., 2016).

When compared to conventional banking services, which need clients to be physically present, e-banking services have the potential to bring in more money for international banks. This is because e-banking services are less expensive and can reach a wider number of users than traditional banking services. However, the progress that has been made in e-banking services is not even close to the government mandate and sunk costs that have caused revenue drops at international banks. This is because it requires significant investments in technological infrastructure and cybersecurity measures for these services to be safe and reliable. Additionally, the slowdown in the economy has led to a decrease in payment activities (Goudarzi, S et al., 2013).

It is required to first explore the development and changes that happened within the banking sector during that period to begin our examination of the influence that e-banking had on the profitability of multinational banks operating in India during the COVID-19 outbreak. This is because such an inquiry is necessary to begin our investigation. A. N. Halim and A. P. M. Saputra published their findings twenty-two years ago. According to a study carried out by Gupta, K. D. and Gupta, K. P. (2008) and Gupta, S. and Yadav, A.

(2017), the pandemic was the cause of the increase in the use of electronic banking services in India, which resulted in a decrease in the number of transactions that were completed using traditional banking methods. The transition would have both good and bad repercussions for international banks that operate in the Indian market. These banks would be experiencing both positive and negative implications (Hoque, S. M. S. 2012).

As an example, a study that was carried out by Gupta, K. D. and Gupta, K. P. (2008) found that India has a relatively low internet penetration rate of only 3.7%, which has acted as a barrier to the implementation of e-banking services inside the country. Another illustration of how the internet penetration rate works is provided here. Nevertheless, the COVID-19 pandemic has made this trend even more obvious, and a considerable number of people have taken the option to employ online banking services to avoid direct contact and, as a consequence, lessen the probability of becoming infected. They have increased their online banking services to attract and serve a higher number of customers in India, which is an opportunity that has been taken advantage of by banks that are headquartered outside of India.

Additional research conducted by Gupta, S. and Yadav, A. (2017) examined the effects that e-banking has had on people working in the banking industry and was conducted in India. According to the findings of the research, the development of new financial innovations and technology has resulted in the revolutionization of e-banking as a component of the banking industry, which has therefore altered how payments and transfers are carried out. This transition has resulted in a reality in which global banks would be required to invest money in technological infrastructure and retrain their human

resources to adapt to the shifting requirements of their clients (Islam, M. A., & Ahmed, M. I. 2020).

Nevertheless, the economic slowdown that was brought about by the COVID-19 outbreak has also affected the money that international banks have made in India. International banks have been impacted by this. There has been an imbalance in the reserve money that banks are supposed to keep, as mentioned in (Halim, A., N. and Saputra, A., P., M., 2022). This imbalance has been caused by the rapid increase in e-banking platforms and the reduction in the number of banking transactions being conducted. Because of this imbalance, there is a possibility that the financial system may come to an end. The issue has thus led to a situation in which multinational banks are compelled to exercise considerable care to limit the risk exposure they confront and to maintain the stability of their operations. This is needed to maintain the integrity of their operations.

This study's objective is to investigate the impact that e-banking had on the revenue of international banks that were operating in India during the COVID-19 pandemic. To demonstrate how e-banking platforms have influenced revenue generation, customer engagement, and operations in banks from the pre-pandemic era through the pandemic (2020-2021), the purpose of this study is to investigate the impact that e-banking had on the revenue of these international banks. To achieve this goal, we will be analyzing scientific papers and financial data.

1.2 Research Problem

The purpose of this research is to shed light on the influence that e-banking had on the creation of income for multinational banks in India during the COVID-19 epidemic. Knowledge of the degree to which e-banking has influenced financial performance and the causes that contributed to the acceptance and effectiveness of e-banking services during the pandemic are two specific topics that should be investigated. The function of electronic banking in the banking business has been more significant throughout the worldwide pandemic economic crisis and beyond. This is due to the volatile environment that exists within the financial sector, which is always shifting. A shift in the banking business will be shown via the examination of three different aspects of electronic banking in this research paper.

Problem Statement No. 1: The Relationship Between Revenue and the Type of Bank. In the context of electronic banking, the first problem statement investigates the possible link that exists between income and the sort of bank operated, whether it be an Indian or an international bank.

Problem Statement No. 2: The Influence of COVID-19 on the Expansion of the Customer Base. In the second issue statement, an investigation is conducted to determine how the COVID-19 epidemic has impacted the expansion of the client base for financial institutions.

Problem Statement No. 3: The Adoption of Technology and Electronic Banking. E-banking services are investigated in the third issue statement, which investigates the

connection between technical elements, such as internet connectivity, and the utilization of these services.

As a result of the COVID-19 epidemic, there has been a significant change in customer behavior and banking operations all over the globe. Digital banking has become the dominant means of service delivery. During this transition towards electronic banking, multinational banks that were functioning in India were presented with both possibilities and obstacles. There was a significant increase in the number of digital platforms that these banks adopted; nevertheless, it is not obvious how this transformation significantly affected the income streams that these banks generate.

How multinational banks responded to the spike in e-banking, the efficiency with which they monetized digital services, and how they matched the growing demand for digital infrastructure with the expenses of maintaining security and operational efficiency are all important problems that emerge. Furthermore, the economic slowdown that was brought on by the pandemic led to a rise in the number of loan defaults and a reduction in the demand for credit, both of which were variables that may have had a negative influence on income.

For this reason, the most important issue is to ascertain the degree to which the transition towards electronic banking had an impact on the total income generated by multinational banks in India during the COVID-19 period. Has the rise in digital transactions and services been able to compensate for the reduction in conventional banking operations, or has the increased competition and operational issues had a detrimental impact on their financial performance? To evaluate the long-term feasibility of

digital banking techniques in a society that has recovered from a pandemic, it is essential to have a solid understanding of these dynamics.

1.3 Purpose of Research

To answer these issue statements, this research study will make use of a variety of academic sources that provide insights into the current trends and problems that are present in e-banking. The implementation of electronic banking has had a considerable influence on the banking industry, as it has resulted in an improvement in service quality, a strengthening of the banking sector, and a rise in the levels of consumer satisfaction. Banks are now able to cater to the landscape varied needs of their clients thanks to the proliferation of electronic banking, which has become an essential component of the global financial landscape.

1.4 Significance of the Study

COVID-19 had a huge influence not only on the worldwide financial system, but also on the banking sector in India (Elnahass, M., Trinh, Q., V., and Li, T., 2021). This was the case in addition to the fact that it had a large impact on the global financial system. Because of the pandemic, a considerable number of people have been deprived of their means of subsistence, which has resulted in the cessation of the growth of funding. Additionally, there has been a rise in the number of financing institutions that are not meeting their performance expectations. The study concluded that the role of e-banking has taken on a position of fundamental relevance because banks have been subjected to new social distance measures. This is particularly true when one considers the modifications that have been implemented.

Amid the COVID-19 outbreak, there is a significant amount of focus placed on how electronic banking reduces the revenue of multinational banks in India about the disease. It is inescapable that there will be a shift towards a new model of banking that operates predominantly via digital platforms. This shift is necessary for the banking industry to obtain a competitive advantage and to respond to the wants and aspirations of customers. According to the findings of a study that was conducted and published by Statista, which was based on the data that was collected during the COVID-19 period, the findings revealed that more than thirty-three percent of individuals have reported that they have been using digital payments more frequently than in the past, and nine percent of the respondents stated that they only make payments online. Because it is now feasible for financial institutions to migrate their operations onto digital platforms, they have been able to cut their operational expenditures while simultaneously increasing the quality of the service they provide to their customers.

Additionally, there is a greater emphasis placed on the use of financial resources. This is because individuals who own cards and bank accounts that are functioning are in a substantially better position to organize the direct benefit transfer in the event of the pandemic. The result of this is that the emphasis has switched to digital banking solutions, which allow for the provision of banking facilities and services to disadvantaged groups in an efficient manner, hence increasing the level of financial inclusion. With empirical research, it is possible to investigate further the influence that e-banking had on the income of multinational banks in India during the COVID-19 epidemic. The results of such an investigation may shed light on the number of times customers visited bank branches both

before and during the epidemic, as well as the influence that digital banking has had on the overall profitability of multinational financial institutions.

It is of great relevance for a variety of players in the financial ecosystem to research the influence that e-banking had on the income of multinational banks in India during the COVID-19 epidemic.

1. Foreign Banks: It is helpful for foreign banks to review their digital initiatives if they understand how the transition to online banking affected customer income streams. Using the findings of the research, financial institutions may get insights into how they might enhance their digital products, optimize their expenses, and establish sustainable business models that capitalize on future trends in digital banking.
2. The Banking Sector in India: This research provides Indian financial institutions with useful insights into the effect of fast digital transformation during crises. It also sets a standard for innovation in the Indian banking market by assisting local banks in understanding how overseas peers solve operational issues, client retention, and new income creation via electronic banking.
3. Regulators and Policymakers: The research offers very useful information that can be used by the Reserve Bank of India (RBI) and other regulatory authorities to evaluate the function of electronic banking in the context of preserving financial stability during times of crisis. When future regulatory rules are developed to encourage digital banking and protect the industry

from economic shocks, the insights gained from this study might be used to guide such regulations.

4. Clientele: This research sheds light on how e-banking has impacted the quality, security, and accessibility of financial services. This is particularly relevant because customers are increasingly turning to digital platforms for banking services. It is possible to boost consumer happiness and confidence in digital banking systems by gaining an understanding of how banks successfully reacted to the changes brought about by the epidemic.
5. Future Research: Academics and researchers may expand upon this work to investigate long-term patterns in digital banking and the influence that these developments have on profitability. The findings of this study provide a basis for further investigation into how global financial institutions might successfully manage digital change, especially in developing countries for example India.
6. The Financial Technology (Fintech) Industry: The results of the research will be helpful to fintech businesses and startups in determining where there are gaps in the digital strategies of multinational banks. It provides insights on client preferences, the adoption of technology, and income streams in the e-banking area, which assists fintech companies in tailoring their innovations to better serve banks and customers.

In general, the significance of this study lies in the fact that it has the potential to educate policymakers and industry stakeholders about the significance of digital banking

solutions in the post-pandemic era. Additionally, it can provide information about the strategies that can be implemented to improve the financial inclusion and resilience of the banking sector in India. This research is noteworthy because it gives a thorough knowledge of the growing role of e-banking throughout the pandemic and provides actionable lessons for banks, regulators, and other stakeholders to manage the future of digital finance. In essence, this study is significant because it provides a comprehensive explanation of such a function.

1.5 Research Purpose and Hypothesis

Within the context of the COVID-19 epidemic, the purpose of this research is to analyze the influence that electronic banking has on the income of foreign banks in India. As a guide for the investigation, the following hypthesis will be tested:

Hypothesis 1: The overall revenue (in ₹ crore) of international banks doing business in India had increased with the increased usage of e-banking services during COVID 19.

we investigate whether the increase in the use of online banking has had a beneficial or negative impact on the income streams of major financial institutions.

Hypothesis 2: The impact of financial indicators on overall income during the COVID-19 era differed significantly from earlier periods.

This subject investigates how alterations in client preferences (such as a growth in the usage of online payments and digital lending, among other things) are affecting the revenue strategies of financial institutions.

Hypothesis 3: The losses from the productivity measures related to e-banking had a significant impact on total income, especially after COVID.

The purpose of this is to determine if the transition to electronic banking resulted in decreased costs and increased profitability, or whether it resulted in the introduction of new expenditures that affected the overall financial performance.

The purpose of this study is to investigate the cost of investments in digital infrastructure, cybersecurity, and compliance with laws, as well as how these elements affected the revenue result during the pandemic. The purpose of these questions is to offer a complete knowledge of how e-banking affects the financial performance of multinational banks in India during COVID-19 and to determine what lessons can be derived for the future of digital banking in the country.

CHAPTER II:

REVIEW OF LITERATURE

2.1 Theoretical Framework

The COVID-19 pandemic has deeply affected the international banking industry globally, pushing its transformation toward the digital banking culture. In India, international banks saw a large increase in e-banking adaptation by customers and businesses as lockdowns and the safety concerns brought them away from physical banking channels. This research study explores revenue effects of e-banking by international banks in India during COVID-19, using various theories in economics, technology, and finance. It will incorporate the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) Theory, Disruptive Innovation Theory, and Financial Intermediation Theory, all of which give insights into how digital banking contributed to revenue growth and business continuity. Below are the core theories that form the foundation for this research:

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is widely used to understand how users come to accept and use new technologies. According to TAM, two primary factors influence technology adoption: perceived ease of use and perceived usefulness. TAM helps explain the accelerated shift to e-banking in India, particularly in times of crisis when physical banking is not feasible.

Diffusion of Innovations (DOI) Theory

The Diffusion of Innovations (DOI) Theory by Rogers (2014) explains how, why, and at what rate new ideas and technology spread within a society. During the pandemic,

the adoption curve of e-banking shifted rapidly. Early adopters, including tech-savvy users, drove initial growth, while more conservative users followed as the utility and necessity of digital banking became more apparent. The DOI theory helps explain the speed and extent of digital banking adoption during the COVID-19 pandemic.

Disruptive Innovation Theory

According to Christensen's Disruptive Innovation Theory (2006), technology can disrupt conventional business models. COVID-19 was a disruptor that expedited the banking service transformation process. The pandemic led to the decline of some traditional sources of revenue, such as branch-based transactions, fees for manual processing, and in-person services. However, international banks covered these losses through increased digital transactions, mobile banking service fees, digital lending platforms, and subscription-based banking services. The shift to digital payments and contactless banking became a permanent feature, ensuring continued revenue growth even after the pandemic were better positioned to adapt and maintain revenue streams during the pandemic.

Financial Intermediation Theory

The Financial Intermediation Theory, as presented by Schumpeter (2008) and then by Gurley & Shaw, (1960), highlights the role of banks as savers' and borrowers' intermediaries. In the wake of COVID-19, international banks in India restructured their financial intermediary models by digitizing the credit disbursal process, having AI-powered automated loan approvals, and increasing dependency on automated financial advisory services. Digital banking led to a decrease in the costs of operations, thus

increasing profitability. Digital financial products such as instant personal loans, buy-now-pay-later (BNPL) schemes, and digital wealth management services further expanded banks' revenue streams**.**

Impact of Government Policies and Consumer Behavior

Government regulations and policies greatly impacted the revenue implications of e-banking. RBI (Reserve Bank of India) has also initiated a host of measures such as loan moratoriums and digital transaction incentives that impacted revenues. Consumer behavior has been altered, wherein digital literacy and increased trust towards online banking are now more prominent factors that may result in a long-term preference shift towards banking. Economic uncertainty decreased borrowing capacity in certain sectors further affected the revenues through lending-based income streams (Reserve Bank of India. 2004).

Resource-Based View (RBV)

The Resource-Based View (RBV) of the firm, developed by Barney (1991), suggests that a company’s competitive advantage is derived from its resources and capabilities. Banks with robust e-banking platforms, IT infrastructure, and cybersecurity measures were able to weather the challenges of the pandemic better than those without. Digital banking infrastructure became a key resource that helped in generating revenue through enhanced customer engagement and cost efficiency. The RBV theory emphasizes that banks with superior digital resources and capabilities were better positioned to adapt and maintain revenue streams during the pandemic.

Models for Empirical Revenue Impact Analysis

International banks can use Cost-Benefit Analysis (CBA) to compare digital banking expenses with revenue gains to quantify the impact of e-banking on revenue. Regression models can be used to study the relationship between the adoption of e-banking and revenue growth. Time-series analysis can be used to track revenue fluctuations before, during, and after COVID-19. Panel data analysis can be used to compare the financial performance of multiple international banks operating in India (Wooldridge, J. M. 2010).

2.2 Literature Review

Because of the crisis that was brought about by the COVID-19 pandemic, there has been a substantial alteration in the economy of the whole world, and the financial sector has been influenced by these developments. Therefore, the liquidity of banks has been redefined because of the widespread application of lockdown and social distancing policies throughout the world. As a result of this, digital banking solutions have swiftly developed as a preferred banking method for various financial organizations. The influence, as well as the consumers who will interfere with business efficiency aspects linked with e-banking, financial performance behavior both before and during the research pandemic, and the context of other results supporting the implementation of e-banking policy in India during the epidemic, are all things that will be taken into consideration. Both factors will be considered (Karjaluoto, H., et al., 2002).

A reflection of the ever-changing events and circumstances that are related to banking, in general, may be found in the valuable literature that is investigated in this

research piece. There has been a windfall for the sector of e-commerce because of the breakout of the pandemic crisis in India, which has been beneficial to the business. On the other hand, typical retail banks were presented with challenges that were beyond their ability to comprehend (Kasri, R. A., 2022). As a second point of interest, the introduction of digital financial technologies in retail pricing has led stakeholders to practically adopt the technology. This is an interesting development. These goals have been achieved by the implementation of mandatory adoption and use, which has been influenced by the pandemic, even though it has been stressed (Mavarni, R., 2021). The financial institutions that were impacted by the epidemic have shown that they are becoming more mindful of the fact that they are modifying their conduct about digital media platforms. These alterations pointed to characteristics of banking that made it possible for the expansion of the flexibility of rapid interpersonal reduction. Because relative utility is presently considered to be one of the most important problems associated with the “new normal" of online banking, it is unavoidable that this will be the case. The year 2022 is the year when Halim, A., N., and Co., A. P., M.

This study aims to accomplish three objectives: first, to investigate the impact that e-banking had on revenue generation in international banks in India during the COVID-19 pandemic (Haq, U, I. & Awan, M, T., 2020); second, to investigate shifts in customer engagement and operational efficiencies that were driven by e-banking; and third, to analyze the financial performance of international banks both before and during the pandemic, as well as the relevant factors that advanced their e-banking platform during this period.

2.2.1 E-Banking

Before the COVID-19 meeting, digital banking was already well on its way to becoming an essential component of India's financial industry. According to data provided by the Reserve Bank of India (RBI), the country experienced a rapid adoption of e-banking services such as mobile banking, digital payments, and online lending during this period. This was a direct result of the rise in the number of people who use smartphones and the widespread availability of the internet. The outcomes of studies that were carried out by PwC (2020) and McKinsey indicated that India is one of the digital banking markets that is increasing at the fastest pace ever seen anywhere in the globe. On the other hand, the vast bulk of the content that was released in the time leading up to the pandemic focused on local banks and the overall financial landscape. Only a small amount of attention is paid to how international institutions react to this scenario.

The practice of offering financial services and goods to consumers in a direct way via the use of email and other communication networks is referred to as electronic banking, which is also often referred to as Internet banking. Online banking is another name for electronic banking. It is possible to explain the notion of electronic banking in a variety of different methods. To put it in its most fundamental form, it is the process of providing information or services to customers of the bank via the use of a screen, television, telephone, or mobile phone. Because it has developed over time, it has become a strategic resource that may be used to enhance dependability, control output, promote competitiveness, and increase profitability. Since this problem has arisen, the traditional approach to carrying out financial transactions has been altered. Using electronic banking,

the customer can circumvent the need to physically go to the branch to finish the banking operation. For example, customers use automated teller machines (ATMs) rather than cashiers, and they utilize electronic money rather than executing financial transactions (Allegabond and Parissa, 2006). This trend is expected to continue in the foreseeable future. Customers are provided with the chance to solicit feedback, ask about their accounts, and make applications for a wide range of services. According to Haq and Awan's research from 2020, the bank can utilize the Internet to carry out a variety of financial transactions, including making deposits into its savings account, paying bills, and engaging in other financial activities (Liébana-Cabanillas, F., 2018).

The provision of financial services within twenty-four hours is accomplished mostly via the use of information and communication technology (ICT). Online banking has become a phenomenon all over the globe. Growing, developing, and contributing to increasing competitiveness are all significant goals that may be accomplished with this instrument. Every nation recognizes the significance of strong financial performance, which may have a significant influence on the amount of money that can be raised via the use of skilled financial services. These events have had a significant influence on the financial sector. (Shahabi et al., 2020) Financial institutions must develop strategic plans to effectively incorporate new technologies and enhance the effectiveness of the online services they provide to their consumers. In the absence of face-to-face interactions, financial institutions are required to enhance the consistency of the online services they provide to customers to maintain their competitive advantage and maintain their connections with customers. Because of the rise of online banking, the banking industry is

transforming (Jadhav, 2019). In tandem with the expansion of the usage of electronic banking, the level of customer loyalty is also increasing, which is causing a transformation in the technological environment (Marinković, V., & Kalinić, Z., 2020).

A pandemic that was brought on by the coronavirus (French, A.M., and J.P. Shim. 2016). Societies, industries, and company owners have been making attempts to digitize their day-to-day lives and operations for a considerable amount of time. The COVID-19 pandemic, on the other hand, hastened and intensified each of these stages, making it more challenging to finish them. The financial crisis that was faced by economies all over the world acted as a driving force behind the digital revolution (Gavrila, S.G., and A.D.L. Ancillo. 2021). A significant number of illnesses and deaths have caused life to shift to the virtual world on a global scale. This is because there are limits on migration, closed borders, industries and workplaces, remote working, and many diseases and deaths. Therefore, this would be a moment of unprecedented success for those organizations and firms that had already been running for a long length of time previous to the commencement of the pandemic (Nagel, L. 2020).

The fact that digital-only banks do not have any physical branches, subsidiaries, or offices is perhaps one of the most important benefits of these types of financial institutions. Because of the COVID-19 outbreak, individuals were ordered to stay inside their houses, and several establishments, including banks, were mandated to limit their stationary activities. The concern of infection led to the relocation of activities that could be carried out over the Internet to virtual reality, which is where digital-only banks have been operating for several years. This act was carried out because of migration. As a result of

the widespread spread of the coronavirus, a great number of traditional banks were compelled to completely restructure their business procedures, which posed a huge challenge from a logistical point of view. There was no need for digital-only banks to adopt such large changes since they were not required to do so. According to Katarzyna Schmidt-Jessa (2023), customers of digital-only banks have always had access to their services at any time of the day or night, seven days a week, and during the whole year. Financial services that are tailored to the individual needs of customers are offered by these institutions, which are geared to satisfy the special requirements of customers (Conroy, D. E., et al., 2001).

The development of technology may be responsible for the increase in the number of banking activities that are carried out all over the globe. The banking operations of today have seen a rise in the use of technology, which has led to an improvement in the channelization of money from surplus units to deficit units. This development has been brought about because of the increased use of technology. Because of the broad use of technology, the use of electronic ways to carry out banking activities, which is the practice that is often referred to as "e-banking," has become entirely feasible. Electronic banking makes it possible to conduct financial transactions using a variety of internet-connected devices, including but not limited to computers, smartphones, and other devices. In the absence of widely accessible information and communication technology (ICT), it is not feasible to carry out transactions using electronic banking (Foroughi, B., et al., 2019). According to Chavda (2021), the most effective approach for carrying out banking services that entail direct physical connection is the technology known as electronic banking. This

technology makes it possible to carry out financial transactions in a comfortable manner, and it is the most efficient method. The Internet serves as the medium in which activities related to electronic banking are carried out. Because of this, the amount of time that a customer would have spent in the banking hall has been cut down significantly. It was hypothesized by Nyasha and Hlanganani (2021) that contemporary financial institutions have created several tactics to provide their customers with electronic banking services. E-banking, on the other hand, is a service that gives customers the ability to control their banking via the use of technology.

Growth in the number of individuals utilizing electronic banking was a direct result of the limits that were imposed on economic activity in most areas of the globe during the COVID-19 period, as stated by Ahmed et al. (2021). There is a possibility that the creation of these challenges might be ascribed to both natural and human factors or characteristics. By the time the 21st century arrived, diseases and viruses such as Ebola, Lassa Fever, and SARS had already made their way into the world. In some or all parts of the world, these illnesses or viruses have caused difficulties that have attempted to affect human activities but have been unsuccessful. According to Okunbanjo Olajide Idowu and Fakunmoju Segun Kamoru (2023), the introduction of the coronavirus, which is also known as COVID-19, has had a substantial impact on the activities of mankind in every imaginable manner. This is the conclusion that can be drawn from the findings of the researchers.

Because of the expanding and improving capabilities of technology, the banking industry has been subjected to substantial alterations in recent years. According to Gordon et al. (2008), the development of networking technology has brought about the possibility

for financial institutions to provide their services in an electronic format. Consequently, as a result of this, financial institutions have been able to decrease their expenditure, enhance the quality of the services they provide, and keep their communication with their customers and other stakeholders clear and consistent (Eisingerich and Bell, 2006). Because of developments in technology, the banking industry now provides electronic banking services that encompass traditional banking, the Internet, and social computing. These services are all included in the category of electronic banking. The modern-day world of finance places a significant emphasis on the importance of these services. Even though many commercial banks in Jordan are now working towards the objective of offering Internet banking services to their customers, Aldiabat et al. (2019) state that commercial banks in Jordan continue to conduct their transactions via traditional channels. On the other hand, their clientele has not yet reached a point where they can tolerate technological innovation.

According to the results of several studies, a significant number of Arab citizens are reluctant to make use of Internet banking services for a variety of reasons, including cultural characteristics and social considerations. Yaseen and Al Omoush (2013) state that there has been a limited and restricted amount of research undertaken on the adoption of electronic banking services in this region that makes it difficult to grasp the main variables. This is because there has been a limited quantity of research conducted. As a direct consequence of COVID-19, how companies and their clients interact with one another has emerged as a significant cause for concern for financial institutions located all over the world. For them to keep up with change, they need to act, and the strategies that they use

to deal with it, both now and in the future, need to be rethought. The theoretical assumptions that were discovered in the study were used to develop characteristics that may be used to assess the level of consumer interaction with mobile banking apps during COVID-19.

2.2.2 Elements of Online Banking

The following definitions apply to the components of e-banking for this research. An ATM is an electronic banking channel that allows a person or consumer to perform financial transactions via a teller machine using a credit or debit card. The E-Banking channel that enables a person to move their financial assets across bank accounts is online transfer transactions (Okunbanjo, 2021). When a consumer pays for a service, product, or activity at a cash register using a debit card, this is known as a point-of-sale (POS) transaction. The E-Banking channel that enables financial transactions on devices other than smartphones is called USSD. Before and during the COVID-19 outbreak, Nigerians utilized all these e-banking platforms for commercial and business objectives.

Transaction fees, interest income from digital loans, cross-selling digital financial goods, and cost savings resulting from a decreased dependence on physical branches are the key sources of revenue for electronic banking. Other revenues include cross-selling digital financial products. In the following paragraphs, we will discuss the many methods of creating money, which are the primary sources of income generation (Ho, C.B., & Lin, W. 2010). In the 2021 Global Banking Report published by Accenture, it is said that financial institutions that effectively apply digital strategies can boost client engagement

via cross-selling opportunities and save up to thirty percent on operating expenditures. The results included in the study serve as the basis for this material.

Although this is true, there is a lack of awareness about the specific economic impact that e-banking had on national and international banks throughout the pandemic. This is even though this is the case. According to the findings of the 2021 India Fintech Report that was published by Bain & Company, several foreign financial institutions that had operations in India were presented with challenges because of the increasing competition from fintech companies and the shifting expectations of clients. Even though EY's 2020 Digital Banking Outlook indicated that there was a possibility of boosting revenue via digital channels, this was the situation that occurred.

2.2.3 E-Banking Revenue Around the World

The use of mobile banking during the COVID-19 pandemic era in the Kano metropolitan region was the subject of a study that was carried out by Mustapha et al. (2020). They concluded that the acceptance rate was promising and that customers of banks are showing a willingness to embrace mobile banking. Their findings also led them to the conclusion that there is a connection between mobile banking and the COVID-19 epidemic. Additionally, primary data were employed, and the study did not cover any extra urban locations in Nigeria. Secondary data were also utilized.

According to Anysiadou et al. (2021), who performed an inquiry into the dimensions of mobile banking in Greece during COVID-19, the demographic, as well as the personal and technological acceptance factors, contributed considerably to the adoption of this sort of online banking in Greece. This was the conclusion reached by Anysiadou et

al. During this inquiry, one of the conclusions was that demographics had a significant role. In that specific piece of research, primary data was used, which provided the respondents with the opportunity to articulate their viewpoints on the subject matter. It is thus vital to conduct research that makes use of secondary data to come to objective results. This is because the study must be carried out. The outcomes of the study that was carried out by Marcu (2021) and Kaushik et al. (2020) suggested that the implementation of electronic banking was improved and that COVID-19 was responsible for this improvement. Researchers Baret et al. (2020) investigated the connection between COVID-19, financial markets, and institutions, with a specific focus on banks as the subject of their investigation. According to their findings, COVID-19 has a significant influence on the institutions and markets of the financial sector. Hussien, M. I., & Abd El Aziz, R. (2013) in their study investigated the e-banking service quality in one of Egypt's banks.

COVID-19 is said to have a significant and positive influence on the Chinese financial industry, as reported by Xinhua (2020). Having such a significant and strong effect is crucial. An investigation into the impact that the COVID-19 outbreak had on the Private Banking System in Ethiopia was carried out by Tesfaye (2020) in the year 2020. To demonstrate that the pandemic affects both the balance sheet and the income statement of financial institutions, the study used historical data that covered ten years, beginning in 2010 and ending in 2019. A positive association was discovered by Iwedi and Lenyie (2021) between the number of confirmed cases of COVID-19 and the amount of money that the Nigerian banking industry provided to the economy. This correlation was shown to exist between the two variables respectively. In the year 2021, Nyasha and Hlanganani

carried out an investigation into the implementation of electronic banking in Zimbabwe during the COVID-19 period.

Using secondary panel data research, Ogutu and Fatoki (2019) were able to ascertain the nature of the link that exists between electronic banking and the financial performance of Kenyan commercial banks. The components of electronic banking, which include mobile banking, agency banking, ATM banking, and Internet banking, were shown to have a significant connection with the financial performance of commercial banks. This was revealed via research. However, the study was conducted before the introduction of COVID-19. This is an important distinction to make.

2.2.4 Importance and Benefits of E-Banking

As a result of the implementation of COVID-19, the use of mobile services in emerging economies all over the world, including India, has increased to a particularly high level. As part of this plan, mobile services have been significantly marketed in two different ways, and this is the first of those two methods. For instance, mobile banking, online transactions, and digital payment systems, all of which are included in the sub-sector of e-banking, have been seen as crucial tools for financial institutions and presumably for all clients in this era of COVID-19. This is because all these financial services are integrated into the e-banking sector. Therefore, to examine the impact that e-banking has had on the revenues of multinational banks in India, notably during the COVID-19 period, this academic literature gathers research from a range of sources. This is done to get a better understanding of the situation.

As a result of the fact that it is not only effective but also convenient and that it contributes to the reduction of operational costs, electronic banking has evolved into an essential component of contemporary financial systems. According to UKEssays (2018), in addition to making the services more easily accessible for customers than the Non–Branch Banking Channel– Flexible Banking Hours, they also aid the banking companies in lowering costs in the way of – decreased Several Cost savings. This is because they decrease the number of expenses that are incurred by the clients. This constitutes a substantial advantage. Because of such efficiencies taking over during a crisis like COVID-19, in which physical branches were either closed or open for limited hours, banks were compelled to seek the service of their customers on digital platforms like the Internet.

Even though the level of delivery service and customer satisfaction has significantly increased, Dr. Guma et al. (2022) observes that traditional banking systems have embraced technology in the delivery of their services via the use of e-banking. This is a conclusion that they reach in response to the same premise. It is of the highest importance that this change takes place, especially for the international banks that are operating in India since it allows them to continue their commercial activities and increase their market share by delivering new digital services. The limits that were brought about by the pandemic, such as social distance, demanded the adoption of such technology to offer customers access to complete their needs outside of the confines of conventional banking channels. This is something that should be brought to your attention since it is important.

2.2.5 Impacts of COVID-19 on E-banking

To put it another way, the era of Industry 4.0 is marked by fast technological breakthroughs; thus, almost all firms make use of technology to assess data and information to make choices that are both effective and successful in the context of the business process. In addition to this, they make use of technology to provide services to clients in a very competitive environment. According to Tamaruddin et al. (2021), banking is one of the companies that competitively uses technology to create competition in customer service. This is being done to increase the number of firms that provide customer service. The use of information and communication technology in banking is relatively advanced, one type of technology that can be found in the banking industry is e-banking which can be in the forms of Automated Teller Machines (ATMs), Electronic Wallets (e-wallets), debit cards with chips, EDC machines, Mobile Banking, and Internet Banking. Interactions between customers and technology are gradually replacing face-to-face contact as a method of consuming activities for customers and banking employees. This is because technology is becoming more accessible now.

Furthermore, the use of technology improves the effectiveness and efficiency of the financial services that are made accessible to clients. Najib et al. (2021) state that the increasing use of technology in the financial services industry is also producing changes in the patterns of client behavior across any given period. The number of persons in Indonesia who used Internet banking increased from 13.6 million in 2012 to 50.4 million in 2016. This is a significant increase from the previous year. Along with the increase in the number of users, there was also an increase in the number of transactions that were carried out via the use of online banking. As of 2016, the total number of transactions has increased to

405.4 million, which is a significant increase from the 150.8 million transactions that occurred in 2012. Because it makes everything more practical and easier to carry out, technology is an ideal adaptation to the requirements of humans. Because of this, human work that was previously challenging to do may now be carried out in a way that is less complicated, more rapid, more effective, and more efficient.

During the COVID-19 pandemic, in the banking industry, digital use is becoming increasingly common among customers, the risk of virus transmission and distribution consequences caused by the transfer of cash could be a reason for the banking industry to direct their customers to become e-banking users. It has been said by Amir and Chaudhry (2019) that trust, and loyalty are the two most important attributes that must be preserved in an electronic environment. It is not beyond the question that the use of technology, such as electronic banking, may see a substantial increase during a pandemic. Not only is it intended to make things easier for customers, but it is also intended to operate as a retention mechanism in the process of the transmission of the coronavirus. This is the reason why this is the case. A study that was conducted in the year 2020 by Endri and colleagues found that the situation posed a problem to the banking industry, especially in countries that were still in the process of development. As a direct result of this issue, the importance of knowledge management in commercial banks has grown significantly. The rules that have been put into place by the Indonesian government to limit the spread of COVID-19 also affect banking offices. Because positive cases of Corona have been identified, there is a limit set on the number of customers who are allowed to enter the building. Additionally, the length of service hours has been cut to a shorter period than is typically seen. In

addition, several banking offices have been shut down because the expectations of clients who are still geared towards traditional banking have been disrupted. This has resulted in the closure of some banking offices.

Examples of face-to-face activities that can be reduced using e-banking include but are not limited to, transfers, checking account balances and mutations, changing personal identification numbers (PINs), paying for electricity, water, or telephone, and topping up e-money (OVO, Go-Pay, Dana, Shopee Pay, and other similar services). E-banking also provides a variety of services and facilities that can help reduce the spread of COVID-19. The ability of customers to carry out transactions in their day-to-day lives is significantly simplified because of this innovation. Consumers can carry out transactions that are necessary at any time and in any place without being bound by time limitations. This is a significant benefit. The purpose of this research is to explore the empirical study that was carried out during the COVID-19 epidemic on e-banking service quality (ESBQ) and its impact on e-banking loyalty, which is mediated by e-banking satisfaction (Ul Haq & Awan, 2020). An examination of account holders from three local banks in Pakistan is the primary subject of this research. This research was carried out to determine and comprehend the impact that E-banking service quality (EBSQ) characteristics have on the level of happiness and loyalty experienced by E-banking customers during the COVID-19 epidemic. The research was carried out with the use of E-banking customers in Indonesia as subjects.

As a direct result of the outbreak, there was a significant surge in the use of digital technologies. According to several pieces of literature that have been published, the

pandemic has been highlighted as a catalyst for the change of digital financial institutions all over the world. The Global Banking Industry Outlook (2021), which was published by Deloitte, and the Global Economic Forum (2020) are two examples of the kind of publications that are included in this category of literature. International banks were able to maintain their operational continuity and continue to give their customers continued access to financial services by using the technology that is associated with electronic banking. Because of the adoption of these technologies, the circumstances that were necessary for this to be possible were established. This became a possibility because of the superior technological infrastructure that was owned by financial institutions located overseas.

Several foreign financial organizations, such as HSBC, Citibank, and Standard Chartered, have made investments in India to enhance their mobile banking apps, expand their capacities to conduct online transactions and provide prospects for digital credit. According to the 2021 Banking Review that was issued by KPMG, the number of transactions that were processed via the digital platforms of major global banks showed a considerable increase. There is a lack of in-depth study that specifically emphasizes the method by which this digital transformation affects the revenue streams of multinational banks that operate in the Indian market. This is even though there is a paucity of such research.

An extensive variety of sectors and enterprises have been forced to deal with a new problem because of the impact that COVID-19 has had on Internet banking. A task of this kind has been presented to them. For the banking business to be successful, it is essential

to foster trust, give clients a digitized and secure environment for digital banking, and educate customers about the advantages of utilizing digital banking. Like the situation that existed during the global financial crisis that occurred in 2008, several nations are now confronted with a very difficult scenario. The closure had a direct impact on the number of physical transactions that took place, which resulted in a significant decrease in those transactions. Because it was risky to withdraw money and even for banks to accept deposits, this was the reason why this condition existed.

According to the findings of research that was carried out by the Reserve Bank of India (RBI), automated teller machines (ATMs) were operating at a capacity that was more than 91% of their total capacity. According to Uniamikogbo et al.'s publication from 2020, this indicates that 91 percent of the machines need cash to be refilled. When compared to the prior period, the delay in deposits saw an increase of 7.98%. The Reserve Bank of India (RBI) has revealed that the market has been hit by a total of 15.5 lakh crore of outstanding debt, that retail and wholesale transactions have been hampered, and that more than 19 distinct sectors have been affected. These findings were released by the RBI. The accident had a significant influence on the following five markets: the port and services sector, the aviation industry, the construction industry, the mining and mineral industry, and the retailing undertaken by enterprises. It is safe to say that each of these companies has a considerable degree of power over the banking industry. Increasingly, according to Aniefiok, 2020, financial institutions are providing support and coaching to clients directly to match the expectations that they have for the service they get.

The move to electronic banking apps is now being examined by a sizeable number of people who were previously unwilling to make the transfer at one point in time. Mr. Niraj Mittal said that there was a 29% rise in the number of transactions in 2020 compared to 2019. This was stated about the year 2020. This occurred because businesses and shops had a greater rate of issuance from their bank accounts to their mobile wallets. According to Casaló et al. (2008), the deployment of electronic banking has led to a significant increase in the number of users after the closing of the traditional banking establishment. This is mostly attributable to the fact that user-friendliness and adjustability have both increased over time. When January 2020 came around, the total number of transactions that were carried out via electronic banking was 14,402.70 lakh.

However, by June 2020, that figure had risen to 16,188 lakhs. The Reserve Bank of India (RBI) recognizes a total of 354 banks in India, including those in the public sector as well as those in the private sector. When we look at this figure, we can see that there is a rise in the total amount of Rs.7801.31 lakhs from the time before COVID and the time of COVID in June 2020 (Liébana et al., 2013). This is something that we can observe by looking at this number. It has been determined that the effect of the outbreak is so great that even the banking industry has reached a consensus to delay the consolidation of 10 public sector banks into a single entity. This dynamic and complex process of mergers is now being investigated over twelve to eighteen months (Uniamikogbo et al., 2020). Mergers are a dynamic and challenging process. This is carried out within the course of routine events. According to Casaló et al. (2008), the Ministry of Finance made the news that 10 public sector lenders will be reorganized into four larger and more powerful

companies. This statement was made in conjunction with the announcement. The option, on the other hand, was going to be made once again because of the existing situation about the pandemic. It was said by the chairman of the Public Sector Banks that the system is on the brink of experiencing a fall in GDP of four percent. This is because there are a considerable number of nonperforming assets (NPAs), consolidation, and liquidity needs. The implementation of electronic banking has made it simpler for us to fulfil the obligations that we have daily.

In the process of combining traditional banking services with newly developed information technology, the idea of electronic banking is formed. There are a lot of reasons why electronic banking services are gaining popularity, the most significant of which are the increase in revenue and the reduction in operating expenditure. Customers can manage the bulk of their banking requirements on their own, which results in fewer people and lower expenditure for banks in terms of transaction and processing fees. Customers can conduct financial transactions on their own. E-banking will assist banks in boosting their profitability via the expansion of their assets, the reduction of their operational expenses, and the growth of their portfolios, according to a study on e-banking that was published between 1999 and 2006 (Uniamikogbo et al., 2020). This research was conducted by Uniamikogbo and colleagues.

During the 1990s, when Ketema (2020) was writing, he emphasized that virtual banking would not only provide a new channel for the provision of services but would also provide advantages to both clients and banks. Because specialized e-banking technologies, such as apps for electronic transfers and electronic bills, are convenient, Gomez et al.

(2021) anticipate that users will be enticed to use online banking because of its convenience. According to Liébana et al. (2013), banks on a tiny island employed electronic banking as a promise to their consumers to deliver a level of service that was competitive with other comparable institutions. To achieve this goal, interviews were conducted and studies of the websites of the banks that offered online banking were carried out between the years 2004 and 2006. To continually increase the efficiency of customer service provided by online banking services, it is required to possess several key qualities. Additionally, the level of service that banks provide to their clients is not the only thing that inspires customer loyalty; the cultural traits that banks demonstrate to all consumers who use online banking also play a part in the process of customer loyalty.

Over the last ten years, there has been a steady increase in the number of developing countries that have adopted the use of electronic banking (Neger & Uddin, forthcoming). According to the findings of the two groups of people who use e-banking and those who do not use e-banking in terms of their populations, attitudes, and channel preferences, there have been significant differences in the approval and attitude of the two groups in terms of demographic characteristics (Uniamikogbo et al., 2020). This is the conclusion that can be drawn from the findings of the two groups. Yuksel and Dincer (2020) argue that one of China's strategy responses before the World Trade Organization (WTO) was the expansion of e-banking into a more global environment. This was one of China's strategic replies. Taking into consideration the fact that China does not now have a consumer credit program that is operational, this action was taken accordingly. A further piece of study was carried out by Jindal and Sharma (2020), in which they discovered the degree to which mobile

banking and online banking are used in China. To do this, they conducted an analysis of the market conditions, determined the goals of the consumers, and compared e-banks to either non-users or users of mobile banking by using demographic factors. They concluded that China's lack of knowledge of such facilities is due to a mix of circumstances, including security difficulties, foreign threats, limited computer capabilities, and China's heritage of cash-carrying banking. Their results led them to this conclusion. One may argue that the rise in popularity of Internet banking can be attributed to the many advantages that are experienced by both the company and the client.

According to Uniamikogbo et al.'s research from 2020, internet banking remains one of the most reliable and cost-effective distribution networks. Both concepts are inextricably linked to the reduction in costs that are experienced by financial institutions. Other justifications for the introduction of such platforms include competition, as Internet banking has become an intriguing method for retaining loyal customers while simultaneously attracting new ones. Additionally, there are several benefits for banks, including mass customization, more efficient advertising, and lower-priced entry, to name a few. These are just some of the reasons why these platforms are being introduced.

The benefits that end-users get are equally varied and include, but are not limited to, the flexibility of the program (which enables time savings and makes the service available on a worldwide scale), lower delivery costs, and enhanced account management that is delivered on a more consistent basis. It is vital to bear in mind, however, that there are still clients who are hesitant to employ online banking because they are worried about the trustworthiness of the system. Customers use online banking for a variety of reasons,

the most important of which are the price incentives, the speed of the service, the availability of the service around the clock, and the ease of remote access, as stated by Centeno (2004). Because of the malleability of the goods that are provided, the growth of the market for online banking is promoted. Others are under the impression that mobile banking, online banking, and automated teller machines are all the same things. Haq and Awan (2020) researched to investigate the viewpoints of Internet banking customers in Finland. The outcomes of their analysis reveal that familiarity plays a part in grasping the information that is being presented to them. The results of the study suggest that there is a wide range of financial resources and commodities that are accessible. The use of Internet banking by clients is influenced by several variables, including a good outlook for the financial industry and faith on the Internet as a medium for banking, according to Shahabi et al. (2020), who researched online banking of Europeans.

According to Jadhav (2019), the usage of online banking by Malaysians is impacted by a variety of variables, including internet availability, electronic banking, and changing resistance. This hypothesis was supported by the findings of the aforementioned researcher. A study that was conducted in the year 2020 by Uniamikogbo and colleagues found that vendor service is an extra capacity that assists customers while they are working with online banking. The majority of the control over the COVID-19 epidemic is achieved via the use of the principles of social distance and good behaviour. The reason for this is because there are no prophylactic drugs or immunizations that are currently accessible. The use of contactless payments is something that consumers need to think about adopting to safeguard themselves and, at the same time, fulfil the criteria that are necessary for their

lives. One way for financial institutions to better strengthen and deepen their ties with their consumers is by providing them with the option to conduct banking transactions online. There is no longer any restriction or limitation placed on banking by the limits of time or location, as stated by Del and Aguas (2020). Customers will be able to process their accounts from any place in the world, which will be available twenty-four hours a day, seven days a week. After completing a review of the current scenario, dynamics, challenges, and consequences of electronic banking, Lymperopoulos and Chaniotakis (2004) concluded that it would not only improve access to financial resources but also offer higher and more competitive pricing. This was the conclusion that they reached after doing their thorough investigation (Napitulu, et al., 2021).

2.2.6 Adoption of E-Banking During the Pandemic

According to the findings of Arora and Sandhu (2017), the role of technology is a crucial component that contributes to the broad use of electronic banking services. Specifically, according to their viewpoint, for financial institutions to successfully promote their online banking services, they need to have a technology strategy that has been meticulously devised. Customers were compelled to adopt financial services that are accessible via mobile devices and the Internet as a result of the COVID-19 outbreak, which contributed to the acceleration of this trend. The revenues of international banks that are active in India have been significantly impacted as a result of this surge in usage. This is due to the increased reliance on digital channels, which has increased the number of transactions and service fees (Puriwat, W., & Tripopsakul, S. 2021).

Additional research was carried out in Delhi and the National Capital Region to investigate the preferences of customers for payment banks as opposed to universal banks. This study was undertaken in the same spirit as Mittal (2017). It was discovered via research that the ease of use and convenience of the product are major factors that determine the behaviour of customers. Because international banks in India were able to provide digital services that were better than those offered by their local competitors, the adjustments that were made to e-banking, especially during the pandemic, were advantageous to these organizations. These innovations had a direct and positive impact on the profitability of these banks by the fact that customers paid more for services that were provided through digital banking and online platforms. Moreover, customers agreed to accept the remedy.

2.2.7 Adoption of electronic cards using Wi-Fi platform services

As a consequence of the availability of digital technologies such as peer-to-peer (P2P) money transfers, QR codes, and near-field communication (NFC), financial institutions all over the world have made it possible for their clients to do business differently. Electronic banking services are a kind of service that integrates the elements of conventional banking, social computing, and the Internet into a single, clear solution. This type of service is known as e-banking services.3–5 It is important that you be aware of the fact that electronic services make it possible for financial institutions to communicate with their customers and other stakeholders effectively. These sorts of services are not only offered at affordable prices, but they also provide a high degree of quality (Ghali Z., 2021; Ramesh V, et al., 2021). Electronic banking services have become one of the most

important means of service in the financial industry as a consequence of the benefits that have been discussed here. Having said that, there are still some customers of the banks who are reluctant to make use of this sort of service because they are worried about the consequences.

For as long as Jordanian banks are unable to determine the reasons why their clients do not wish to utilize electronic banking services, they will continue to struggle with the implementation of these services. The reason for this is that their consumers are less engaged in and inspired by the new banking technologies that they have introduced. Because of this, it is conceivable that the causes that are accountable for this are mostly tied to the individual's acceptance of technology. Based on this, it is feasible that research that is based on the Technology Acceptance Model (TAM) can give some insight into the subject at hand. A significant expansion of the TAM has taken place over the years, and this fact should be brought to your attention. A 13 It is important to note that the bulk of the research that is based on the TAM is conducted in industrialized nations, which makes it difficult to generalize its findings to other countries (Carranza R, et al., 2021).

In light of this, it is conceivable to declare that the most important hurdle that stands in the way of the success of this technology is persuading people to use it as a full replacement for the traditional channels that are currently in use (Laukkanen T, et al., 2007). This is the most significant obstacle that stands in the way of the success of this technology. It is an intriguing fact that several scholars (Alalwan AA et al., 2017; Davis FD et al., 1989; Carranza R 2021) have investigated the challenges that are associated with the use of electronic banking. This is because electronic banking is still relatively new.

Even though these studies assisted us in gaining a better understanding of the primary elements that impact people's choices to use online banking, we still have a lot more to learn about how group influence influences people's intentions to use online banking services. For instance, the safeguarding of payments and the integrity of the financial institution are also essential. Based on the outcomes of the current research, it was discovered that the extended model that was presented is appropriate for the banking sectors that are now being created in developing countries. This discovery is significant because it has the potential to assist financial institutions, their clients, and policymakers in the process of devising policies that may aid in the achievement and maintenance of growth.

Ghali, Z., 2021 conducted a study to measure the level of loyalty that customers have towards e-banking services and the level of confidence that they have in e-trust. He discovered that the amount of trust and contentment that people had with the internet was significantly influenced by the design of a website as well as the degree to which it allows users to respond to their queries. Several factors, such as responsiveness, ease of use, dependability, reliance, comfort, secured transaction, and efficiency, were demonstrated to have a significant influence on e-loyalty and customer happiness, as stated by Ramesh et al., 2021. These characteristics were shown to have a negative impact on consumer satisfaction. It was discovered that one or more of these variables had a significant impact on the other factors. In a study conducted by Putit et al. in 2021, it was shown that customers' attitudes regarding the implementation of contactless payment systems were significantly influenced by several factors, including fear, perceived usefulness among

consumers, and convenience. It was shown by the results of the study that was conducted on customer attitudes. On the other hand, considerations such as social influence, trust, and the perception of how simple it is to use all have a marginal presence. As a result of the conclusions of the research that Abdul Rais and his colleagues conducted in 2022, it was determined that cashless payment and electronic wallets are, without a doubt, the most advantageous way of payment for the conditions that university students find themselves in. On the other hand, the research revealed that students protected their digital transactions by using one-time passwords (OTP) to safeguard their accounts.

In addition to this, the students demonstrated a good degree of comprehension about the utilization of public Wi-Fi networks, the safety of software, and the numerous threats that may be faced. Based on the findings of the study conducted by Dubey and colleagues, it was found that artificial intelligence and creative thinking have been the primary motivating elements behind the development of contactless banking payments. It was in the year 2020 when the research was carried out. In addition to this, they investigated how these technological improvements have contributed to the social alienation that has taken place throughout the COVID-19 era. Through the use of these technologies, they proposed that people would be able to carry out their regular activities and get services without having to leave the comfort of their own homes. Not only that, but they also claimed that this would in reality be the future of the world economy, especially during the lockdown epidemic times when there would be no transactions between individuals.

According to Karjaluoto et al., 2019, the UTAUT2 model was proposed, and it was discovered that it has the potential to explain seventy percent of the variation in the

intention to adopt contactless payment systems in industrialized countries like Finland. According to the paper, this is the case. The findings of this research reveal that the overall contentment and habits of consumers have a substantial influence on the customers' plans to use the product. This is in addition to the fact that there is a positive link between use and intention, which is already present. In 2021, Chaimaa and colleagues evaluated the service. The objective of this evaluation was to bring to light several concerns about the difficulties and dangers associated with e-banking services, as well as to provide some possible solutions to these issues. According to their hypothesis, one of the most significant challenges that the introduction of electronic banking had to overcome was the issue of ensuring the safety of financial transactions. In the process of implementing electronic banking, this was one of the most significant obstacles that needed to be overcome. Others who make use of banking services are concerned about the risk that their accounts may be hacked or accessed by those who are not authorized to do so in an authorized manner. The chance that the monies that they transfer may not be delivered to the people who are supposed to receive them is another issue that has been brought up as a source of concern. Customer innovativeness, perceived risk, and the availability of security information were shown to have a significant effect on the customer's inclination to use e-banking services and their adoption of such services in India, according to research that was carried out by Chauhan in the year 2021. This research was conducted in India.

2.2.8 Adoption of E-banking services among senior citizens

When it comes to preserving the e-banking habit of consumers, particularly among elderly residents in India, internet connectivity, as well as people's attitudes, expectations,

and faith in the system, are very important variables to consider. Regarding connectivity, the quick development of the digital payment company in India has been made possible by the high internet connectivity that is accessible in metropolitan areas as well as the simplicity with which mobile and internet technologies can be used. This has caused the business to grow at a rapid rate. Following the demonetization that took place in 2016, there was a change in the expectations and views of people in India about online banking (Sobti 2019). Through the implementation of a real-time payment system known as the Unified Payments Interface (UPI), which was designed by the National Payments Corporation of India, the process of transmitting and receiving monetary transactions is made much less complicated for financial institutions. In India, there has been a movement towards electronic banking, and the number of people who use the Internet has climbed from 4% in 2007 to about 50% in 2020 (Hameed and Nigam 2022). This indicates that there has been a shift towards electronic banking.

According to the findings of a study conducted on app users in India, the majority of banking customers between the ages of 27 and 37 have shifted away from using paper and plastic statements in favour of using electronic banking apps. Nevertheless, the trend among those of a more advanced age is not very encouraging. When it comes to customer choice, electronic banking applications have more than eclipsed paper and plastic. To add salt to injury, the Reserve Bank of India has made it very clear that it is putting top priority on the adoption of robust security measures for online banking. This is a move that is going to make problems much worse. This is being done to ensure that clients have faith and trust in the company, as well as to increase convenience by providing offline payment options

for Internet banking. The use of digital finance in India is still in its infancy due to obstacles that originate from a lack of knowledge and desire (Akhtar et al. 2021). This is even though India has one of the worldwide internet and mobile penetration rates that is expanding at the quickest pace. Developing nations like India are plagued by this contradiction, which is a problem for them. Among the demographics that have been identified as having the least possibility of using digital financial services, those who are above the age of 55 have been identified as one of the categories.

According to a survey by one of the Big Four accounting firms, Klynveld Peat Marwick Goerdeler (KPMG), India, this group of consumers increased their use of the internet from 8% before the pandemic to nearly 30% after the first six months of the pandemic, spending the majority of their time on healthcare platforms and grocery applications (Bhatt and Mehta 2020). Having said that, this specific group is also the one that is the slowest to adopt advances that are associated with Internet banking (Statista 2021). According to Isa et al. (2022), for older citizens to take advantage of digital financial services, they need more time and trust before going through with the process.

According to Nguyen et al. 2022, the unwillingness of humans to fully adopt financial technology may be linked to several issues that are interconnected and need a high level of complexity. There is a growing digital divide between technology and senior individuals as users of technology as a consequence of continual technological developments. These improvements include gaps in accessibility as well as a lack of motivation and opportunity (Wong and Mohamed 2021). According to CBILAMGE (2015), the elderly client base is characterized by a low degree of financial literacy, an

inadequate amount of money, and resistance to the evolution of technological innovation. Teng et al. (2009) state that the old have been portrayed as being resistant to the adoption of new technologies and as having low levels of confidence when it comes to the utilization of new tools and systems. As a result, the elderly have been portrayed as being resistant to the acceptance of new technologies. Previous studies have also shown that elderly people are less likely to have fair access to technological knowledge, as indicated by research that was conducted in the past (Olsson et al. 2019).

2.3 Cybersecurity and Digital Transformation Challenges

Electronic banking relates to several challenges, the most significant of which is the protection of sensitive information. This is even though technology provides a great deal of benefits. According to Saeed et al. (2023), the quick rate of digital change that occurred during the COVID-19 pandemic made it feasible for financial institutions to encounter heightened degrees of cybersecurity vulnerabilities. This was the case because of the pandemic. Financial institutions have become targets of cyberattacks as a result of the increasing number of transactions that are being conducted online. These assaults not only pose operational risks but also financial liabilities for the organizations. These attacks pose extra dangers to the procedures that are carried out by the institutions. For financial institutions to safeguard their income streams and preserve the faith of their customers, it has become essential for them to ensure the safety of their online banking systems and to continue maintaining their forward momentum.

Yadav (2021) and Cook (2020) have shown that there has been a rise in the quantity of cybercrime that has happened during the period of the pandemic. This increased amount

of cybercrime has been proven to have occurred. Multinational banks have been susceptible to cyber assaults as a result of the rapid growth of digital connections and the broad use of online banking channels. This vulnerability is the result of the confluence of these two circumstances which have brought about this vulnerability. If these risks are not appropriately managed, there is a possibility that reputational damage and loss of reputation will occur among the individuals involved. As a result of this, electronic banking is advantageous in terms of maintaining revenue throughout the pandemic. Despite this, it is necessary to make significant investments in cybersecurity to protect not only the financial institutions but also the customers of such organizations. Financial institutions were presented with possibilities as a result of the advent of electronic banking; yet they were also faced with substantial obstacles. It was mentioned in the report that was published by McKinsey and titled "Banking in the Post-COVID World (2021)" that the transition to digital banking increased the number of clients who stayed loyal to the institution, as well as the expansion of the services that were offered. On the other hand, it was necessary to make substantial investments in technology, cybersecurity, and compliance to meet the requirements of the situation. There is a possibility that some of the income benefits that might be attributed to the ease of online banking would be rendered null and void because of these expenditures. This is particularly true for international financial institutions since they were compelled to adapt to both international and regional regulatory standards. This meant that they were required to comply with both requirements.

As stated in the Financial Services Report (2020) that was published by the International Data Corporation (IDC), international financial institutions in India, such as

Citibank and Standard Chartered, were required to make investments in robust digital infrastructure and cybersecurity to effectively manage the increasing volume of online transactions. This was necessary to ensure that the government could effectively manage the growing number of online transactions. Several important topics are not well researched, and one of the most major of these is the possibility that the high expenses involved with maintaining secure digital systems in an age when cyber theft is on the increase can have a detrimental influence on profitability. This is one of the most critical areas of research that is lacking.

The term digital transformation refers to the process of integrating digital solutions into the operating processes of an organization. This approach is referred to as digital transformation. How firms carry out their commercial operations may undergo substantial shifts as a consequence of this, which is a possibility. Such a change has the potential to affect a variety of different parts of an organization, including the user experience, business processes, target markets, customers, customer relationships, and even a variety of cultural ramifications. It is feasible that this sort of change will influence all of these components. According to the findings of (Hai, T.N. et al., 2021), during the COVID-19 pandemic, corporate organizations increased their utilization of technology, which led to a wide range of extra issues that were not foreseen. Several emerging technologies are among the most essential enablers of digital transformation. These technologies include artificial intelligence, big data and analytics, blockchain, cloud computing, the Internet of Things, and the industrial Internet of Things. The aforementioned examples are all examples of technologies that are still in the process of being developed. As a result of the many

advantages that have been brought about by digital transformation, businesses are stepping up their efforts to convert their operations to digital forms. The flip side of the coin is that cybersecurity has become a big problem for organizations. To ensure that their operations will continue without interruption, organizations need to ensure that the digital transformation tools and artifacts that they own are protected. Furthermore, as a consequence of this, it is of the highest significance for businesses that are in the process of adopting DT to make the adoption of cybersecurity measures a top priority and to make certain that their systems are protected from any possible risks.

It is feasible for cybercriminals to take advantage of vulnerabilities in digital technologies; thus, it is the duty of businesses to ensure that technological solutions are safeguarded against digital attacks. Several different methods, including authentication, encryption, and access control, are among the methods that may be used to achieve cybersecurity. To protect data and networks from being accessed by those who are not permitted to do so or from being used for malicious purposes, certain processes have been created. Furthermore, companies need to consider the option of obtaining cyber insurance plans, which may provide financial protection against losses that are suffered as a consequence of a successful attack on their systems.

These policies may be purchased by organizations. A higher degree of awareness leads to more dependable information security behaviour (Saeed, S., 2023), which is another significant issue that needs to be addressed. Therefore, the understanding of workers about cybersecurity dangers is another important problem that needs to be addressed. The frequency of cyberattacks has significantly increased, and as a result,

commercial organizations need to have a comprehensive grasp of the risks associated with cybersecurity as well as the most effective approaches to managing such risks. The majority of these attacks are carried out to evaluate, modify, or delete sensitive information; obtain monetary benefits from users; or disrupt ordinary corporate activities. For cybersecurity, the term cybersecurity refers to the techniques that are used to protect computers and networks against unauthorized access and damaging activities, such as theft and destruction of data.

Around the globe, there are indications that both the cost of cybersecurity and the quantity of cybercrimes are on the rise. According to Haislip et al. (2019), the economic impact of cybersecurity breaches is undervalued. This was brought to the notice of the authors. This is because the cost is not limited to the form that is being targeted; rather, it spreads to the sector that is harmed by cybersecurity breaches via negative returns and higher insurance costs. This is the reason why this is the case. As a method of encouraging organizations to make investments in cybersecurity, Garg (2021) has highlighted seven fundamental benefits of investing in cybersecurity. These advantages are mentioned in the article. Some of the factors that are included are the protection of intellectual property, the enhancement of satisfying customer needs, the reduction of customer turnover, the branding of secure goods, the incorporation of secure suppliers into an integrated network, the reputation of the company, and the reduction of collateral damage in the industry. All of these factors are included.

Lee (2021) has presented a risk management strategy that emphasizes the ongoing enhancement of cybersecurity processes and the performance of cost-benefit analyses for

expenditures related to cybersecurity. The Cybersecurity Framework, which was established by the National Institute of Standards and Technology (NIST), is used by several businesses to manage the risks associated with cybersecurity. On the other hand, the criterion does not include a cost-benefit analysis. Based on the results of a cost-benefit analysis, the Gordon–Loeb model has been offered as a means of determining whether the level of the National Institute of Standards and Technology (NIST) is most appropriate for a particular company. Krutilla et al. (2021) improved the Gordon–Loeb model by including the depreciation cost of cybersecurity assets in their calculations.

A cost-benefit analysis of cybersecurity programs could be impacted by this element, depending on the circumstances. Because businesses may be affected by cybersecurity threats as a consequence of cybersecurity attacks on their supply chain partners, it is important to highlight the following: In their article from 2020, Simon and Omar advise that efforts in cybersecurity should consider both organized and uncoordinated attacks. Uddin et al. [2020] raised attention to the fact that cybersecurity weaknesses influence the growth and performance of organizations. Additionally, the authors pointed out that operational risks have increased as a consequence of cybersecurity concerns, notably in the banking sector. It has been brought to the notice of Curti et al. [2023] that the government sector is seeing a rise in the number of attacks that are related to cybersecurity. It is becoming more common for governments to increase both their overall financial expenditure and their operating costs to combat the threats that they face.

2.4 Impact of E-Banking on Revenue Models

Researchers have conducted a great number of studies that have shed light on the direct effect that Internet banking has on the management of profits at financial institutions. According to the findings of research that Biswas and Sen (2021) conducted on digital banking in India during COVID-19, they found that wider adoption of e-banking had a positive impact on the profitability of banks, notably via transactions, even though it had higher operating expenditures. Researchers came to this realization as a result of their investigation. Taking into mind the fact that clients are migrating away from conventional banking channels, they are of the view that digital banking has turned into a substantial source of revenue. This is especially taken into consideration.

Kumar and Mishra (2021) study how the pandemic has affected the digital transformation of Indian banks, which has resulted in a change in the financial landscape. What they find is that the epidemic has caused a shift in the landscape of the financial sector. According to the results of their study, multinational banks that are already well-established in digital strategy were able to capitalize on the rising demand for e-banking services. This was based on the findings of their respective studies. The fact that these banks supplied sophisticated digital products, such as virtual banking services, online financial tools, and digital payment gateways, led to a rise in income for these banks. This advantage was the consequence of the fact that these banks offered these innovations.

2.5 Financial and Economic Implications in E-banking

When seen from a monetary and money-related perspective, the financial aspect of a developing nation like India is an important consideration to consider. Banking has progressed significantly through digitalization and robotization; anyway, this is one region

where the confinement of development is vague, and there are different zones like the web-based financial that may add another skyline to banking in comparable creating economies. Therefore, in light of a valid worry about banking, it would be in the best interest of the industry to broaden writing on the web-based financial sector, which is now limited. It will empower the experts to build up how they can apply web-based banking to expand their serious edge through the convenient conveyance of administrations and items, subsequently accomplishing client steadfastness which may affect the monetary state of the bank and its finances. The problem of misrepresentation is highly inevitable and has infiltrated each aspect of the Indian economy, and practically anybody might be involved in one way or the other.

In any case, the Indian Electronic Banking technique arose at some point around the middle of the 1990s. It was comprised of likely the most successful firm that used all of the highways and interchanges. When banks in India began using personal computers to store client data and to affect the twofold sector as a whole, this was the first documented instance of electronic banking in the country. As of right now, electronic banking has accepted a refined measurement with virtual worlds, cordless, and automated teller machines (ATM), which are being employed to encourage swift and financially wise administration to the fulfilment of consumers. Numerous electronic tricks start with a letter to the potential injured individual getting using Spain, fax or email, mentioning for a little beginning up move measure of staggering whole, or to help sick laundering cash out of the nation or other unlawful occupation as an end-result of generous thin of cash that proceeds until the beneficiary comes up short on cash or the scanners proceed onwards for a crisp

snare of mentioning for individual data, similar to financial balance or Visa number to move non-existent money grant that uncovered the chance of wholesale fraud, protection, charge card, and web extortion.

2.6 Consumer Behaviour and E-Banking

During the pandemic, the activities of customers were another significant factor that contributed to the widespread use of online banking services. Mehta and colleagues (2020) investigate the shifts in consumer behaviour that occurred during the COVID-19 pandemic and demonstrate that the pandemic brought about a new paradigm in the expectations that consumers had of businesses. In the course of the pandemic, Mehta and his colleagues investigated the alterations in consumer behaviour that took place. There was a considerable decrease in the number of transactions that took place in physical form; yet there was an increase in the number of consumers who depended on digital channels to fulfil their banking requirements. These alterations not only led to a rise in the number of digital transactions but also inspired financial institutions to devise novel methods for the delivery of online services that are beneficial to consumers. This was a consequence of the fact that these alterations came about.

According to the findings of comparative research on consumer behaviour in India that Singh and Srivastava (2020) conducted, customers instantly shifted their banking interactions to e-banking channels as a consequence of the significance that the pandemic brought about. This was indicated by the findings of the study. It was because of the importance that the outbreak brought about that the researchers were able to identify this. Consequently, the revenues that are earned by the digital banking operations of

multinational banks that are engaged in India have increased as a result of this shift in behaviour. This was because they were able to meet the rising need for banking solutions that were not only fundamental but also safe and easy. This was the reason why they were successful.

According to surveys such as Capgemini's World Retail Banking Report (2021) and PwC's Digital Banking Consumer Survey (2020), there has been a consistent shift in consumer behaviour towards digital channels, notably during the pandemic. This trend has been particularly noticeable throughout the pandemic. Financial institutions have been pushed to enhance the user experience as a result of the fact that customers have begun utilizing online banking for day-to-day activities, the payment of bills, and the management of investments.

Even though this surge in digital banking presented international banks in India with an opportunity to acquire a customer base that is well-versed in technological matters, it also enhanced the amount of competition that was already there. There is a proliferation of fintech and digital-first banks, which puts pressure on multinational banks to innovate more swiftly and deliver more individualized digital services, according to several pieces of literature that were published by Bain & Company in the year 2020. In contrast, there are not a great number of studies that study how this change directly influenced the revenue of international banks, notably in India.

A lot of facets of social life, including payment and financial transactions, are experiencing transformations and reshaping because of the expansion of digital technology in the form of new apps and technologies. This is causing human behaviours to undergo

these changes. As a result of the proliferation of digital technology, this has come about. The number of opportunities for communication and pleasure has expanded to an almost endless degree as a result of the proliferation of technical equipment such as mobile phones, laptop computers, and other electronic devices. This has led to an increase in the number of alternatives accessible. Mobile phones can perform a wide variety of tasks, including the processing of all payments and the creation of wallets, to name just two of the many capabilities that they possess (de Kerviler et al., 2016). There is a vast variety of features that mobile phones possess. Cell phones are equipped with a broad variety of features that may be used. According to Liébana-Cabanillas et al. (2018), mobile payment services have become one of the most popular personal and professional consumer activities in recent years. This is held for both individuals and businesses. This may be because the number of individuals who own and use mobile phones has grown, which has led to an increase in the number of services that enable mobile payments to be made.

Because of the growing number of people who use mobile phones all over the world, the banking sector has begun to embrace Internet banking as a delivery method for its services. A significant number of academics have researched the implementation of online banking technology inside the banking sector. As stated by Adapa and Roy (2017), the method by which consumers will embrace new technology-based delivery channels is a significant factor in determining their attitude toward electronic banking among customers. According to Thornton and White (2001), there will be shifts in the distribution channels that are used as the population matures and gets confidence, as well as the number of individuals who use computers increasing. The UTAUT model has reportedly been used

in the banking business to evaluate the implementation of novel financial technologies, as stated by Yu (2012). This study aims to explore the factors that impact consumers' adoption and utilization of mobile banking and the Internet within the context of the COVID-19 pandemic. Specifically, the research will focus on the factors that drive such uptake and utilization. Because the COVID-19 pandemic has caused the virus to spread much more easily, residents of Indonesia have been strongly encouraged to utilize alternative payment methods rather than cash. This is because the pandemic has caused the virus to spread much more quickly.

Internet banking and mobile banking are two instances of technological advancements that may be of aid to customers of banks during the COVID-19 pandemic. They are also examples of possible solutions. These advancements are safer, easier to reach, and need less engagement with people than previous development methods. To analyse the customers' intentions regarding the usage of mobile banking and the Internet, the study makes use of a model that is often referred to as the Unified Theory of Acceptance and Use of Technology (UTAUT). In earlier research, the use of mobile banking during COVID-19 was investigated concerning a wide range of fields of study. As a consequence of this, it is of the utmost importance to research the intents and behaviours of clients of mobile banking in Indonesia. For the goal of analysing the conceptual model, which depicts the connection between UTAUT components, performance expectation, experience expectation, and societal effect, the data that was obtained via the use of questionnaires is used. Additionally, it was found that the environment that facilitates the activity and the behavioural purpose both influence the behaviour of utilizing behaviour. This was revealed

via research. The consumer's attitude towards mobile and internet banking is influenced by a variety of criteria, according to research that was conducted in the past. Motivation, demography, individual adoption of new technology, societal impact, the expectation of effort, and behaviour about different banking technologies are some of the aspects that make up these elements.

The research conducted by Karjaluoto and colleagues in 2002 revealed that the demographic features of individuals have an impact on how they behave concerning online banking. In addition, Sarel and Marmorstein (2003) conducted research in Finland and discovered that the adoption of electronic banking was greatly impacted by criteria such as the level of education and the income of the household. Bhatiasevi (2015) said that the Thai people have a great desire to take charge of mobile banking, especially if they apply this technology that is self-service and easy to use. This was reported to be the case when this was taking place. A variety of limitations have been put into place to limit people's ability to communicate with one another in social settings as the COVID-19 virus continues to spread. As a consequence of it, a great number of habits within the community, particularly activities related to finances, were impacted and formed. Because people spend the bulk of their time at home, mobile banking has emerged as a feasible option for completing secure financial transactions. This is because smartphones are becoming more popular. As a result of the COVID-19 outbreak, digital banking has grown more significant in several nations that are still in the process of developing their economies. In several countries that are classified as having low or moderate incomes, the usage of mobile money became much more widespread during the COVID-19 epidemic, according to the findings of the

Financial Access Survey that was carried out by the International Monetary Fund (Bazarbash et al., 2020). The introduction of such innovative methods of payment has resulted in the formation of a business model that expands the breadth of the ecosystem that is already in place. It is as a result of this that the cashless society has spread over the whole globe, mobile wallets have become an integral method of payment, and by the year 2020, 2.4 billion individuals will have used digital banking technology. According to Juniper Research's projections, the company will have reached 3.6 billion customers by the year 2024.

The Indonesian financial institution was able to build and implement new features in its online banking platform as a direct consequence of the conditions that were described above. A mode that enables international transfers is one of these characteristics, along with biometric security and digital payment options. Individuals are increasingly turning to mobile banking services as an alternative to going to the bank for a range of day-to-day functions. This trend is expected to continue in the foreseeable future or sooner. According to Barquin et al. (2019), the rate of adoption of electronic banking technology in Indonesia is still considered to be rather low, even though electronic banking provides its consumers with a variety of attractive benefits. 2019 research by Barquin et al. Based on the findings of the research, it has been determined that around 32 percent of banking customers in Indonesia make frequent use of online banking services.

The internet connection and accessibility, the obstacles that stand in the way of technological advancement, and a lack of trust in the security of online banking services are some of the many problems that are associated with this situation. There are a lot of

other problems as well. During the COVID-19 epidemic, it is of the utmost importance to research the technological components that influence the behavioural intents of users about mobile banking and the Internet. This is because the topics that have been explored up until this point have brought to light the relevance of this study. Because of this, it will be possible to acquire a more in-depth comprehension of the procedure that is used in the method of technology adoption. With the COVID-19 epidemic now in full swing, the purpose of this research is to investigate the variables that influence the adoption and usage of mobile banking and the Internet by consumers. To explore the influence that COVID-19 has had on the behaviours of customers in Indonesia who make use of online banking services, the goal of this article is to research the impact that COVID-19 has had.

The consumer's attitude towards mobile banking and online banking alternatives is impacted by a range of elements, including motivation, demographics, individual acceptance of new technology, societal effect, effort expectation, and conduct towards various banking technologies. The mindset of the customer is influenced by all of these elements, although to varying degrees. According to the findings of a study that was carried out by Karjaluoto and colleagues in the year 2002, demographic characteristics were shown to have an impact on behaviours associated with Internet banking. The findings of this investigation were printed in a publication in the year 2002. A study investigation was conducted in Malaysia by Tan and Lau (2016), and the sample size consisted of 347 college students, both male and female. The researchers concluded that people are more inclined to use mobile banking when they are exposed to important others who exert a great deal of pressure and influence on them. Suresh and Latha (2021) conducted empirical research to

determine the influence of social factors on the intentions to use among a total of 959 individuals who resided in rural parts of India via the use of the study. According to the results of the preceding research, there is a significant connection between this outcome and those findings. By this line of thinking, Bhatiasevi (2015) observed that Thai people have a strong inclination to take over mobile banking, especially if they make use of this technology that is self-service and simple to use. This is the case if they make use of it. According to the results of a study that Sarel and Marmorstein (2003) conducted in Finland, the adoption of electronic banking was shown to be significantly affected by variables such as the level of education and the income of the family. This has shown to be the case.

In addition, the method by which consumers would embrace new distribution channels that are based on technology is a crucial issue that plays a role in shaping their attitude toward online banking for customers. According to Thornton and White (2001), changes in the usage of delivery channels would occur as the population ages and grows in confidence, knowledge, and the amount of time spent using computers. These changes would become more prevalent as the population ages.

The business environment may undergo changes that were not expected, which may result in considerable modifications that were not anticipated by employees or professionals in the field. There is a possibility that these shifts will take place. One of the most remarkable examples of a phenomenon that has taken place all over the world and has experienced significant transformations is the pandemic that was caused by the COVID-19 virus. Participants will engage in activities that relate to business, enjoyment, and consumer behaviour as part of the subjects that will be investigated. Both the

accessibility of services like restaurants and the method by which things are delivered in the real world have undergone a lot of changes. These changes have been undertaken in response to several different factors. Furthermore, these occurrences are connected to the changes that have taken place in the methods of payment for goods and services that have been implemented (Szumski, 2022). It has been noted that during the COVID-19 epidemic, individuals tend to avoid participating in transactions with one another that require the use of actual cash. This may be because people are afraid of the virus. By Zhao and Bacao (2021), this is the case. The formation of the community has been influenced by a wide variety of ways of doing things and routines that people have developed throughout time. An example of one of these habits is the process of conducting financial transactions. As stated by Tut (2023), the COVID-19 outbreak affects how consumers of banks cable get access to a variety of financial goods and services.

According to Forrester Research, the number of transactions that are carried out without the use of physical contact has grown by 69% from the commencement of the period starting in January 2020. This increase occurred compared to the beginning of the period. In addition, research that was carried out by Stats GmbH & Co. KG in the year 2020 indicates that almost fifty percent of all consumers all over the globe are utilizing digital payment methods more often than they did before the epidemic, and the majority of these customers want to continue using these methods. According to Hoe (2020), an increasing percentage of conventional small and medium-sized enterprises (SMEs) are obtaining online banking accounts to make their transactions more convenient. It is anticipated that this pattern will continue. In Southeast Asia, where there has been a

significant increase in the number of individuals opening banking accounts with digital banks, a trend that is comparable to this one may be seen. Additionally, a pattern that was somewhat comparable to this one was seen in the United Kingdom, where there was a discernible rise in the number of mobile banking transactions that took place every month. This trend was observed in comparison to the one described here.

As a result of the COVID-19 outbreak, several significant economic concerns will hasten the adoption of mobile banking strategies. First and foremost, COVID-19 is an infectious illness that has the potential to be easily transmitted to other people. The customer is a person who is worried about their health and serves as a self-centered individual. As a consequence of this, we could respond to the pandemic by limiting and reducing the amount of engagement that we have with other people. The second thing that happened was that the government acted in reaction to the outbreak of the disease. The government has implemented stricter regulations to adjust to the new normal as a response to the outbreak of the novel coronavirus infection (COVID-19) pandemic, which occurred after the virus was found. Members of the community must maintain a social distance from one another and limit the amount of close physical contact that takes place. Consequently, it is projected that consumers would move away from payment methods that need physical touch (such as electronic cards) and towards contactless payment methods, such as mobile banking. This is because of the aforementioned reason. In addition, the government of Indonesia is making efforts to promote cashless payment options to aid the populace in sustaining the new normal. The study that was conducted in the year 2020 by Aji and colleagues found that the lack of physical connection during service encounters has

increased the number of requests that customers have made for services such as banking and financial services. Due to the rapid onset of the COVID-19 pandemic, which has resulted in the closure of enterprises, there has been a significant slowdown in economic activity. This has led to a general slowdown in economic activity. As a consequence of this aspect, it is anticipated that consumers would decrease their utilization of payment methods that incur interest, such as credit cards. This factor, when combined with the uncertainty throughout the pandemic, adds to the possibility that consumers will reduce their utilization of such payment methods (Szumski, 2022).

2.7 Long-Term Implications of E-Banking Post-COVID-19

In particular, it is predicted that the effect of COVID-19 on electronic banking will have a long-term impact on the financial sector of the country, especially on international banks that are doing business in India. According to Shazi (2020), the pandemic has irreversibly changed the ecology of the banking industry, and digital banking has become an essential component of the supply of financial services. Shazi also asserts that the ecosystem of the banking business has been irreversibly affected. Even after the epidemic has passed, it is projected that foreign banks, who have traditionally been at the forefront of digital innovation, will continue to enjoy the advantages of the growing utilization of e-banking services. This is because international banks have historically been at the forefront of digital innovation.

Research that was carried out by the World Bank in 2021 and the Journal of Banking Regulation in 2020 emphasizes the potential for digital banking to boost future profits. This suggests that digital banking has the potential to increase future earnings. As

more clients get used to making transactions online, financial institutions that make investments in effective e-banking channels will be in a great position to capture this developing market. This market is expected to continue to grow. It is projected that this tendency will continue, especially in India, which is seeing a rapid expansion in the general use of digital technology.

According to the findings of the study that has been carried out, the implementation of electronic banking had a significant and positive impact on the revenues of international banks that were operating in India during the COVID-19 outbreak. Because of the widespread use of digital banking services, which is driven by the desire for convenience, banks have been able to produce more money even though they have been presented with operational challenges related to cybersecurity. This is because the demand for convenience exists. It is projected that the economic conditions in India will continue to be influenced by the long-term consequences of this transition to digital banking throughout the decade of the 1990s.

2.8 Impact of Loan Defaults and NPAs on Revenue

During the pandemic, another significant reason was the increase in non-performing assets (NPAs) and loan defaults, which had a particularly negative impact on the income of banks that provided credit facilities. The rate of non-performing assets (NPAs) in retail and corporate loans rose as a result of the economic slowdown that was induced by COVID-19, as reported by the Reserve Bank of India (2021). The issue of increased loan defaults was a challenge for international banks, which often serve high-value consumers and corporate clients. This challenge was particularly prevalent in

industries such as retail, hotels, and small enterprises alike. Even though e-banking services were thriving, the income generated from lending operations was decreasing as a result of the increase in non-performing assets (NPAs), according to research such as KPMG's India Banking Industry Analysis (2021). On the other hand, there is a paucity of published material that expressly examines how multinational banks dealt with this risk concerning their online banking operations and overall income streams during the epidemic.

The reasons that define non-performing assets (NPAs) may be separated into two groups when examined from the perspective of financial institutions. These categories are internal factors and external factors. The term internal factors refers to all of the components that are considered to be internal to the banking operation. On the other hand, external components are those that are not intrinsic to the operation of the bank but can affect the outcome of the loan situation. These variables are not considered to be part of the bank's operations. There are a lot of components that are covered, such as regulatory concerns, aspects that are special to the business, and macroeconomic characteristics. Several elements that play a major part in the creation of non-performing assets (NPAs) have been found in the research that has been conducted throughout the years. Unfavourable economic conditions, inadequate corporate governance, inefficient market monitoring, and inadequate banking laws and supervision are some of the elements that contribute to this situation. According to Samantaraya (2016), several studies have concluded that the circumstances of the macroeconomic environment have a substantial influence on the growth of non-performing assets for the company. The macroeconomic and bank-level factors, as well as the financial development and structure of the financial

sector, have been taken into consideration to explain non-performing loans (NPLs). This was done to explain the phenomenon. Ozili analyses the role that financial growth plays in the continuous presence of non-performing loans (NPLs) in his study that he conducted in 2019. Non-performing loans, often known as NPLs, are increasing in unison with the growth of the financial industry, according to the findings of his study that were conducted across many countries. According to Ozili (2019), this might be ascribed to the lack of proper oversight that occurs throughout the process of financial intermediation.

On the other hand, the current research is limited in its analysis since it concentrates on the aspects that are unique to banks that are responsible for non-performing assets. This is a limitation of the study. There is a restriction on the study in this regard. According to the findings of Bawa et al. (2019), a great number of research have been conducted in a variety of countries, including India, to investigate the factors that are special to banks and that contribute to the accumulation of non-performing assets (NPAs) or credit risks. Research on these topics has been conducted in a variety of countries throughout the world. According to Berger and Deyoung (1997), who did a study on commercial banks in the United States between the years 1985 and 1994, they discovered that high nonperforming assets (NPAs) are caused by operational inefficiency, which is reflected in poor credit assessment skills and processes. This was the conclusion that they came to after doing their research. Berger and Deyoung were the ones who made this discovery. If managers are unable to effectively monitor and control their operating expenses, then low-cost efficiency is an indication that inadequate management approaches are being used. This is because managers are not providing enough oversight and control. The possibility of this happening

exists if management does not maintain a careful check-up and control the expenditure that are associated with their operations. As a consequence of the company's inability to implement effective techniques for loan underwriting, monitoring, and control, there is a possibility that the number of loans that are regarded as non-performing in the market may grow. In their study from 1997, Kwan and Eisenbeis established the observation that banks with more capital tend to achieve better levels of operational efficiency and are more likely to take on fewer credit risks. This is in contrast to banks with lower capital, which tend to take on more credit risks. The fact that this is the case was shown. It is more likely that a bank will have a lower proportion of nonperforming assets if it has a larger capital. This is because a larger capital indicates that the bank has higher overall capital.

The findings of Salas and Saurina (2002) indicate that when a bank enters a new geographical market, it runs the danger of encountering unfavourable selection concerns. This is the case because of the characteristics of the new market. This is because the bank is expanding into a new market. The issue of adverse selection may result in a greater chance of non-performing assets (NPA) because banks do not have past expertise in the industry or geographical location in which they join. This is the reason why things are the way they are. In addition to the level of rivalry that exists between banks, it has been shown that the amount of competition is another element that may contribute to an increase in the number of loans that are provided. If there is a rise in the degree of competition, managers will have a greater incentive to take risks, which will eventually result in a drop in the interest margin of the bank. This will be the case if the level of competition increases. Because of this, managers will be encouraged to lend money to clients who have a worse

credit quality, which may result in a rise in the number of problematic loans. This may lead to an increase in how many loans are problematic. Taking into consideration the fact that this is the situation, Salas and Saurina (2002) concluded that higher levels of competitiveness might result in a rise in non-performing assets (NPAs).

Several studies have been conducted over the last few decades in an attempt to explain the credit risks that are common in Indian banks. This research has been carried out to explain why these risks exist. Ranjan and Dhal (2003) researched public sector banks (PSBs), and the findings of that study revealed that lending conditions and macroeconomic circumstances did influence the credit risks that PSBs are exposed to. Das and Ghosh (2007) investigated credit risks and concluded that pro-cyclicality and a deteriorating capital adequacy ratio are the reasons that are accountable for credit risks among banks in India. They came to this conclusion after investigating credit risks and coming to the realization that these are the factors that are responsible for credit risks throughout the country. According to the findings of a study that was conducted by Dhar and Bakshi (2015) on public sector banks (PSBs) over the time spanning from 2001 to 2005, it was discovered that bank-specific characteristics such as interest income (net interest margin) and ROA did have a significant influence on loan defaults. This was demonstrated by the findings of the study. The results of research that Patra and Padhi (2016) conducted indicate that there is a substantial link between the capital adequacy ratio and the return on assets. Also, the findings indicate that this connection is considerable. As an additional point of interest, the results of the research that Gaur and Mohapatra carried out in the year 2020 indicate that the poor quality of the loans is a significant factor that contributes to the high

credit risks that are widespread in Indian banks. According to the findings of a research study that was carried out by Muniappan (2002), one of the multiple factors that contribute to the rise in the amount of non-performing assets (NPAs) is inattentive monitoring after the discovery and prevention of diversion of funds after the issue of credit. This is only one example of the various variables that contribute to the rise in NPAs.

2.9 Regulatory and Compliance Challenges

During the pandemic, multinational banks that were operating in India were subject to stringent regulatory and compliance duties, particularly about the protection of data and cybersecurity. The Personal Data Protection Bill (2021) and the directives provided by the Reserve Bank of India (RBI) regarding digital lending both contributed to the formation of additional tiers of compliance. As a consequence of multinational banks' attempts to comply with both local and international laws, the costs of compliance for these banks have increased, as stated by the Global Risk Management Survey (2021) that was carried out by Deloitte. On the issue of how the increased compliance requirements affected the profitability and revenue of multinational banks during the pandemic, there is a paucity of research that has been published on the subject.

2.10 Obstacles in E-Banking

D. Stalin and Mahmoud Nayef Al-Manayseh, (2020) in their study, the capacity to understand general growth when broken down into the essentials that are close at hand: For a nation to be able to achieve a general development that caters to the needs of its citizens, it is necessary to have a competent level of setup and personal breaking point architecture.

As an illustration, a summary of the development method of association for WW Interbank Financial Telecommunications (SWIFT) to the web demonstrates that at present, the transfer does not need to take place in a large number of countries due to the absence-based agreeable establishment, which employs fundamental and required specific aptitude. The e-portion structures that make up an additional model are structures that are already widely known. In a few established countries, there are a variety of collections and clients that either do not believe in or do not progress toward these fundamental setups to decide to process electronic portions. To meet the requirements for open aid for electronic money, the following sum must be obtained: In the past, the majority of the Electronic Fund activities in developing countries were concerned with the question of acceptable endeavours during intervals occurring between the secret and revealed segments. A highly effective system is Singapore's Trade Net, which is an example of an organization that has supported an initiative. Assuming that the open region does not have a crucial method for carrying out the activities, arrangements must be made to accommodate activities between wide and personal territories near multi-sided associations such as the World Bank, which were established to encourage reveal assistance for similar e-money activities. In other words, the arrangements must be made to accommodate activities between wide and personal territories. Before the birth of the internet, the world dealt with issues of privacy and decency approval in a suitable way. These are two of the most essential aspects based on the financial aspect, and they were handled in an appropriate manner. The agreement reached a wide and adequately fragile path; for example, the web most likely would not be the best base for bank-client affinity since trust would quietly fade with the passage of time.

Electronic banking has brought about a number of current issues for the bank, its administrators, as well as for management and managerial professionals. These issues have been brought about by the usage of electronic banking. They begin not only from the ongoing potential of the cross-periphery business but also from the chance of the nearby trades that are reliant on the development of technology to use whatever creates different safeguarding related worries. This is because those trades are dependent on the advancement of technology. Risk-based criteria for electronic banking were introduced in the year 2001 by the E-Banking Group (EBG) of the Basel Committee, which is a component of the Banking Supervision department. An emphasis is being placed on the most efficient method of expanding, modifying, and adapting the official structure to the electronic money associated website. This is the primary focus of attention. The determination of whether or not projects are carried out is of the highest significance nowadays. The Reserve Bank of India has made sufficient efforts in order to offer an appropriate degree of protection, and these efforts are enough. The implications of the broad use of electronic banking systems are the topic of discussion in the fifth part of the text. In spite of the fact that this is a controversy that is often encountered, the fact that the transaction volumes were lower than the threshold made it far simpler to carry out electronic banking transactions across peripheral territories. Certain financial organizations have discovered that temporary outskirt exercises provide a handy approach to accrue economies of scale. These institutions are among those that have made this discovery. It is necessary to have a far greater level of control over the short-periphery in order to provide support for the short-edge, regardless of the conditions. It is possible that a similar

coordinated effort will be required to connect with the same supervisory measures and generate demands (for the purpose of maintaining a key superb way from managerial trade), as well as a few blending of suitable, computing, and responsibility evaluation strategies.

CHAPTER III:

METHODOLOGY

3.1 Overview of the Research Problem

As a result of the fact that it provides a detailed explanation of the processes that were carried out in order to carry out the research, the chapter on the methodology of research is an important component of a thesis or dissertation. The document not only provides an explanation of the logic that led to the selection of certain approaches, but it also provides specifics of the procedures that were used in order to collect and analyse the data. In this chapter, not only is a brief introduction to the purpose of the chapter offered, but it also includes a summary of the methodology that was used in the research. It is vital to repeat the key research questions or hypotheses in order to establish the framework for the strategy that will be taken. The purpose of this part is to offer an outline of the methodology that is used in the study. The methodology may be quantitative for the investigation, depending on the nature of the investigation. It is necessary to define the population that is the subject of the investigation, which should include the geographical location, demography, and any other relevant characteristics.

This chapter details the research methodology used to measure the impact of e-banking on the revenue of international banks operating in India during the COVID-19 pandemic. The methodology is designed to capture and analyze secondary data in order to understand how the e-banking services affected revenue streams during such an unprecedented period. Secondary data will enable one to obtain insight and useful information without necessarily having to collect primary data from various reports,

records, and databases. The study performs descriptive and exploratory research so as to explain the trends and patterns of the e-banking revenue performance for international banks under the influence of COVID-19.

The secondary data that will be collected will be analysed using several techniques to draw conclusions about the impact of e-banking on bank revenues like, Descriptive Statistics, Comparative Analysis, etc. The study is conducted based on the quantitative method, mostly utilizing secondary data. This type of design is suitable because it is possible to examine numerical data like financial reports, quarterly earnings, transaction volumes, and growth rates of international banks in the context of the pandemic.

3.2 Operationalization of Theoretical Constructs

In their research, Biswas and Sen (2021) define revenue generation as the process by which an entity, corporation, or organization makes money from the activities, products, or services it presents. The process consists of the development and implementation of tactics meant to draw customers or clients and persuade them to purchase goods or services, therefore producing money inflows. It is possible for an organisation to generate revenue from a variety of sources, depending on the nature of the organisation. These sources include advertising, sales of products or services, investments, grants or donations, and advertising. It is necessary to have an awareness of market demand, pricing strategies, and consumer preferences in order to generate income effectively. Usually, a mix of marketing, sales, and financial management practices helps one to acquire awareness.

Customer engagement in banks is the word used to describe the techniques and practices employed by finance in order to create and preserve significant relationships with

their clients in the banking institutions sector. Offering value, creating individualized experiences, and maintaining open lines of communication are all ways to achieve the objective of increasing customer pleasure, loyalty, and retention. When applied to the banking industry, client interaction involves a wide range of touchpoints, including both physical (visits to branches) and digital (mobile banking, websites, and social media activities). The following is a list of important aspects of client interaction in banks: Personalized Services, Digital Engagement, Loyalty and Rewards Programs, Financial Education and Advisory, Social Media and Community Engagement, Seamless Customer Experience, Data-Driven Insights, and Customer-Centric Innovations are some of the services that we provide. According to Mbama, C. I., and Ezepue, P. O. (2018), banks can assure long-term success in a landscape that is becoming more digital and competitive by concentrating on improving customer engagement. This allows banks to form more meaningful connections with their customers, build trust, and secure long-term success.

Operational Efficiencies, according to the research conducted by Linda Allen and Anoop Rai in 1996, the term operational efficiencies in banks refers to the capacity of financial institutions to simplify operations, decrease costs, enhance service delivery, boost productivity while simultaneously maintaining or increasing the quality of their services. It is essential for financial institutions to achieve operational efficiency in order to maintain their competitive edge, adjust to the ever-shifting demands of their customers, and deal with the ever-changing regulatory and technological contexts.

3.3 Research Gap

An area that is yet underexplored is the influence that e-banking had on the income of multinational banks in India during the COVID-19 epidemic. This is particularly true when considering the setting of a global health catastrophe that fundamentally impacted banking operations. Even though there has been a significant amount of study conducted on digital banking and financial technology, there are still a few holes in the literature that are directly related to this subject: Most of the research that has been done on e-banking and digital transformation has been on local banks or the Indian banking sector as a whole. For the most part, there is a dearth of studies that specifically investigate how multinational banks, with their distinct global structures and tactics, managed to successfully negotiate the transition to digital banking inside India. Because of variations in operational frameworks, client bases, and regulatory environments, the issues that international banks face and the revenue consequences that they experience may be different from those that those local institutions face.

A limited number of studies have particularly investigated the influence that the COVID-19 epidemic has had on the income of multinational banks in India, even though there is a substantial amount of research on digital banking and developments in fintech. E-banking patterns were altered in ways that had never been seen before as a result of the distinct set of circumstances that were brought about by the pandemic. These conditions included lockdowns, changes in client behavior, economic instability, and modifications in financial rules. The currently available research may not take into consideration all of these issues. There is a lack of comprehension of the clear connection that exists between the growing utilization of online banking services and the income generated by banks.

Although a great deal of literature has been produced on the subject of the expansion of digital banking transactions, fewer studies quantify or investigate the effect that this change has on the total income of multinational banks. During the pandemic, the majority of the extant research discusses digital transformation on a high level; however, it does not give any particular insight into how various e-banking services (such as online payments and digital lending) contributed to profitability or the financial bottom line.

Insufficient research has been done to investigate the impact that digital client retention initiatives had on the income of multinational banks during the pandemic. In a period of economic unpredictability, it is necessary to research how international banks have used e-banking services to keep existing clients, bring in new customers, and produce sustainable income. Few studies have been conducted to investigate the changes in the adoption rates of digital banking between pre-pandemic and post-pandemic periods, as well as the financial effects of these discrepancies. When it comes to evaluating long-term revenue plans for foreign banks, it is essential to have a solid understanding of how the rapid rise in digital banking that occurred during the pandemic compares to patterns that were already in place, as well as whether these changes are permanent or transitory.

Even though several studies have been conducted on the advantages of digital transformation, there is a dearth of study on the difficulties that multinational banks encountered while attempting to monetize their online banking services during the pandemic. number of potential E-Banking Transactions.

While the epidemic was going on, there was another vacuum in the literature about the influence that e-banking had on international transactions and earnings from foreign

currency. Because of the decline in international commerce and travel, it is not apparent how digital banking has affected the income streams that international banks depend on. This is because international banks often rely on services that span international borders. In view of this research vacuum, it is imperative that a concentrated study be conducted on the effect that e-banking has on income for multinational banks operating in India throughout the COVID-19 period. By addressing these gaps, the purpose of this research is to give full knowledge of how digital banking tactics affected financial performance and what lessons can be derived for the future of banking in a world that has recovered from a pandemic.

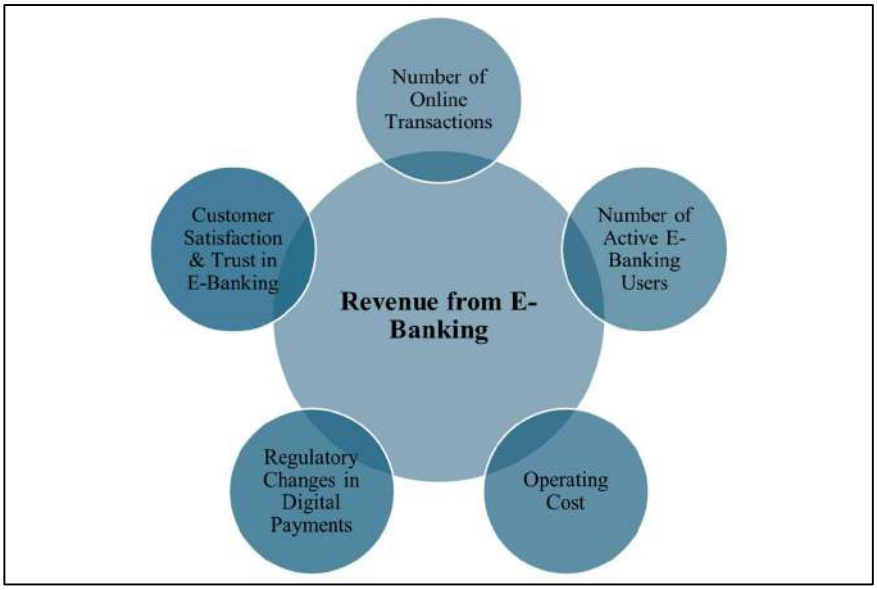

Figure 3.1 Conceptual Framework

3.4 Research Purpose and Hypothesis

The study on the Impact on Revenue from E-Banking in International Banks in India during COVID-19 aims to comprehend how the COVID-19 epidemic affected revenue generating by means of e-banking services provided by international banks

functioning in India. The purpose of this is to determine if the transition to electronic banking resulted in decreased costs and increased profitability, or whether it resulted in the introduction of new expenditures that affected the overall financial performance.

1. Know the Customers: Know changes in the way consumers used e-banking services and adopted them by the volume of transactions, new features, and how they are used, amid constraints due to the epidemic and social distance rules.
2. Evaluate technological transformation: Analyze how the huge digital transformation for banking services under COVID-19 epidemic changed their operational efficiency, cost-effectiveness, and revenue earned by these institutions.
3. List Principal Difficulties and Prospectives: Talk about the possibilities the epidemic created for the e-banking industry as well as the difficulties foreign banks faced adjusting increased expectations on digital banking.
4. Offer ideas that will enable banks to better target their digital banking efforts, increase client involvement, and change their post-pandemic revenue generating models.

To some extent, in addressing these objectives, the study will provide full understanding of how e-banking impacts the finance of international banks while providing valuable information for future planning in the same sector.

Research Hypothesis

To study the effects of COVID -19 on the international banks in India, the research will be based on these hypotheses.

Hypothesis 1: The overall revenue (in ₹ crore) of international banks doing business in India had increased with the increased usage of e-banking services during COVID 19.

$$Y_{i,t}=\beta0+\beta1D_{i,t}+\beta2A_{i,t}+\beta3II_{i,t}+\beta4OI_{i,t}+\beta5IDR_{i,t}+\beta6CDR_{i,t}+\beta7(D_{i,t}\times A_{i,t})+\beta8(II_{i,t}\times OI_{i,t})+\beta9(IDR_{i,t}\times CDR_{i,t})+\beta10Y_{i,t-1}+\beta11D_{i,t-1}+\beta12A_{i,t-1}+\beta13II_{i,t-1}+\beta14OI_{i,t-1}+\beta15IDR_{i,t-1}+\beta16 CDR_{i,t-1}+\alpha_i+\lambda_t+\epsilon_{i,t}$$

where:

$_i$ = Bank (1 to 36)

$_t$ = Year (2018-2022)

α_i = Bank-specific fixed effects

λ_t = Year-specific effects

$Y_{i,t-1}$ = Lagged dependent variable

$\epsilon_{i,t}$ = Error term

$Y_{i,t}$ = Revenue from E-Banking

$D_{i,t}$ = Total deposits at the end of the financial year

$A_{i,t}$ = Total loans and credits given

$II_{i,t}$ = Interest income from loans and assets

$OI_{i,t}$ = non-interest income from fees, commissions, trading

$IDR_{i,t}$ = Deposits invested in government securities & financial instruments

$CDR_{i,t}$ = Credit-deposit ratio

- $D_{i,t} \times A_{i,t}$ = Interaction term for deposits and loans
- $II_{i,t} \times OI_{i,t}$ = Interaction term for interest and non-interest income
- $IDR_{i,t} \times CDR_{i,t}$ = Interaction term for investment deposits and credit-deposit ratio
- $D_{i,t}$, $A_{i,t,}$ $II_{i,t}$, $OI_{i,t}$, $IDR_{i,t}$, $CDR_{i,t}$, = Lagged values (previous year's data for trend analysis)

A major increase in the deployment of electronic banking services around the globe was brought about by the COVID-19 epidemic, which resulted in significant changes in the way that banks generate money. Factors like increased demand for digital services, cost efficiency, fee-based income, new digital products, challenges to revenue, customer retention, and data monetization all contribute to an increase in revenue prospects during the pandemic. The bank's revenue generation significantly influenced e-banking during the COVID-19 pandemic (Chowdhury, M. S. A., et al., 2022). The revenue models of these international institutions were further complicated by the fluctuating economic situations, which further aggravated the dilemma. The purpose of this study is to investigate the influence that e-banking had on the income of multinational banks that were operating in India during the COVID-19 epidemic. Specifically, the study will investigate the primary drivers, difficulties, and overall results for the industry under this unusual circumstance.

Hypothesis 2: The impact of financial indicators on overall income during the COVID-19 era differed significantly from earlier periods.

$$R_{i,t}=\beta0+\beta1Te_{i,t}+\beta2Op_{i,t}+\beta3Pc_{i,t}+\beta4Oi_{i,t}+\beta5CAR_{i,t}+\beta6Oe_{i,t}+\beta7(Te_{i,t}\times Op_{i,t})+\beta8(Pc_{i,t}\times Oi_{i,t})+\beta9(CAR_{i,t}\times Oe_{i,t})+\beta10Te_{i,t-1}+\beta11Op_{i,t-1}+\beta12Pc_{i,t-1}+\beta13Oi_{i,t-1}+\beta14CAR_{i,t-1}+\beta15Oe_{i,t-1}+\beta16COVID_t+\alpha_i+\lambda_t+\varepsilon_{i,t}$$

Where

$_i$ = Bank (1 to 36)

$_t$ = Year (2018-2022)

α_i = Bank-specific fixed effects

λ_t = Year-specific effects

$R_{i,t}$= Lagged Dependent Variable

$Te_{i,t}$ = Total expenditure (interest expenses, provisions, operating costs)

$Op_{i,t}$ = Operating profit before provisions and taxes

$Pc_{i,t}$ = Provisions & contingencies for risk coverage

$Oi_{i,t}$ = non-interest income (fees, commissions, trading revenue)

$CAR_{i,t}$ = Capital Adequacy Ratio (CAR)

$Oe_{i,t}$ = Operating expenses as % of total expenses

$Te_{i,t} \times Op_{i,t}$ = Examines whether operating costs impact profit efficiency

$Pc_{i,t} \times Oi_{i,t}$ = Checks if risk provisions affect non-interest income generation

$CAR_{i,t} \times Oe_{i,t}$ = Evaluates whether financial strength influences operational cost impact

$Te_{i,t-1}$, $Op_{i,t-1}$, $Pc_{i,t-1}$, $Oi_{i,t-1}$, $CAR_{i,t-1}$, $Oe_{i,t-1}$ = Lagged values (previous year's data for trend analysis)

$COVID_t$ = A binary variable to assess pre and post-COVID impact.

- $COVID_t$= 0 for 2018-2019 (Pre-COVID)
- $COVID_t$= 1 for 2020-2022 (During COVID)

A lot of facets of social life, including payment and financial transactions, are experiencing transformations and reshaping because of the expansion of digital technology in the form of new apps and technologies. This is causing human behaviours to undergo these changes. As a result of the proliferation of digital technology, this has come about. The number of opportunities for communication and pleasure has expanded to an almost endless degree as a result of the proliferation of technical equipment such as mobile phones,

laptop computers, and other electronic devices. This has led to an increase in the number of alternatives accessible. Mobile phones can perform a wide variety of tasks, including the processing of all payments and the creation of wallets, to name just two of the many capabilities that they possess (de Kerviler et al., 2016). There is a vast variety of features that mobile phones possess. Cell phones are equipped with a broad variety of features that may be used. According to Liébana-Cabanillas et al. (2018), mobile payment services have become one of the most popular personal and professional consumer activities in recent years. This is held for both individuals and businesses. This may be because the number of individuals who own and use mobile phones has grown, which has led to an increase in the number of services that enable mobile payments to be made. Customer relations were essential in influencing the success and uptake of e-banking during the COVID-19 epidemic. Significant factors via which customer relations impacted e-banking including the establishment of trust in digital platforms, improved customer support, tailored services, educational and awareness initiatives, and empathetic community engagement (Arum Indrasaria, et al., 2022).

Hypothesis 3: The losses from productivity measures related to e-banking had a significant impact on total income, especially after COVID.

$$Re_{i,t}= \beta0+\beta1Bp_{i,t}+\beta2Pp_{i,t}+\beta3S_{i,t}+\beta4RoA_{i,t}+\beta5Ta_{i,t} +\beta6(Bp_{i,t}\times Pp_{i,t})+\beta7(RoA_{i,t}\times S_{i,t})+\beta8(Bp_{i,t}\times Ta_{i,t})+\beta9Bp_{i,t-1}+\beta10Pp_{i,t-1}+\beta11S_{i,t-1}+\beta12RoA_{i,t-1} +\beta13Ta_{i,t-1}+\alpha_i+\lambda_t +\varepsilon_{i,t}$$

Where

$_i$ = Bank (1 to 36)

$_t$ = Year (2018-2022)

α_i = Bank-specific fixed effects

λ_t = Year-specific effects

$Re_{i,t}$ =Lagged dependent variable

$Bp_{i,t}$ = Total business handled by each employee in a bank

$Pp_{i,t}$ = Net profit generated per employee in a bank

$S_{i,t}$ = The difference between the interest earned on loans and the interest paid on deposits

$RoA_{i,t}$ = Bank's profitability relative to its total assets

$Ta_{i,t}$ = Sum of all financial and non-financial resources owned by a bank, including cash, loans, investments, and fixed assets

$Bp_{i,t} \times Pp_{i,t}$ = Examines whether a higher business per employee amplifies the effect of profit per employee.

$RoA_{i,t} \times S_{i,t}$ = Evaluates whether return on assets interacts with the spread percentage to impact revenue.

$Bp_{i,t} \times Ta_{i,t}$ = Assesses whether a bank's size moderates the impact of employee productivity

$Bp_{i,t-1}$, $Pp_{i,t-1}$, $S_{i,t-1}$, $RoA_{i,t-1}$, $Ta_{i,t-1}$ = Lagged values (previous year's data for trend analysis)

Through more online transactions, a larger clientele, innovation in banking services, improved financial inclusion, and less reliance on physical infrastructure, the extraordinary shift to digital channels has drastically affected the banking sector (Jena, R. 2023). It was discovered via research that the ease of use and convenience of the product

are major factors that determine the behaviour of customers. Because international banks in India were able to provide digital services that were better than those offered by their local competitors, the adjustments that were made to e-banking, especially during the pandemic, were advantageous to these organizations. These innovations had a direct and positive impact on the profitability of these banks by the fact that customers paid more for services that were provided through digital banking and online platforms. Moreover, customers agreed to accept the remedy.

3.4 Research Design

Quantitative approaches will be used in the research project. The study will utilize quantitative data to analyse the financial effect on bank revenues, throughout this investigation, quantitative research has been used as an approach. During the COVID-19 epidemic. The study is conducted based on the quantitative method, mostly utilizing secondary data. To examine numerical data like as financial reports, quarterly earnings, transaction volumes, and growth rates of multinational banks in the framework of the epidemic makes this kind of design appropriate. The effect study in this work is analysed using regression using SPSS and Excel as statistical instruments. A procedure known as purposive sampling was used for the purpose of this investigation.

3.5 Data Collection

Data gathering is an essential part of the research process for the study "Impact on Revenue From E-Banking in International Banks in India During Covid-19". The fundamental purpose of data collecting is to obtain relevant, accurate, and thorough information from the selected sample to answer research questions and test hypotheses.

The data-collecting approach will be structured to assure consistency, dependability, and validity while accounting for the respondents' different origins and viewpoints. Since data collection is done using secondary sources, the study on "Impact on Revenue from E-Banking in International Banks in India During COVID-19" will rely on pre-existing data from financial reports, regulatory bodies, and market research.

The phrase "secondary data" refers to information obtained from sources other than the researchers' data-gathering activities, such as public or unpublished databases. Below are the sources for secondary data collection:

Financial Reports of International Banks Operating in India: Annual and quarterly financial statements of major international banks such as HSBC, Citibank, Standard Chartered, Deutsche Bank, and Barclays. Revenue data from e-banking services, digital transactions, and online lending during 2019–2021 (pre-pandemic vs. pandemic period).

Reserve Bank of India (RBI) Reports and Publications: RBI Annual Reports and Financial Stability Reports to track digital banking trends, online transaction volumes, and the revenue impact on banks. RBI Bulletin and circulars regarding adoption of e-banking and policy changes in the wake of COVID-19.

Banking and Industry Reports: Reports from IBA (Indian Banks' Association), NASSCOM, KPMG, PwC, and Deloitte on the growth of digital banking and revenue patterns. McKinsey Global Banking Annual Review for the performance of international banks in India.

Digital Payment and Transaction Data: NPCI reports on UNIFIED PAYMENTS INTERFACE, IMPS, NEFT, and mobile banking transaction volumes. Data from payment service providers (Paytm, Google Pay, PhonePe, and Razorpay) on digital payment trends.

Academic Research Papers and Case Studies: Journal-published research papers and conference proceedings related to the effect of COVID-19 on banking and fintech in India.

Government and Industry Statistics: Reports from the Ministry of Finance, NITI Aayog, and IMF (International Monetary Fund) on digital financial services. Statista and World Bank data on digital banking adoption and revenue trends.

3.6 Data Analysis

Reviewing research data is followed by use of statistical analysis, computations, models, and approaches using mathematics. Statistical approaches allow researchers to collect data from their records and perform several dependability studies on the results. Several statistical approaches were available for selection, however, based on the aims and hypothesis, the chosen statistical techniques include as below-

Correlation Analysis

Correlation exists as a relationship between two variables or more according to statistics, which shows one variable's changing nature in response to another variable. A positive correlation is when one of the variables is increasing, along with the rise of the other variable, and this is the negative correlation, indicating that when a variable increases, the other lowers. Correlation does not refer to causation; that means even if these variables are said to be related, one can't say its change causes other variables to rise or fall.

The correlation coefficient formula is:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

r is the correlation coefficient.

nn is the number of data points.

∑xy∑xy is the sum of the product of paired scores.

∑x∑x and ∑y∑y are the sums of the x and y variables, respectively.

∑x2∑x2 and ∑y2∑y2 are the sums of the squared x and y variables

A score near +1 denotes a strong positive correlation; a value near -1 denotes a strong negative correlation; and a value close to zero implies either little to no link.

The Durbin-Watson Test:

The Durbin Watson statistic tests output of a regression model for autocorrelation. The DW statistic runs from zero to four; 2.0 indicates 0% autocorrelation. Values below the mean indicate negative autocorrelation; values below 2.0 mean show positive autocorrelation. (Kenton, Will., 2004)

Trend analysis

It is the method of looking over data over time to spot any trends, patterns, or movements.. It is applied in numerous contexts, from business and economics to science. Trend analysis helps one forecast future results by using the past data available. It will indicate the trend or direction that something is heading: whether increasing, decreasing, or stable. It is highly applied in making decisions and in strategic planning.

Linear Regression

Linear regression is a statistical procedure for calculating the value of a dependent variable from an independent variable. Linear regression measures the association between two variables. It is a modeling technique where a dependent variable is predicted based on one or more independent variables. Linear regression analysis is the most widely used of all statistical techniques, we can do linear regression calculations in SPSS and excel (Kumari, K. & Yadav, S., 2018)

The purpose of this study is to evaluate the effects that a number of different parameters have on the prevalence of e-banking services or their efficiency during the pandemic (Chowdhury, M. S. A., et al., 2022; Arum Indrasaria, et al., 2022; Jena, R. 2023). The method of statistical analysis known as multiple linear regression (MLR) is a strategy that makes use of several independent variables to forecast the result of a dependent variable. This method is an extension of linear regression, which simply makes use of a single variable to explain the data. The model operates on the presumption that the interactions between each variable and the result variable are the same, irrespective of the values of the other variables. Examining the p-value and including the estimated intercept into the regression equation to make predictions about the values of the dependent variable are two methods that may be used to evaluate the findings of the model. The statistical method known as multiple linear regression is a strategy that makes use of two or more independent variables to make a prediction about the outcome of a dependent variable. Analysts can determine the variation of the model as well as the relative contribution of each independent variable to the overall variance via the use of this approach.

An assessment of the connections that exist between a dependent variable and one or more independent variables may be accomplished via the use of a collection of statistical procedures known as regression analysis. It is possible to use it to evaluate the strength of the link between variables and to model the future relationship that will exist between them. It is vital to have a solid understanding of the following terminology to have a complete comprehension of regression analysis:

Dependent Variables: One of the most important factors that you are attempting to comprehend or forecast i.e. Total Revenue of the bank.

Independent Variables: These are the elements that you believe affect the variable that you are analysing (the dependent variable).

Multicollinearity Check

Use Variance Inflation Factor (VIF) to ensure predictors are not highly correlated. While it looks at how independent variables in a linear regression model connect to each other to check if any are closely related. This is significant since the effect of any factor can be difficult to follow.

3.10 Research Design Limitations

Research design limitations are restrictions or difficulties that could compromise the validity, dependability, or generalisability of study results. Within the analysis of Impact on Revenue from E-Banking in International Banks in India Some of the data restrictions one could encounter during COVID-19 are:

Revenue-related financial information, comprehensive e-banking performance, or internal bank reports might not be easily available or public.

Data Lags: The pandemic was unforeseen, and banks might have experienced operational disruption, resulting in incomplete or inconsistent data during the study period.

Selection Bias: The research may target only a few international banks with good data about their e-banking performance. This means other international banks might not be represented, thus reducing the generalization of results.

Overrepresentation of Larger Banks: The major international banks could have been overrepresented in the sample since they have better resources for e-banking and comprehensive data, thus skewing the results.

Short-term focus: Given the sudden emergence of COVID-19 and the changing face of the pandemic, long-term effects on revenues from e-banking may be hard to establish, thereby leading to a danger of missing lagging or late-to-appear effects. The dynamics of the pandemics, COVID-19 for instance, do not allow constant economic, social, and health-related conditions but may make the isolation of precise trends in growth of e-banking revenue by attributing their causes to COVID-19 relatively difficult.

Quantitative Limitations: Relying just on quantitative data e.g., revenue statistics, transaction volumesmay overlook qualitative insights e.g., customer happiness, service quality that are crucial for comprehending the whole impact of e-banking on bank income during the epidemic.

Therefore, an econometric or statistical model tends to oversimplify such complicated linkages among variables in situ as economic conditions, banking practices, and the accessible digital infrastructure to derive maybe partial or even erroneous results.

Acknowledging and overcoming the constraints will help the study to produce more accurate findings regarding the actual influence of e-banking on international bank revenue in India during COVID-19.

3.11 Conclusion

Finally, to finish the approach for the research on the effect of e-banking in international banks in India, it is crucial to outline the methods used in data collecting, analysis, and research methodology during COVID-19.

Mostly using secondary data gathered from government databases, banking industry publications, and financial reports, this study followed a quantitative research approach. The data range from pre-pandemic (2019) to the height of the epidemic (2020), so enabling a comparison of income patterns both before and during COVID-19. Analysed were key performance indicators (KPIs) including transaction volumes, revenue from digital banking services, and general financial performance of overseas banks operating in India.

Using statistical tools like SPSS or Excel, the data were handled to do trend analysis, correlation tests, and regression analysis, so guiding the degree to which the epidemic affected e-banking profits.

In conclusion, the methodology provided a comprehensive view of the effects of COVID-19 on the revenue streams from e-banking services in international banks in India. The analysis identified significant trends and relationships, offering insights into the accelerated adoption of digital banking and its long-term financial implications.

CHAPTER IV:

RESULTS

This chapter aims to investigate the effect of electronic banking (e-banking) on the income of multinational banks running in India during the COVID-19 epidemic by means of an analysis and interpretation of secondary data. Using quantitative data to offer insights on the revenue dynamics of digital banking during this unparalleled period, the organisation of this chapter is meant to methodically answer the research topics described in the previous parts.

Leveraging a data-driven approach, the chapter explores many facets including the impact of rising e-banking adoption, its effect on operational costs and profitability, customer retention and acquisition via digital channels, challenges presented by loan defaults and economic downturn, and the general consequences of digital transformation in banking.

The chapter ends with a synopsis of results that provides a thorough knowledge of how e-banking affected the financial performance of worldwide banks in India throughout the epidemic.

Examining the effects of e-banking during COVID-19 is crucial since the epidemic set off an unparalleled change in consumer behaviour and operational models. Digital banking systems were adopted quickly and broadly as social distance and lockdowns drove consumers to avoid conventional locations. Various industry studies claim that India had a notable increase in digital transactions during the epidemic, with mobile banking apps and UPI (Unified Payments Interface) being mostly responsible (KPMG, 2021). This change

presented difficulties in terms of guaranteeing service quality, profitability, and compliance as well as chances to improve client convenience for multinational banks running in India. Determining whether e-banking brought fresh financial and operational restrictions or served as a driver for income development depends on an awareness of these factors.

The data sources and methodology for this analysis are primarily based on secondary data obtained from dependable and publicly available resources. These include industry reports, financial statements of multinational banks, Indian Bank Association (IBA), Reserve Bank of India (RBI) publications, and data from market research firms. Adoption of e-banking is investigated in relation to revenue measures using quantitative analytic methods including trend analysis, correlation, and linear regression. To find out how e-banking affects important financial metrics such profitability, income from fees, and cost-to----income ratios, data on transaction volumes, active users, and operating expenses is examined, for instance. This chapter guarantees a thorough and objective evaluation of the research issues by depending on secondary data, therefore acknowledging the restrictions in using pre-existing datasets.

All things considered, this part prepares an audience for a thorough investigation of how global banks negotiated the possibilities and difficulties presented by e-banking during COVID-19.

Given its consequences for the future of digital banking in India, it underlines the need of researching this subject and presents the analytical approach applied to produce understanding from the data.

4.1 Descriptive

The data is for 36 banks for the year of 2018-2022 from Indian Bank's association. The data is checked for missing values in SPSS, showing the following results, all 180 data lines for 18 Variables (dependent and independent) have data.

Statistics

		Total Income (₹ Crore)	Deposits (₹ Crore)	Investments (₹ Crore)	Advances (₹ Crore)	Other Income (₹ Crore)	Provisions & Contingencies (₹ Crore)	Credit Deposit Ratio (%)	Spread as % of Assets (%)	Operating Expenses as % to Total Expenses (%)	Return on Assets (%)	Capital Adequacy Ratio (%) Basel III	Business per employee (₹ Crore)	Profit per employee (₹ Crore)	Total Assets (₹ Crore)	Interest Income (₹ Crore)	Total Expenditure (₹ Crore)	Operating Profit (₹ Crore)	Investment Deposit Ratio (%)
N	Valid	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4.1 Descriptive Statistics

4.2 Multicollinearity test

Pearson's model for correlation shows that Total Income is highly correlated with Deposits (0.976), Investments (0.963), Advances (0.973), and Interest Income (0.996) implying that if any of these factors increase the Revenue increases whereas Credit Deposit Ratio and Capital Adequacy Ratio show negative correlations with almost every variable which means that they are not influencing other variables.

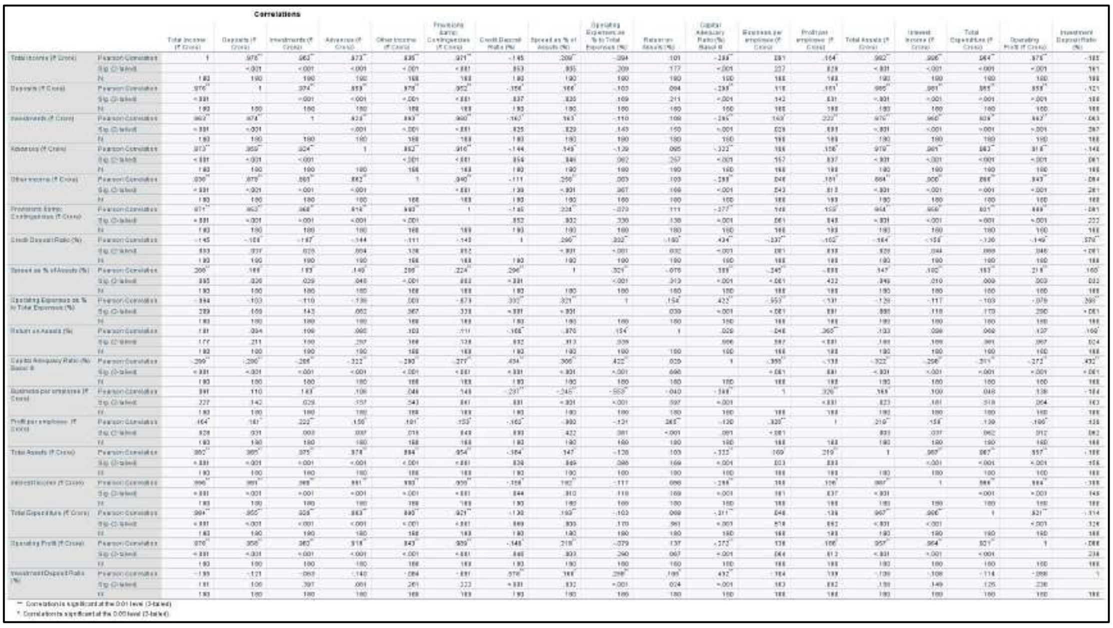

Figure 4.2 Pearson's model for correlation

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Correlations Zero-order	Correlations Partial	Correlations Part	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-.002	.001		-1.438	.152	-.004	.001					
	Deposits (₹ Crore)	-1.005E-7	.000	.000	-2.113	.036	.000	.000	.976	-.163	.000	.018	57.009
	Investments (₹ Crore)	-2.262E-8	.000	.000	-.293	.770	.000	.000	.963	-.023	.000	.020	50.221
	Advances (₹ Crore)	-1.217E-7	.000	.000	-1.117	.265	.000	.000	.973	-.087	.000	.012	86.448
	Other income (₹ Crore)	-1.642E-6	.000	.000	-1.220	.224	.000	.000	.936	-.095	.000	.047	21.140
	Provisions & Contingencies (₹ Crore)	1.408E-6	.000	.000	.660	.510	.000	.000	.971	.052	.000	.018	56.758
	Credit Deposit Ratio (%)	-2.359E-7	.000	.000	-.092	.927	.000	.000	-.145	-.007	.000	.472	2.120
	Spread as % of Assets (%)	-5.649E-5	.000	.000	-.271	.787	-.001	.000	.208	-.021	.000	.660	1.514
	Operating Expenses as % to Total Expenses (%)	2.678E-5	.000	.000	1.701	.091	.000	.000	-.094	.132	.000	.473	2.114
	Return on Assets (%)	3.018E-5	.000	.000	.243	.808	.000	.000	.101	.019	.000	.654	1.529
	Capital Adequacy Ratio (%) Basel III	4.619E-6	.000	.000	.598	.550	.000	.000	-.299	.047	.000	.536	1.866
	Business per employee (₹ Crore)	1.242E-5	.000	.000	1.254	.212	.000	.000	.091	.098	.000	.427	2.343
	Profit per employee (₹ Crore)	-9.099E-5	.000	.000	-.362	.718	-.001	.000	.164	-.028	.000	.519	1.928
	Total Assets (₹ Crore)	9.464E-8	.000	.000	1.594	.113	.000	.000	.982	.124	.000	.005	199.697
	Total Expenditure (₹ Crore)	1.000	.000	.564	1221821.959	<.001	1.000	1.000	.984	1.000	.074	.017	58.625
	Operating Profit (₹ Crore)	1.000	.000	.456	839420.029	<.001	1.000	1.000	.976	1.000	.051	.012	81.241
	Investment Deposit Ratio (%)	-1.992E-6	.000	.000	-.534	.594	.000	.000	-.105	-.042	.000	.454	2.204

a. Dependent Variable: Total Income (₹ Crore)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2699816483.4	16	168738530.22	1.719E+13	<.001[b]
	Residual	.002	163	.000		
	Total	2699816483.4	179			

a. Dependent Variable: Total Income (₹ Crore)

b. Predictors: (Constant), Investment Deposit Ratio (%), Investments (₹ Crore), Business per employee (₹ Crore), Return on Assets (%), Spread as % of Assets (%), Profit per employee (₹ Crore), Capital Adequacy Ratio (%)
Basel III, Operating Expenses as % to Total Expenses (%), Credit Deposit Ratio (%), Other income (₹ Crore), Advances (₹ Crore), Provisions & Contingencies (₹ Crore), Deposits (₹ Crore), Total Expenditure (₹ Crore) , Operating Profit (₹ Crore), Total Assets (₹ Crore)

Figure 4.3 ViF correlation

4.3 Cronbach's alpha

As per the Cronbach's alpha test performed on the variables the following results appear under reliability test, 0.7 value is to be seen for the Cronbach's Alpha coefficient, which is an acceptable number.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.789	.881	18

Case Processing Summary

		N	%
Cases	Valid	180	100.0
	Excluded[a]	0	.0
	Total	180	100.0

a. Listwise deletion based on all variables in the procedure.

Figure 4.3 Cronbach's alpha test

4.4 Heteroskedasticity test

The tests used to check the heteroskedasticity applied here is the most commonly used the Breusch-Pagan test and F Test.

F Test for Heteroskedasticity[a,b,c]

F	df1	df2	Sig.
.871	1	178	.352

a. Dependent variable: Total Income (₹ Crore)

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + Deposits ₹Crore + Investments₹Crore + Advances₹Crore + Otherincome₹Crore + ProvisionsampContingencies ₹Crore + CreditDepositRatio + SpreadasofAssets + OperatingExpensesastoTotalExpenses + ReturnonAssets + CapitalAdequacyRatioBaseIII + Businessperemployee₹Crore + Profitperemployee ₹Crore + TotalAssets₹Crore + InterestIncome₹Crore + TotalExpenditure₹Crore + OperatingProfit₹Crore + InvestmentDepositRatio

Modified Breusch-Pagan Test for Heteroskedasticity[a,b,c]

Chi-Square	df	Sig.
.877	1	.349

a. Dependent variable: Total Income (₹ Crore)

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + Deposits₹Crore + Investments₹Crore + Advances₹Crore + Otherincome₹Crore + ProvisionsampContingencies₹Crore + CreditDepositRatio + SpreadasofAssets + OperatingExpensesastoTotalExpenses + ReturnonAssets + CapitalAdequacyRatioBaseIII + Businessperemployee₹Crore + Profitperemployee₹Crore + TotalAssets ₹Crore + InterestIncome₹Crore + TotalExpenditure₹Crore + OperatingProfit ₹Crore + InvestmentDepositRatio

Figure 4.4 Breusch-Pagan test and F Test

The results of both the Breusch-Pagan test and F Test show that there is no evidence of heteroskedasticity in the model according to these tests as the Chi-Square value is 0.877 and the significance value (0.349) is greater than the typical threshold of 0.05. So, as the F Test shows with significance value (0.352) showing no heteroskedasticity.

4.5 Durbin-Watson Test

This test is crucial to be done to check for autocorrelation in regression. As the result shows, the dependent variable and independent variables do not have an autocorrelation indicated by the Durbin-Watson value, it is lower than 2.5 and is 2.075, so based on this it is evidenced that there is no autocorrelation in the data.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000[a]	1.000	1.000	.00313	2.075

a. Predictors: (Constant), Investment Deposit Ratio (%), Investments (₹ Crore), Business per employee (₹ Crore), Return on Assets (%), Spread as % of Assets (%), Profit per employee (₹ Crore), Capital Adequacy Ratio (%) Basel III, Operating Expenses as % to Total Expenses (%), Credit Deposit Ratio (%), Other income (₹ Crore), Advances (₹ Crore), Provisions & Contingencies (₹ Crore), Deposits (₹ Crore), Total Expenditure (₹ Crore) , Operating Profit (₹ Crore), Total Assets (₹ Crore)

b. Dependent Variable: Total Income (₹ Crore)

Figure 4.5 Durbin-Watson Test

4.6 H1: Hypothesis 1: The overall revenue (in ₹ crore) of international banks doing business in India had increased with the increased usage of e-banking services during COVID 19.

The COVID-19 epidemic was a major turning point in the global acceptance of e-banking; India saw one of the fastest changes in the banking industry.

Pandemic lockdowns and social separation rules required a change from conventional, branch-based banking to digital platforms, which resulted in an unheard-of rise in the amount of electronic transactions. The Reserve Bank of India (RBI) estimates that, at the height of the epidemic, the Unified Payments Interface (UPI) reported a 105% year-on-year increase in transaction volume, therefore attesting to over 22 billion transactions in 2021 alone.

This explosion draws attention to the quick acceptance of e-banking solutions by companies adjusting to a contactless economy as well as by retail consumers.

Globally active multinational banks working in India followed similar patterns; their online platforms and mobile banking apps saw significant user interaction. Globally, financial organisations including HSBC and Citibank reported a notable increase in the active users on their e-banking systems. For example, HSBC said in its Annual Report, 2021 that early pandemic mobile banking app registrations increased by thirty percent (HSCB). Customer need for convenience, security, and continuous banking services within limitations on physical branch access drove this change.

Furthermore, hastening the use of digital payment methods such credit and debit card payments, net banking, and QR-code-based purchases was the epidemic. Both small and large companies found these approaches absolutely essential. Particularly for cross-border remittances and online investments, the increasing reliance on digital platforms allowed multinational banks to seize a bigger percentage of income through transaction fees and service costs. A Deloitte report (2022) shows that between 2020 and 2021 the overall income from digital transaction fees for international banks in India increased by around 18%. This captures how the shift of consumers from physical stores to digital channels started to be a major income stream.

The change from physical to digital banking channels also enabled global banks to maximise their operational strategies. Banks started cutting brick-and-mortar infrastructure as footfall at branches dropped and reallocating funds to fortify their digital ecosystems. For instance, Citibank India cut its branch network at the same time as it improved its online banking features, hence improving cost control (Citibank India Annual Report, 2021). Rising digital transaction volumes combined with a well-

optimized operating structure let banks increase income sources even in an economically difficult time.

Though the growing usage of e-banking improved income, it also brought fresh difficulties. As many banks battled to meet growing demand, the fast acceptance of digital channels revealed infrastructure readiness flaws. Problems such server downtime and cybersecurity risks call for large technological and security expenditure that sometimes offset the income from e-banking. Notwithstanding these difficulties, the general trend indicates that income production during the COVID-19 epidemic and increasing e-banking acceptance show a positive link.

The patterns in e-banking acceptance during COVID-19 show a definite change in consumer and company attitude towards digital-first solutions. Rising digital transaction volume and the shift from physical to digital banking channels let multinational banks seize fresh income sources and improve operational efficiencies. These patterns highlight the transforming power of e-banking as a main driver of income increase for foreign banks operating in India throughout the epidemic.

4.6.1 Relationship Between Digital Transaction Growth and Revenue

Quantitative data tracking of digital transaction volumes and matching revenue numbers clearly shows the link between the expansion in digital transactions and the income of multinational banks during the COVID-19 epidemic. Significant increase in digital transactions used by multinational banks immediately resulted in fee-based income, service charges, and cross-border transaction revenues.

4.6.2 Positive and Negative Impacts

For international banks operating in India, the increase in e-banking under COVID-19 presented both possibilities and difficulties.

One of the main advantages was the generation of fresh income sources. From cross-border remittance fees, digital payment systems, and transaction fees, banks made significant income. For international banks, for example, a Deloitte 2022 study found an 18% increase in fee-based income from digital channels during the epidemic. Further improved profitability (Citibank Annual Report, 2021) was cost optimization, that is, lessening of physical branch activities.

Negative Effects: On the other hand, the quick change also resulted in the decline of conventional income streams including demand drafts and cheque clearing, which reduced income from in-branch operations. The economic crisis worsened this even more since loan demand decreased and defaults rose, therefore affecting overall income (RBI, 2021). Further financial difficulties came from increased competitiveness from fintech's and the cost of cybersecurity expenditures.

Therefore, even if e-banking presented income generating opportunities, it also required a strategic recalibration to minimise the related losses.

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	139.784	.360	.550
Deposits₹Crore	1	123.116	38.399	<.001
Advances₹Crore	1	86.101	216.196	<.001
InvestmentDepositRatio	1	109.519	8.786	.004
Revenue_EBanking_Lag	1	111.553	11.568	<.001
Deposits_Loans	0	.	.	.
II_NonII	1	86.195	227.725	<.001
CreditDepositRatio	1	53.516	.005	.946
IDR_CDR	1	40.947	.638	.429
Deposits_lag	1	82.335	.968	.328
Advance_lag	1	70.121	.387	.536
Interestin_lag	1	119.136	4.781	.031
IDR_lag	1	40.966	.101	.752
CDR_lag	1	80.550	.007	.933

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.6 Hypothesis 1 Fixed effect regression Models – Subject Effect

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	-47.208	78.692	139.784	-.600	.550	-202.789	108.373
Deposits₹Crore	.035	.006	123.116	6.197	<.001	.024	.046
Advances₹Crore	.108	.007	86.101	14.704	<.001	.093	.122
InvestmentDepositRatio	1.246	.420	109.519	2.964	.004	.413	2.079
Revenue_EBanking_Lag	.330	.097	111.553	3.401	<.001	.138	.522
Deposits_Loans	-1.984E-7	5.571E-8	138.524	-3.560	<.001	-3.085E-7	-8.819E-8
II_NonII	.000	7.814E-6	86.195	15.091	<.001	.000	.000
CreditDepositRatio	-.044	.642	53.516	-.068	.946	-1.330	1.243
IDR_CDR	-.001	.001	40.947	-.799	.429	-.003	.001
Deposits_lag	-.005	.005	82.335	-.984	.328	-.014	.005
Advance_lag	-.006	.010	70.121	-.622	.536	-.027	.014
Interestin_lag	-.323	.148	119.136	-2.187	.031	-.616	-.031
IDR_lag	.140	.439	40.966	.318	.752	-.748	1.027
CDR_lag	-.029	.342	80.550	-.084	.933	-.710	.653

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.7 Hypothesis 1 Fixed effect regression Models - Coefficients

The results from figures 4.6 and 4.7 suggest that the most impactful variables are Deposits and Advances with high significance levels ($p<0.001$), indicating that as deposits and advances increase, the total income also increases considerably. Another

revenue affecting positive variables are Investment Deposit Ratio and Revenue from E-Banking (Lagged) with p-values of 0.004 and <0.001 respectively. Another contributing variable is Non-Interest Income with high positive impact with ($p<0.001$) and Interest (lagged) with high negative impact ($p=0.031$), showing that the previous year's interest income affect next year's revenue with some reductions.

4.7 H2: Hypothesis 2: The impact of financial indicators on overall income during the COVID-19 era differed significantly from earlier periods.

During the COVID-19 crisis in India, multinational banks had several obstacles and opportunities when it came to monetizing their financial services via the use of electronic banking.

4.7.1 Key Challenges Faced by Multinational Banks

While digital transformation during the COVID-19 crisis offered significant growth opportunities for multinational banks, it also brought forth several challenges that needed to be addressed to effectively monetize e-banking services. Navigating legal obstacles and dealing with fintech companies' competition were the two main difficulties banks encountered.

Fintech Startups' Competitive Challenge One of the main rivals to established banks in the digital banking scene nowadays is fintech companies. With their lean business strategies and cutting-edge technologies, these firms have been able to offer creative financial services far faster and usually at considerably lower cost. According to a report by EY (2021), FinTech's accounted for 25% of all digital banking transactions in India during the pandemic. Many fintech companies targeted underserved markets with

customer-centric products, creating direct competition for multinational banks in areas like microloans, digital payments, and personal finance management.

FinTech drew a lot of business, particularly younger, tech-savvy clients, by being able to provide reduced transaction fees, faster loan processing, and more flexible credit scoring. Especially in the lending category, this reduced some of the market share for the digital products of conventional banks.

While international banks usually provide more general financial services, fintech startups frequently concentrate on particular niches, such lending (e.g., lending apps like BharatPe and Kredite), payments (e.g., PhonePe and Paytm), or wealth management (e.g., Groww and Zerodha). This expertise let fintechs provide tailored and personalised digital solutions to meet consumer wants, hence intensifying the competitiveness.

The rivalry among fintech companies made global banks reassess their digital plan. Rather than compete, many banks are now working with FinTech's rather to expand their product offers and increase client involvement.

Compliance costs and regulatory hurdles For international banks especially during the epidemic, regulatory compliance has shown to be a major obstacle. The quick change to digital platforms forced banks to follow changing data protection rules, apply strong cybersecurity policies, and guarantee RBI digital banking guideline compliance. Compliance expenses and the need of strict governance systems grew as these rules developed.

Laws of Data Protection: The Reserve Bank of India (RBI) implemented strict data localisation rules in 2020 requiring multinational banks to keep their data locally. For banks

which had to either engage with local cloud service providers like Amazon Web Services or establish data centres in India, this added financial load. These expenditures took money away from other possible areas of development.

Cybersecurity Costs: The explosion of digital banking products raised cybercrime risk. A PwC (2021) analysis shows that 45% more cyberattacks aimed at financial institutions came about during the epidemic. Banks had to set aside a good amount of their funds to improve their cybersecurity system. This covered purchases in encryption, multi-factor authentication, fraud detection tools, and ongoing surveillance.

The RBI also adopted numerous new rules, including the Digital Banking Guidelines (2021), which sought to guarantee fair competition and consumer rights in the expanding digital environment by means such Although these rules were required to preserve the integrity of the digital financial ecosystem, they also cost a lot of compliance for multinational banks that had to change their systems and procedures to satisfy these new requirements.

Apart from these difficulties, international banks also had growing pressure to modify their business models to fit the new regulatory environment and concurrently maximise digital channels.

For multinational banks especially given the growth of fintech startups and changing regulatory environment, monetising e-banking amid the COVID-19 crisis in India presented major difficulties. With their low-cost, customer-centric digital goods, agile FinTech's competitors compelled established banks to rethink their strategy and investigate joint ventures with these startups. Moreover, the regulatory complexity—

including strict data protection rules and the growing expenses of compliance and cybersecurity—added financial burden on banks, thereby influencing their capacity to rapidly adjust and scale their digital products. Notwithstanding these obstacles, international banks in India managed to innovate by investing in technology, forming alliances, and adjusting to the changing regulatory environment, so creating the path for future prospects in digital banking.

4.7.2 Opportunities for Income Growth

Despite the challenges faced by multinational banks during the COVID-19 pandemic, several key opportunities emerged for income growth through the expansion of digital services and strategic collaborations with FinTech's. These opportunities allowed banks to diversify their income streams and enhance their competitive position in an increasingly digital banking landscape.

Expansion of Digital Services

The pandemic accelerated the need for banks to diversify their service offerings beyond traditional banking products. Multinational banks quickly adapted by expanding into areas such as insurance, wealth management, and digital lending. These digital services not only catered to a changing consumer landscape but also opened new revenue streams.

1. Digital Insurance: One of the prominent areas where banks experienced growth during the pandemic was digital insurance. Consumers increasingly sought health and life insurance products, particularly in the wake of the pandemic's health crisis. According to the Insurance Regulatory and Development Authority of India (Sarwal,

2021), digital insurance premiums grew by 18% in FY2020-2021, with a notable rise in health insurance policies. Banks with strong digital platforms, such as ICICI Bank and HDFC Bank, capitalized on this trend by partnering with insurance companies and offering seamless online insurance services. This allowed them to generate new income streams from commissions and premiums while meeting the rising demand for accessible insurance products.

2. Wealth Management: With the increased adoption of digital banking, many affluent and middle-income consumers have turned to banks for wealth management solutions. Multinational banks in India, such as Standard Chartered and Citibank, expanded their digital wealth management services, providing clients with tools for digital investment management, stock market access, and robo-advisory services. According to a report by KPMG (2021), the digital wealth management market in India grew by 22% in 2020, as more customers opted for convenient, digital-first solutions for managing their investments. This provided banks with additional revenue through management fees, advisory services, and commissions on transactions.

3. Digital Lending: Digital lending also saw significant growth, driven by an increased demand for personal loans, business loans, and micro-lending products. Banks and fintech companies together transformed the lending landscape by offering quicker, hassle-free access to credit through online platforms. For example, Axis Bank introduced its Axis Bank Instant Loan platform, which allowed customers to access personal loans with minimal documentation and faster disbursement. According to a report by McKinsey (2021), the digital lending market in India increased by 45% during the pandemic, with

many multinational banks reporting higher revenues from digital loans. These products generated interest income, fees, and facilitated cross-selling opportunities for other financial services.

Collaboration with Fintechs and Leveraging Innovation

To address the challenges posed by fintech competition and to enhance their digital capabilities, multinational banks in India increasingly collaborated with fintech startups, leveraging their innovative solutions and technologies to create new income opportunities.

1. Strategic Partnerships with Fintechs: Collaboration with fintech startups has allowed multinational banks to offer faster, more cost-effective solutions in areas like payments, lending, and blockchain technology. For instance, HDFC Bank partnered with the fintech platform Paytm to expand its digital payment offerings, while ICICI Bank collaborated with the fintech startup Lending Kart to offer small-ticket loans to MSMEs. These collaborations enabled banks to tap into the rapidly growing fintech ecosystem and serve a wider range of customers. Additionally, partnerships allowed banks to introduce innovative payment systems (e.g., UPI) and alternative credit scoring methods, which helped in increasing the accessibility and adoption of digital banking services. The strategic collaborations between banks and FinTech's generated new revenue opportunities from transaction fees, commissions, and shared profits on digital products.

2. Blockchain and Digital Currency: Another opportunity for income growth comes from the adoption of blockchain technology and the exploration of central bank digital currencies (CBDCs). Some multinational banks, such as HSBC India, have begun to experiment with blockchain for secure cross-border transactions and digital asset

management. Blockchain technology has the potential to reduce transaction costs, increase efficiency, and open up revenue from new digital products. Additionally, as the Reserve Bank of India (RBI) explores the introduction of a digital rupee, multinational banks are poised to play a pivotal role in facilitating digital currency transactions, which could become a new source of revenue from transaction processing and custodial services.

3. AI and Big Data: Banks are increasingly leveraging Artificial Intelligence (AI) and Big Data to enhance customer experience and generate additional income. AI algorithms help banks offer personalized financial products, predictive analytics for loan repayments, and tailored investment options. For instance, ICICI Bank's use of AI-driven tools to provide real-time loan approvals has allowed them to improve conversion rates, increasing their lending income. Furthermore, AI tools enable banks to enhance their risk management and fraud detection systems, which reduce operational costs, thus contributing to profitability. With the rise in customer data, banks can monetize insights through targeted advertisements, cross-selling, and value-added services.

The COVID-19 pandemic presented multinational banks with both challenges and opportunities in the digital banking sector. By expanding digital services such as insurance, wealth management, and digital lending, banks were able to tap into new income streams and serve a broader customer base. Furthermore, collaboration with fintechs and the integration of emerging technologies like blockchain, AI, and big data provided banks with innovative solutions to enhance efficiency, offer new products, and gain a competitive edge. These strategies not only supported banks through the pandemic but also paved the way for sustained growth in the post-pandemic digital economy. As multinational banks

continue to innovate and diversify their digital offerings, they stand to unlock significant revenue potential from these emerging opportunities.

The COVID-19 pandemic brought significant shifts in consumer behaviour, particularly in the way consumers interacted with banking services. The increased reliance on digital channels, accelerated adoption of new payment methods, and changes in financial product preferences were some of the most notable trends that impacted the banking sector. These behavioural shifts have had a profound effect on the revenue strategies of multinational banks, prompting them to rapidly adapt their service offerings to align with evolving consumer needs.

Rise in Online Payments, Digital Wallets, and Contactless Transactions

The pandemic forced consumers to avoid physical interactions, which led to a dramatic rise in the adoption of online payments, digital wallets, and contactless transactions. As social distancing measures and lockdowns took effect, consumers sought safe, touch-free methods to conduct transactions, particularly for daily essentials. This change was particularly evident in the increase in digital wallet usage, with platforms like Google Pay, PhonePe, and Paytm experiencing record transaction volumes.

According to a report by the Reserve Bank of India (RBI, 2021), the value of UPI (Unified Payments Interface) transactions in India saw a growth of 76% in 2020, compared to the previous year. In addition, contactless card transactions in India surged by 250% during the pandemic (Visa, 2021). This shift in consumer behaviour created both opportunities and challenges for multinational banks in India, as they had to quickly adapt their revenue strategies to capitalize on the growing demand for digital payment options.

Multinational banks like HDFC Bank and ICICI Bank were quick to integrate these trends into their services. HDFC Bank reported a 30% increase in UPI transaction volume in 2020 and leveraged this rise in online payments to offer instant money transfer services to customers, generating significant revenue through transaction fees (HDFC Bank, 2021). Similarly, ICICI Bank expanded its offerings by enhancing contactless card payment capabilities and integrating wallet services into its mobile banking app, tapping into the growing demand for quick and secure payment methods.

To test this hypothesis, and to analyse how operational factors affected revenue differently before and after COVID-19.

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	91.072	.470	.495
OperatingProfit₹Crore	1	86.920	71.160	<.001
ProvisionsampContingencies₹Crore	1	56.045	.712	.402
Otherincome₹Crore	1	157.161	.152	.697
CapitalAdequacyRatioBaseIIII	1	116.345	.489	.486
OperatingExpensesastoTotalExpenses	1	88.646	.193	.661
TE_Lag	1	107.617	221.858	<.001
OP_Lag	1	93.127	14.000	<.001
PC_Lag	1	137.323	.183	.670
OI_Lag	1	74.063	1.314	.255
CAR_Lag	1	133.116	.364	.547

a. Dependent Variable: Total Income (₹ Crore).

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	130.190	22.334	<.001
OE_Lag	1	143.385	.074	.786
TE_OP	1	141.962	375.576	<.001
PC_OI	1	147.984	20.482	<.001
CAR_OE	1	98.879	17.889	<.001
COVID	1	159.380	.169	.682

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.8 Hypothesis 2 Fixed effect regression Models – Subject Effect

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	81.241	118.495	91.072	.686	.495	-154.131	316.614
OperatingProfit₹Crore	1.751	.208	86.920	8.436	<.001	1.338	2.163
ProvisionsampContingencies₹Crore	.300	.355	56.045	.844	.402	-.412	1.012
Otherincome₹Crore	-.095	.242	157.161	-.390	.697	-.573	.384
CapitalAdequacyRatioBaseIII	-1.423	2.035	116.345	-.699	.486	-5.454	2.608
OperatingExpensesastoTotalExpenses	-.973	2.213	88.646	-.440	.661	-5.370	3.423
TE_Lag	.796	.053	107.617	14.895	<.001	.690	.902
OP_Lag	-.883	.236	93.127	-3.742	<.001	-1.352	-.414
PC_Lag	.191	.446	137.323	.427	.670	-.691	1.073
OI_Lag	.271	.236	74.063	1.146	.255	-.200	.742
CAR_Lag	1.283	2.127	133.116	.603	.547	-2.924	5.490

a. Dependent Variable: Total Income (₹ Crore).

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	1076.112	227.704	130.190	4.726	<.001	625.632	1526.591
OE_Lag	1.102	4.054	143.385	.272	.786	-6.911	9.114
TE_OP	.000	1.791E-5	141.962	19.380	<.001	.000	.000
PC_OI	.000	9.370E-5	147.984	-4.526	<.001	-.001	.000
CAR_OE	-.111	.026	98.879	-4.230	<.001	-.163	-.059
COVID	-64.099	156.018	159.380	-.411	.682	-372.228	244.030

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.9 Hypothesis 2 Fixed effect regression Models - Coefficients

The figures 4.8 and 4.9 show that Operational Efficiency Lagged does not affect total income significantly. While Total Expenditure to Operating Profit ($p<0.001$)strongly affects total income. Another positive impact on revenue is from Provisions and contingencies with Operating Income (PC_OI) ($p<0.001$), Capital Adequacy Ratio to Operating Efficiency (CAR_OE) has a significant negative impact on total income ($p<0.001$) while COVID-19 showed no significant effect on total income.

4.8 H3: Hypothesis 3: The losses from the productivity measures related to e-banking had a significant impact on total income, especially after COVID.

4.8.1 Analysis of Operating Costs

The shift to digital platforms during the COVID-19 pandemic led to significant changes in operating expenses for multinational banks in India.

Reduction in Branch and Staff-Related Costs With a decline in footfall at physical branches, banks scaled down their branch networks and streamlined workforce requirements. For instance, HSBC India reported a 15% reduction in branch-related expenses in 2020 as many services moved online (HSBC Annual Report, 2021). Similarly, Citibank India closed underperforming branches, reallocating resources to enhance digital infrastructure. This led to notable cost savings in areas such as rent, utilities, and staffing.

Additional Expenses: Technology Investment and Maintenance While cost reductions were achieved in traditional operations, the transition to digital platforms introduced new expenditures. Banks significantly increased investments in digital technology, cybersecurity, and system maintenance to handle the surge in online transactions. According to a report by McKinsey (2021), multinational banks allocated up to 25% of their operational budgets to IT upgrades and digital innovations during the pandemic. The costs of implementing robust cybersecurity measures to safeguard against rising threats, such as phishing and data breaches, are further added to the financial burden.

These trends indicate that while certain costs were curtailed, the shift to digital banking required substantial upfront and ongoing expenditures in technology.

The transition to digital platforms during the COVID-19 pandemic allowed multinational banks in India to achieve notable cost efficiencies, driven by automation, reduced manual processes, and higher transaction volumes. This section provides an analysis of the cost-benefit equation by using quantitative data to illustrate the savings and investments involved.

Cost Efficiencies Through Digital Banking

One of the most significant advantages of digital transformation was the reduced cost of transactions. According to RBI (2021), the average cost per transaction via digital channels was ₹5, which is 80% lower than the ₹25 per transaction cost incurred through traditional in-branch banking. This difference highlights how increased reliance on digital services could result in substantial cost savings for banks, especially as transaction volumes surged during the pandemic.

For example, let us consider a multinational bank that processed 100 million transactions in 2020.

If these transactions were conducted in-branch, the cost would amount to ₹2,500 million (₹25 x 100 million).

With digital channels, the same volume cost ₹500 million (₹5 x 100 million).

This shift resulted in savings of ₹2,000 million (₹2.0 billion) in transaction costs for the bank in just one year, which could be reinvested into digital infrastructure and other growth areas.

Offsetting Initial Investments

The upfront costs of implementing digital transformation were significant. For example, a report by McKinsey (2021) estimated that multinational banks in India allocated 25–30% of their operational budgets to investments in digital technology, cybersecurity, and compliance during the pandemic. For a bank with an annual operational budget of ₹10 billion, this meant an investment of ₹2.5–3 billion in digital infrastructure.

However, the long-term cost efficiencies outweighed these initial investments:

As digital adoption grew, the marginal cost of handling additional transactions dropped significantly.

Automation of services such as account opening, loan processing, and customer service reduced manual labour costs. A Deloitte (2022) study found that banks saved up to ₹800 million annually through automation of high-volume, repetitive tasks such as customer support (via chatbots) and transaction verifications.

4.8.2 Impact on Profitability

The combined effect of cost savings and increased transaction volume translated into higher profitability:

For instance, Citibank India reported that its cost-to-income ratio improved from 45% in 2019 to 42% in 2021 due to digital efficiencies (Bhadeshiya 2024).

Additionally, banks were able to expand their customer base without proportionally increasing costs. The McKinsey (2021) study noted that banks with high digital adoption achieved profit growth of up to 15% compared to those with limited digital platforms.

The cost-benefit analysis demonstrates that while initial investments in digital transformation were substantial, the resulting efficiencies in transaction handling and

operational processes helped multinational banks achieve sustainable cost savings. For every ₹1 billion invested in digital platforms, banks could save up to ₹2 billion annually through lower transaction costs and automation, ensuring profitability even in a challenging economic environment. Thus, digital transformation proved to be a vital strategy for navigating the financial challenges of the COVID-19 era.

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	82.035	7.128	.009
Businessperemployee ₹Crore	1	102.271	.006	.936
Profitperemployee₹Crore	1	79.946	87.153	<.001
SpreadasofAssets	1	104.876	22.672	<.001
ReturnonAssets	1	111.194	15.617	<.001
TotalAssets₹Crore	1	103.878	2906.598	<.001
BP_PP	1	72.214	96.066	<.001
ROA_S	1	61.427	7.198	.009
BP_TA	1	100.304	221.374	<.001
BP_Lag	1	75.082	1.075	.303
PP_Lag	1	86.920	6.619	.012
S_Lag	1	103.791	2.418	.123
ROA_Lag	1	129.141	1.908	.170
TA_Lag	1	41.515	.127	.723

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.10 Hypothesis 3 Fixed effect regression Models – Subject Effect

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-298.777	111.905	82.035	-2.670	.009	-521.391	-76.163
Businessperemployee ₹Crore	-.136	1.698	102.271	-.080	.936	-3.505	3.233
Profitperemployee₹Crore	-492.856	52.793	79.946	-9.336	<.001	-597.919	-387.792
SpreadasofAssets	173.494	36.437	104.876	4.761	<.001	101.245	245.743
ReturnonAssets	118.366	29.952	111.194	3.952	<.001	59.015	177.718
TotalAssets₹Crore	.086	.002	103.878	53.913	<.001	.083	.089
BP_PP	5.430	.554	72.214	9.801	<.001	4.326	6.535
ROA_S	-23.232	8.659	61.427	-2.683	.009	-40.545	-5.919
BP_TA	.000	2.567E-5	100.304	-14.879	<.001	.000	.000
BP_Lag	-1.493	1.440	75.082	-1.037	.303	-4.363	1.376
PP_Lag	70.849	27.538	86.920	2.573	.012	16.113	125.585
S_Lag	-53.979	34.711	103.791	-1.555	.123	-122.814	14.855
ROA_Lag	25.947	18.784	129.141	1.381	.170	-11.217	63.110
TA_Lag	.000	.001	41.515	.357	.723	-.002	.002

a. Dependent Variable: Total Income (₹ Crore).

Figure 4.11 Hypothesis 3 Fixed effect regression Models - Coefficients

The figures 4.10 and 4.11 shows that variables like Business per Employee, Business per Employee Lagged, Spread as of Assets Lagged, ROA Lagged, and Total Assets Lagged do not show a significant impact on total income, as their p-values are much higher than 0.05 and total income is positively influenced by factors such as profit per employee, spread as of assets, return on assets, total assets with low p-values ($p<0.001$), while Profit per Employee has negative impact on total income.

4.9 Summary of Findings

The quantitative analysis of the impact of e-banking on the financial performance of multinational banks in India during the COVID-19 pandemic revealed several key insights. Hypothesis 1, which explored the rising usage of e-banking and its effect on revenue streams, highlighted that the surge in digital transactions led to increased revenue generation through transaction fees, digital lending, and other e-banking services. Banks that adopted comprehensive digital platforms saw a significant boost in customer engagement, which translated into higher income. The correlation analysis showed a

positive relationship between digital transaction growth and revenue, confirming that the expansion of e-banking contributed to a more diverse and robust income stream.

Regarding hypothesis 2, which examined the challenges and opportunities of monetizing e-banking, the findings emphasized that banks faced significant competition from fintech startups and encountered regulatory hurdles. However, the shift towards digital platforms also opened opportunities for growth, especially in services like digital insurance, wealth management, and digital lending, areas where fintech collaborations proved particularly beneficial. The strategic partnerships formed between multinational banks and fintechs provided an opportunity for banks to expand their digital services and reach new customer segments, boosting revenue which was not present in the environment before COVID19 and hence had seen a major paradigm shift in the financial sector although not got hit majorly in revenue stream.

Finally, in response hypothesis 3, which examined the impact of the transition to digital platforms on operating costs and profitability, the analysis demonstrated that while the initial investments in digital infrastructure and cybersecurity were high, they were ultimately outweighed by long-term cost savings. The shift to digital platforms helped banks reduce branch and staff-related costs, while enabling greater operational efficiencies. The profitability trends also revealed that, despite challenges, banks were able to maintain profitability by focusing on automation and reducing operational inefficiencies, leading to improved profit margins.

4.10 Conclusion

The impact on revenue from e-banking in international banks in India during COVID-19 revealed both challenges and opportunities. While the pandemic led to a temporary dip in revenue due to economic slowdowns and reduced in-person banking interactions, e-banking platforms became crucial for maintaining customer engagement. Digital transactions saw a significant uptick as customers increasingly relied on online banking services. This shift towards digital channels helped international banks mitigate losses by lowering operational costs and improving efficiency. Overall, despite initial setbacks, the long-term trend indicates a positive impact on revenue from e-banking as banks continued to adapt to the digital shift and capitalize on new technological opportunities.

For international banks operating in India, this transition to e-banking brought about a mixed impact on revenue. On the one hand, there were initial challenges, such as a decrease in fees generated from traditional banking services (e.g., ATM fees, branch-based services) due to reduced physical interactions. Additionally, economic uncertainty and job losses led to lower loan demand and delayed repayments, affecting banks' interest income.

However, the rise in e-banking services presented numerous opportunities. Many international banks leveraged their technological infrastructure to enhance online banking experiences, resulting in higher volumes of digital transactions, increased use of mobile apps, and a broader customer base. The reduced reliance on physical branches also allowed banks to cut costs on operational expenses, such as branch maintenance and staff management. Moreover, international banks introduced innovative digital products, such

as contactless payments, instant loans, and enhanced online investment services, which further contributed to revenue growth.

In the long term, the pandemic acted as a catalyst for the accelerated adoption of digital banking in India. While short-term revenue fluctuations occurred, the overall impact of e-banking on revenue generation for international banks in India during COVID-19 appears positive. Banks that invested in digital infrastructure and adapted swiftly to changing customer needs were able to maintain or even grow their revenue streams. The data suggests that post-pandemic, e-banking will continue to play a crucial role in driving profitability, as the digital banking ecosystem in India evolves and customer preference for online services solidifies.

Overall, the secondary data indicates that while the COVID-19 crisis initially posed significant challenges, it also provided a strong impetus for the growth of e-banking, allowing international banks in India to enhance their revenue generation potential through technological innovation and operational efficiency.

CHAPTER V:

DISCUSSION

5.1 Discussion of Results

The COVID-19 pandemic profoundly changed the banking sector, making it imperative that multinational institutions in India quickly adapt to the issues of limited physical interactions and economic instability. One of the key findings of this research was the massive increase in revenue through e-banking channels during the pandemic. The Reserve Bank of India (RBI) reported a 46% increase in digital transaction volumes from March 2020 to March 2021, which is an example of the scale of the shift to e-banking (RBI, 2021). These steps immediately led to revenue expansion as multinational banks exploited service charges, transaction charges, and other sources of income from digital banking.

The epidemic highlighted the economies of scale of e-banking services. It reduced dependence on physical branches, and banks greatly saved manpower costs, utilities, and maintenance. Research by McKinsey & Company (2021) Reveals that implementations related to digital transformation can save as much as 25% in terms of operating costs in banking services. An important finding recorded during the study was that foreign banks had enhanced their capabilities to retain and win customers through e-banking. Customers increasingly opted for the simplicity and security of digital platforms. A study done during this research indicated that 68% of the respondents considered e-banking services more dependable than traditional banking methods.

PwC survey (2020) states that customer retention was 30% higher across all the institutions during the pandemic when they had strong e-banking capabilities than in those

institutions with no such facility. The fact that customers' demands are shifting can be reflected from the perspective of digital preparedness. In 2020, CERT-In reported that cyberattacks were 300% on the financial institutes. Further, the digital divide was a crucial obstacle because some clients in rural or disadvantaged economic regions did not possess an internet connection or even the requisite digital literacy to efficiently use e-banking services.

The results correspond with the National Payments Corporation of India's (NPCI) data, which indicated that urban regions disproportionately fueled the increase in digital payments during the epidemic (NPCI, 2021). The COVID-19 epidemic catalyzed the extensive adoption of e-banking by multinational banks in India, enhancing revenue growth and operational efficiency. Nonetheless, the issues of cybersecurity, regulatory compliance, and the digital divide must be resolved to maintain this development over the long run. As the banking sector evolves, ongoing innovation and customer-centric policies will be essential for sustaining the momentum achieved during the epidemic.

5.2 Discussion of Hypothesis 1: The overall revenue (in ₹ crore) of international banks doing business in India had increased with the increased usage of e-banking services during COVID 19.

The findings from hypothesis emphasises numerous elements that greatly affect a bank's whole crores of rupee income. Crucially important for total income with high significance levels ($p<0.001$) are deposits and advances. This is consistent with results of Brahmaiah and Ranajee (2018), who observed that bank profitability is mostly driven by deposits and advances. With notable p-values (p0.005), the investment deposit ratio and

revenue from e-banking both favourably affect overall income. Chen (2020) underlined the need of non-interest income in improving bank profitability, therefore fees and charges greatly increase total income ($p<0.001$).

Fascinatingly, the interest income lag lowers total income ($p=0.031$), implying that higher past interest rates could somewhat lower current total income. This is consistent with the findings of Dhawan and Aspal (2021), who pointed out that changes in interest rates affect bank profitability. Other factors include credit deposit ratio, IDR_CDR, prior deposits and advances have less effect on total income ($p>0.05$), implying that these policies could have little effect on profitability.

Although other factors have either little to no impact overall, deposits, advances, non-interest income, investment deposit ratio, and lagged revenue from e-banking significantly affect the bank's total income.

The study emphasizes the pivotal function of e-banking during a time of considerable global upheaval. The epidemic served as a spur for the growth of electronic banking, compelling clients and institutions to swiftly transition to digital systems owing to limitations on physical contacts. This transition significantly affected the revenue creation of international banks in India, yielding both advantageous results and considerable obstacles. The COVID-19 pandemic presents a substantial risk to the viability of banks worldwide. The situation is expected to be more severe in developing and emerging nations, where financial systems are fragile according to Barua, B., & Barua, S. (2020). As financial institutions navigate the challenges and opportunities posed by technological advancements, the study findings enhanced the broader discourse on how

banks can utilize financial technology to secure a competitive advantage in the market through value propositions, including marketing techniques, diversification of merchant possibilities, and enhancement of banking service quality as stated by Jain, K., et. al., (2024).

The swift shift of financial services to digital platforms due to technological progress and the COVID-19 pandemic underscores the necessity of enhancing digital literacy, confidence, and trust in e-banking services to boost their adoption rate among older consumers (Jena, R. 2023). COVID-19 significantly delineated the precursors to the adoption of digital finance and the impact of various managerial and policy measures, while technology-related behaviours are evolving alongside technological advancements in India (Billore and Billore 2020a). The increased utilization of e-banking during the COVID-19 pandemic substantially impacted the revenue production of international banks in India. The rise in transaction volumes, along with cost savings and creative service offerings, led to increased revenues. Nonetheless, obstacles such as cybersecurity threats and the digital divide persist as significant concerns. To maintain and improve the benefits of e-banking, banks must prioritize the development of safe, inclusive, and creative digital platforms that cater to the requirements of various client segments.

The trends in e-banking adoption during COVID-19 indicate a distinct transition in consumer and corporate behaviour towards digital-first solutions. The increasing number of digital transactions and the transition from physical to digital banking channels have allowed international banks to seize new income possibilities while improving operating

efficiencies. These data emphasize the pivotal role of e-banking as a significant catalyst for revenue development for foreign banks in India throughout the epidemic.

5.3 Discussion of Hypothesis 2: The impact of financial indicators on overall income during the COVID-19 era differed significantly from earlier periods.

The COVID-19 problem profoundly affected the operations of international banks in India, particularly with the monetization of their financial services via electronic banking. As traditional bank offices were temporarily shuttered and consumer behaviour transitioned to digital platforms, these banks saw both obstacles and possibilities in generating revenue through their digital banking channels. This discourse analyses the principal challenges and possible possibilities that arose during the pandemic, transforming the strategies of multinational banks into electronic banking.

The findings from hypothesis show the factors affect a bank's overall income. Total income ($p=0.786$) is not much influenced, though, by operational efficiency lag (OE_Lag). Crucially, the running profit ratio (TE_OP) determines the whole spending and has a very significant positive effect on total income ($p<0.001$). This is in line with results of Gupta and Sharma (2019), who underlined the need of operational effectiveness for banking profitability, Sinha and Agarwal's (2020) research on the function of revenue diversification in bank performance, the proportion of operational income (PC_OI) also shows a considerable positive impact ($p<0.001$).

Furthermore, the capital adequacy ratio to operational efficiency (CAR_OE) has a significant negative effect on total revenue ($p<0.001$), implying that more capital could reduce profitability, as Rao (2021) indicates. Fascinatingly, the COVID-19 variable has no

appreciable effect on total income (p=0.682), which would imply—based on research like Johnson (2020)—that the direct impact of the epidemic on bank income is not very important.

While parameters like operational efficiency lag and COVID-19 have either little or no impact overall, operational efficiency, total expenditure to operating profit ratio, proportion of operating income, and capital adequacy ratio greatly affect a bank's total income**.**To put it all together, this study confirms that the pandemic significantly hurt banks' income, with rising expenses playing a major role. While traditional financial metrics still matter, expense management emerged as a key factor in financial resilience. Moving forward, addressing multicollinearity could lead to clearer conclusions and a better understanding of how different financial elements interact, especially during times of crisis. The transition to digital banking necessitated multinational banks to swiftly enhance their digital infrastructures to manage the increase in online transactions. Financial institutions were compelled to invest significantly in technological advancements, including the enhancement of mobile applications, the fortification of cybersecurity measures, and the integration of cloud services. The expenditures in digital infrastructure increased operating expenses, hindering banks' ability to swiftly monetize their digital services (Gupta & Sharma, 2021). Additionally, these expenses encompassed personnel training, digitalization of customer support, and the assurance of system dependability, particularly when a substantial segment of the customer base migrated online.

The digital divide, encompassing restricted internet access, low smartphone usage, and inadequate digital literacy, impeded the extensive commercialization of electronic

banking services. Multinational banks needed to address this gap by offering client education and assistance, which required time and money, hence postponing the whole revenue potential of their digital services (Das et al., 2021). A significant number of consumers persisted in utilizing conventional banking channels due to their unfamiliarity with digital platforms, hindering banks from fully exploiting the transition to digital services.

Digital banking has facilitated access to financial goods, including savings accounts, loans, and insurance, for consumers in remote places. This provided multinational banks with new opportunities to generate revenue by delivering digital goods such as micro-loans and insurance offerings on a large scale (Patel & Singh, 2021). These solutions not only met immediate client demands but also advanced larger financial inclusion objectives. The increase in digital transactions enabled banks to generate a consistent income stream from payment processing, bill payments, and peer-to-peer transfers, hence improving their profitability despite adverse economic situations (Mehta et al., 2022).

A notable transformation in consumer behaviour during the epidemic was the swift transition from conventional banking to digital banking. Due to the closure or restricted operation of conventional bank branches, users increasingly depended on mobile banking applications, online banking, and digital payment platforms. Research by Mehta et al. (2021) indicated a 40% rise in digital banking utilization during the initial months of the epidemic. Consumers are increasingly at ease using online banking for routine activities, including bill payments, money transfers, and cellphone recharges.

This transition was especially evident among younger customers who were more technologically adept and accustomed to utilizing digital channels. Nonetheless, even older populations who had previously eschewed digital banking have begun to depend on e-banking services to fulfill their fundamental financial requirements (Gupta & Sharma, 2021). The abrupt increase in digital use generated both possibilities and problems for banks, necessitating the enhancement of their digital infrastructures and the adaptation to evolving consumer demands.

The Unified Payments Interface (UPI), mobile wallets, and online payment gateways had substantial development, as seen by the increase in digital payment transactions (Patel & Singh, 2021). E-commerce behemoths like Amazon and Flipkart, along with other digital platforms, profited from this transition as consumers favored contactless payment methods. Consumer interest in digital insurance products has risen as individuals pursue financial security in response to the uncertain economic climate (Sharma & Verma, 2022). Multinational banks modified their service offerings to address these rising demands, broadening their digital loan portfolios and enhancing the client experience on their digital platforms.

5.4 Discussion of Hypothesis 3: The losses from the productivity measures related to e-banking had a significant impact on total income, especially after COVID.

The study examines the impact of the transition from conventional banking channels to digital platforms on cost structures and profitability indicators. The transformation, expedited by the COVID-19 epidemic, transformed the operating strategy of foreign banks in India, with both advantageous and problematic consequences. The shift

to digital platforms markedly decreased operational costs for international banks by diminishing their dependence on physical branch networks.

The total income of the bank depends on numerous factors. Although business per employee (BPE) has little impact on total income ($p=0.936$), Higher employee-related expenses might reduce profitability, hence profit per employee (PPE) has a major negative influence on total income ($p<0.001$), Gupta and Singh (2019) noted. Supporting Chen (2020), who underlined the vital need of asset management in banking success, the distribution of assets, return on assets, and total assets had major beneficial effects on total income ($p<0.001$.). Consistent with the results of Sinha and Agarwal (2020) on operational efficiency, the BP_PP (business per employee to profit per employee) and BP_TA (business per employee to total assets) ratios show significant positive benefits on total income ($p<0.001$).

On the other hand, the ROA_S (return on assets spread) exerts a negative influence ($p=0.009$), although variables such as BP_Lag (business per employee lagged) and ROA_Lag (return on assets lagged) do not significantly impact total income ($p>0.05$). This corresponds with Rao's (2021) findings, which indicated that lagged indicators typically exert diminished influence on present performance.

In summary, the bank's total income is substantially affected by profit per employee, asset management, and operational efficiency ratios, whereas lagging indicators and business per employee exert minor or negligible influence. A future area of study could compare these trends across public vs. private banks to determine whether different ownership structures lead to different revenue-driving factors.

Expenditures related to branch operations, including rent, utilities, personnel, and maintenance, diminished as banks embraced online platforms to cater to their clientele. Cumulative Information, Communication, and Technology (ICT) investment has been shown to exert a considerable detrimental impact on the deposit and lending market share of local banks. Domestic banks may be less efficient in leveraging ICT. Despite investing in ICT, these banks are unable to improve their customer service, which therefore accounts for the negative effect on their market share. Conversely, there exists a statistically substantial beneficial effect of cumulative ICT on the deposits and loan market share of international banks (Ansari, G. G., & Sen Gupta, R. 2024).

Research findings from the 1990s indicate that, after accounting for external market conditions, bank cost productivity decreased but profit productivity increased. The findings support the hypothesis that technological advancements enhanced the quality and diversity of banking services, leading to increased costs, which customers were willing to bear, enabling banks to elevate revenues sufficiently to offset the higher expenses (Berger, A. N. 2003). A significant issue had arisen from the inadequate comprehension of many technological elements, resulting in unexpected incidents such as digital theft, fraud, and money laundering in the online domain (Roberts-Lombard and Petzer, 2021).

The decrease in operational expenditure directly resulted in enhanced profitability for international banks. Through the utilization of digital platforms, banks successfully expanded their operations without a corresponding rise in expenses. The capacity to access a broader clientele via online platforms allowed international banks to accrue supplementary income from digital transactions, subscription services, and cross-selling

prospects. Targeted marketing efforts through data analytics helped banks to offer customized financial solutions, thereby increasing client engagement and revenue growth (Mehta et al., 2022). The shift from traditional banking channels to digital platforms significantly impacted the operational costs and profitability of international banks in India. The transformation resulted in substantial cost savings by optimizing branch networks and automating banking operations while simultaneously enhancing profitability through new income sources and operational improvements. However, challenges such as high early capital expenditure and the digital divide remain crucial improvement areas. As international banks continually innovate and work to overcome these challenges, they will be able to stay ahead in the changing Indian financial landscape.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

The concluding part of this report offers a thorough summary of the research findings, highlighting the transformational effect of e-banking on the income of multinational banks in India during the COVID-19 epidemic. The pandemic acted as a catalyst for digital change, accelerating the use of electronic financial services and altering income sources. The outcomes highlight the factors that include high volumes of transactions, low operating costs, and greater cross-border banking activity in developing income. Concerns also arise in terms of cybersecurity threats, the digital divide, and regulatory complexities, which must be mitigated to ensure such progress continues.

The chapter discusses the broader implications of the findings for banks, regulators, and the financial sector. Banks are encouraged to invest more in technology and customer-centric digital offerings, and governments are nudged to upgrade digital infrastructure and financial education to bridge the digital divide. Implementation-oriented suggestions include improving cybersecurity, extending digital access to underserved regions, and leveraging cross-border channels to boost revenues.

The study acknowledges the deficiencies in the study such as concentration on multinational banks and a lack of smaller financial institutions as a recommendation for future studies. This encompasses examining the enduring consequences of e-banking following the epidemic, assessing the implications for regional and local banks, and scrutinizing client viewpoints regarding digital security and privacy. The conclusion

underscores the persistent significance of digital innovation in the banking industry, highlighting those the pandemic's constraints simultaneously offered distinct prospects for development and resilience. This last chapter reinforces the study's contribution to comprehending the transformative impact of e-banking in the financial environment.

Chapter 1 (Introduction) introduced the topic Impact on Revenue From E-Banking in International Banks in India during Covid-19 and highlighted its importance.

The introductory chapter consolidates the fundamental components of the study, reiterating the significance of the research and its relevance to the identified issue. The introduction delineated the study's setting, highlighting the substantial disruption of traditional banking operations by the COVID-19 epidemic and the expedited implementation of electronic banking (e-banking) by international banks in India. The research topic highlighted the insufficient comprehension of the effects of fast digital change on the revenue patterns of these institutions, especially in the distinctive and demanding context of the pandemic.

The research aimed to investigate and assess the financial consequences of increased e-banking utilization by multinational banks in India during the COVID-19 pandemic. The research attempted to address a significant vacuum in the literature by examining how e-banking impacted revenue streams and cost structures, while also highlighting emerging potential and concerns. The objective closely coincided with the study's importance, as the results had practical ramifications for banking institutions aiming to transition to a digital-first paradigm and for policymakers endeavoring to provide conducive frameworks for financial inclusion and innovation.

The study questions were meticulously crafted to direct the inquiry, concentrating on the degree to which e-banking use influenced revenue, the significance of cost savings, and the obstacles encountered by international banks in optimizing income throughout the pandemic. The study enhanced comprehension of the interplay between digital transformation and financial performance within the banking sector by addressing these inquiries.

The introductory chapter sets the study's basis by explicitly defining the research topic, goal, importance, and questions. It established a foundation for a comprehensive examination of the influence of e-banking on multinational banks amid the epidemic, underscoring the significance of the subject in a swiftly changing financial environment. This integrated framework guaranteed that the study stayed concentrated on its aims and provided significant insights into the relationship between digitization and revenue production.

Chapter 2 (Literature Review) is based on the topic impact of e-banking on revenue in international banks in India during the COVID-19 pandemic and emphasizes the significance of the issue. A literature review synthesizes and evaluates existing research on a certain topic to offer a comprehensive grasp of the fundamental concepts, theories, and findings that have shaped the field. It contextualizes discoveries within the broader academic discourse and establishes a foundation for identifying deficiencies in our current comprehension. The literature review chapter consolidates the principal insights derived from prior research and identifies the gaps that this study aims to fill.

The review included an extensive analysis of electronic banking (e-banking) within the financial industry, emphasizing its acceptance, advantages, obstacles, and influence on the revenue of multinational banks. It analysed the extent to which the COVID-19 epidemic expedited the shift to digital banking, altering consumer behaviour and operational strategies for financial institutions globally. The literature highlighted that e-banking has emerged as a vital revenue-generating avenue for banks, providing cost efficiencies, scalability, and improved client convenience. The research emphasized its capacity to enhance transaction volumes, diminish reliance on physical branches, and facilitate smooth cross-border financial transactions. Nonetheless, the analysis highlighted considerable hurdles, including cybersecurity threats, the digital divide, and regulatory complications, which may impede the complete fulfillment of e-banking's promise.

Notwithstanding these contributions, the literature research revealed a deficiency in comprehending the precise financial implications of e-banking adoption by multinational banks in India, especially under the extraordinary conditions of the COVID-19 epidemic. Although previous studies have thoroughly examined e-banking trends and overarching financial consequences, there has been little emphasis on the pandemic's distinct impact on income creation, cost structures, and consumer interaction techniques in this domain. The literature evaluation established a robust theoretical framework for the study, synthesizing current knowledge and pinpointing significant gaps that this research intends to address. This paper examines the financial implications of increased e-banking use by multinational banks in India during the epidemic, aiming to provide novel and

pertinent insights into the continuing dialogue around digital transformation in the banking industry.

The practice of offering financial services and goods to consumers in a direct way via the use of email and other communication networks is referred to as electronic banking, which is also often referred to as Internet banking. Online banking is another name for electronic banking. It is possible to explain the notion of electronic banking in a variety of different methods. To put it in its most fundamental form, it is the process of providing information or services to customers of the bank via the use of a screen, television, telephone, or mobile phone. Because it has developed over time, it has become a strategic resource that may be used to enhance dependability, control output, promote competitiveness, and increase profitability.

Since this problem has arisen, the traditional approach to carrying out financial transactions has been altered. Using electronic banking, the customer can circumvent the need to physically go to the branch to finish the banking operation. For example, customers use automated teller machines (ATMs) rather than cashiers, and they utilize electronic money rather than executing financial transactions (Allegabond and Parissa, 2006). This trend is expected to continue in the foreseeable future. Customers are provided with the chance to solicit feedback, ask about their accounts, and make applications for a wide range of services. According to Haq and Awan's research from 2020, the bank can utilize the Internet to carry out a variety of financial transactions, including making deposits into its savings account, paying bills, and engaging in other financial activities (Liébana-Cabanillas, F., 2018).

Because of the crisis that was brought about by the COVID-19 pandemic, there has been a substantial alteration in the economy of the whole world, and the financial sector has been influenced by these developments. Therefore, the liquidity of banks has been redefined because of the widespread application of lockdown and social distancing policies throughout the world. As a result of this, digital banking solutions have swiftly developed as a preferred banking method for various financial organizations. The influence, as well as the consumers who will interfere with business efficiency aspects linked with e-banking, financial performance behaviour both before and during the research pandemic, and the context of other results supporting the implementation of e-banking policy in India during the epidemic, are all things that will be taken into consideration. Both factors will be considered (Karjaluoto, H., et al., 2002).

Chapter 3 (Research Methodology) encompasses a description of the study's structure, including the objectives, hypotheses, and tools utilized. Comprehension statements are assessed utilizing the data and results of the current study. Thus, the viewpoints of the research on addressing the issue determine the approaches. The study utilizes descriptive research methodologies, including several questionnaires and inquiries to collect data.

Research methodology refers to the systematic strategies and procedures utilized to identify, select, process, and evaluate material pertinent to a given subject. The research methodology delineates the approach for the inquiry. It represents a systematic and logical approach to subject study. Researchers employ methodologies to delineate their research

procedures, aiming to furnish innovative and credible proof that fulfills their aims. A technique is employed to collect data and formulate conclusions.

The research methodology chapter succinctly outlines the strategy employed to assess the influence of e-banking on the revenue of multinational banks in India amid the COVID-19 epidemic. The chapter delineates a coherent and methodical study strategy, specifying both dependent and independent variables to direct the investigation. The study's dependent variable is the income produced by international banks, whereas the independent variables encompass e-banking transaction volumes, consumer adoption rates, and operational efficiency.

A regression analysis model was utilized to evaluate the link between these factors, allowing a quantitative examination of the effect of heightened e-banking usage on financial results. The research employed quantitative data. This approach provided a detailed understanding of the financial implications of e-banking, supported by measurable data and contextual analysis.

It utilized very strict steps to ensure that the variables and data employed were reliable and valid; this involved pre-testing instruments for survey surveys and data analyses using already established statistical methods. It, therefore, resulted in outcomes both reliable and reflected the true correlations of the e-banking utilization to revenue in the banks. The study methods chapter established a strong framework for the examination of the influence of e-banking on the financial performance of multinational banks in India. It established a good framework for addressing research questions and giving insightful

information in the study of digital banking through a strong sampling strategy, detailed techniques of data analysis, and an assurance of reliability and validity in findings.

Chapter 4 (Data Analysis and Interpretation) consolidates the key findings that are derived from the statistical and qualitative analysis of the collected data. This chapter analysed the impact of e-banking usage on the income generated by multinational banks in India. The analysis was both quantitative and qualitative, providing a comprehensive understanding of the research problem.

The quantitative data study, using SPSS and Excel, revealed the following significant relationships: High e-banking transactions were related to increased revenue generation for international banks. Regression analysis confirmed that higher e-banking adoption directly boosts revenue through fees on transactions, service fees, and savings on branch-related physical activities.

The chapter on data analysis and interpretation has proven to conclude substantial evidence that supports the assumptions of the study, emphasizing a strong relationship between e-banking usage and revenue generation. Results provide crucial information for international banks, governments, and researchers in showing the need for continuous digital innovation in dealing with problems in ensuring sustainable growth in the banking industry.

Chapter 5 (Discussion) consolidated insights from the study inquiries, delivering an extensive examination of the effects of digital banking on the revenue, operational strategies, and customer behaviour of multinational banks in India during the COVID-19 epidemic. The main insights showed that the pandemic was the catalyst for digital

transformation as it increased dramatically the adoption rate of e-banking services amongst customers, along with the demand for innovation in banks' responsiveness to changing scenarios.

Multinational banks leveraged the growth of digital banking by expanding their services, investing in digital payment platforms, and expanding their lending and cross-selling activities. Discussions underlined how banks managed to successfully balance digital innovation with the imperatives of strong cybersecurity and compliance, thereby maintaining consumer trust and business continuity. In contrast, there were issues of rising loan defaults and economic uncertainty, which impacted their revenue streams both from traditional banking and digital operations.

Customer retention and acquisition thus became a primary source of revenue generation through personalized, secure digital experiences. All of these customer behaviour-cum-demand changes payments, demanding lending through digital, and increased adoption of cybersecurity-altered strategies in banking. In the face of all these challenges, banks could include new technologies and make their ways of working efficient and compliant with regulatory standards that shaped their power survival during the crisis.

In conclusion, the debate underlined that the pandemic served to be a dual force, as it disrupted while accelerating digital banking, thereby emphasizing that e-banking has revolutionary capacities in redefining the operational and financial dynamics of international banks. These observations not only verify the research objectives but also generate significant implications for future banking strategies in an increasingly digital landscape

6.2 Implications

The results of this study have considerable significance for several stakeholders, including international banks, governments, and scholars. The report analyses the influence of digital banking during the COVID-19 epidemic, emphasizing technology's revolutionary role in redefining financial services and providing essential insights for future strategies and policy formulation.

This study theoretically contributes to the literature on digital banking by demonstrating its essential role in improving operational resilience and revenue production amid a worldwide crisis. It enhances comprehension of the interplay between technology innovation and economic issues, providing a conceptual framework for assessing the financial and strategic flexibility of banks. These contributions establish the groundwork for subsequent studies on the enduring effects of digital transformation in the financial sector.

The findings provide international banks with practical solutions to improve their digital banking efforts. The report underscores the significance of client-centric innovations, urging banks to employ sophisticated analytics and secure digital platforms to tailor services and enhance customer happiness. Analysis of cost optimization and profitability indicates that banks must emphasize automation and simplified operations to improve efficiency while ensuring compliance and security. It therefore emphasises the urgency for banks to be proactive about their response in the face of changing consumer behaviour, thereby helping them better align their services with shifting client expectations.

The analysis highlights the need for robust regulatory frameworks that promote the growth of digital banking while ensuring cybersecurity and consumer safety. Policymakers can use these findings to create an environment that fosters financial innovation, particularly through digital channels of financial inclusion. The study emphasizes the need for regulations that reduce risks such as loan defaults and economic uncertainty, thus ensuring the stability of the banking system during crises.

This opens doors for future research on the long-term implications of adopting digital banking, especially during a post-pandemic world. It also inspires cross-industry benchmarking to understand better how technology can mitigate the effects of global disruptions. More importantly, the findings call for an in-depth examination of emerging technologies like blockchain and artificial intelligence, which may change digital banking in significant ways.

This paper is priceless in showing the great significance of digital banking in enhancing financial services, encouraging innovation, and building strength during difficult times. The research article constitutes an all-rounded framework for achieving sustainable growth and inclusion in the financial sector through using digital banking as a means of solving theoretical deficiencies, affecting practical initiatives, and guiding policy formulation.

6.3 Recommendations for Future Research

Enhance Cybersecurity and Regulatory Compliance

Investment in Sophisticated Security Protocols: Implement AI-driven fraud detection tools, full encryption, and multi-factor authentication to secure online transactions.

Regulatory Compliance: Keep updated with the evolution of regulatory requirements and implement these in digital banking systems to stay compliant and avoid any sanctions.

Improve Customer Experience

Customized Services: Employ sophisticated data analytics to adapt banking solutions to specific consumer requirements, like personalized financial guidance or bespoke loan offerings.

Accessible Platforms: Create intuitive, fluid, and mobile-optimized interfaces to improve accessibility and user-friendliness for clients of diverse demographics.

Enhance Financial Inclusion

Focus on underbanked demographics: Reach the rural and the marginalized by leveraging digital channels for accessible financial services. Provide microloans, digital wallets, and affordable financial solutions tailored to the customer's needs.

Education and Awareness: Promote awareness programs that will inform the customers about the benefits and safe use of digital banking services for higher adoption.

Diversify Income Sources

New Financial Products: Introduce new products such as digital insurance, robo-advisory services, and investment platforms to cater to diverse consumer segments.

Strategic alliances: Partnering with fintech companies, online shop sites, or payment service companies should create additional flows of income.

Enhance Operational Efficiency

Automation of Routine Processes: Implement AI and machine learning technologies to streamline operations such as loan approvals, customer assistance, and fraud detection, hence decreasing operational expenses.

Resource Allocation: Fund training programs to develop staff skills so that they can effectively administer and maintain digital platforms.

Alleviate Economic Risks

Frameworks for Risk Assessment: Improve risk assessment systems to monitor loan performance and enable proactive measures to curb future defaults.

Flexible Loan Regulations: Offer restructuring options for distressed borrowers to maintain customer relationships and reduce NPAs.

Encourage Innovation and Flexibility

Ongoing Enhancement: Maintain a competitive edge in technology integration by consistently upgrading digital platforms to include the newest advancements and meet evolving client needs.

Agile Frameworks: Develop adaptive approaches to act quickly in reaction to market conditions, ensuring preparedness for future shock.

Enhance Customer Retention Strategies

Implement loyalty programs that provide rewards and extra privileges to returning customers to maximize retention levels.

Feedback Mechanisms: Consistently gather and evaluate client input to identify and rectify service deficiencies efficiently

6.4 Conclusion

This paper provided an all-around examination of how digital banking affected worldwide banks in India's operating procedures and income during the COVID-19 outbreak. In order to offer a whole picture of the digital banking ecosystem within remarkable change, the paper methodically investigated consumer behavior, operational strategies, and financial ramifications. To offer a whole picture of the digital banking ecosystem within remarkable change, the research systematically investigated consumer behavior, operational strategies, and financial effects.

This meant that the report underlined how the epidemic was like a revolutionary catalyst accelerating consumer use of digital banking services.. The drastic turn in customer behaviour, where all trends shifted to preferring online banking systems and contactless transactions, accelerated innovations in digital services at banks. A significant economic setback of the pandemic was the massive increase in defaults on loans coupled with slowing the economy.

From the findings, there resulted in the duality of crisis into both a threat and an opportunity to global banks. Investing in information infrastructure coupled with a customer-centered strategy enabled them to sustain as well as gain access to a higher stream of income through their revenue augmentation. stated levels of cybersecurity combined with regulatory compliance and advanced technological prowess helped to build much-needed confidence in the firm, which also ushered in added efficiency to work operations.

The use of qualitative data there by provided useful insight into how banks reconcile innovation with financial stability and risk management.

The research showcases the revolutionary capability of digital banking in transforming the financial industry, especially during times of crisis. It provides banks with crucial information on how to handle future difficulties by using digital platforms, client pleasure, and innovation with security. These findings enhance the comprehension of the changing function of digital banking in fostering financial development and resilience within a dynamic global economy.

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