IMPACT OF FINTECH ON THE
COMMERCIAL BANKING INDUSTRY: CUSTOMER SIDE

By

PRATIKSHYA DHAKAL

Presented to the Faculty of the Honors College of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

HONORS BACHELOR OF ADMINISTRTAION IN FINANCE AND ECONOMICS

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2023

ACKNOWLEDGMENTS

I want to express my sincere gratitude towards my mentor Dr. Richard Berard for providing me with necessary guidance, resources, and support throughout the research process. His guidance and advice helped me in every stage of writing my project, from outlining the proposal to concluding the paper. I am extremely grateful for what he has offered me. Additionally, I would also like to thank the entire Department of Finance at The University of Texas at Arlington (UTA) for providing me with the necessary resources to complete this project.

April 21, 2023

ABSTRACT

IMPACT OF FINTECH ON THE COMMERCIAL BANKING INDUSTRY: CUSTOMER SIDE

Pratikshya Dhakal, BBA Finance and Economics

The University of Texas at Arlington, 2023

Faculty Mentor: Richard Berard

FinTech are the firms that use new technology to deliver financial services. They have heavily impacted the change in the banking industry, mostly on the consumer side with innovation, social impact, and technological advancements. Commercial Banks have been declining in numbers for the past 35 years. This paper analyses the change in the customer side of commercial banking with the advancements of Fintech companies.

This paper uses a systematic literature review approach to evaluate Fintech and commercial banks' strategies. It creates concluding remarks on the change in customer's behavior towards the adoption of Fintech using the Technology Acceptance Model (TAM). The findings from TAM suggest that Fintech companies and customers' behavior towards acceptance of new technology will continue to advance. The banking industry can survive and not get completely replaced by Fintech because of the different set of regulations but can take away many banking services and jobs in the long run.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

1.1 Understanding Fintech and Commercial Banking

Fintech companies are the firms using new technology to conduct their businesses. Fintech refers to "financial technology" and is one of the fastest-growing industries today. According to Insider intelligence, the percentage of US consumers using technology to manage their finances jumped from 58% in 2020 to 88% in 2021. Companies use Artificial Intelligence, Blockchain, Cloud Computing, and big data (ABCD) as a part of their technologies. Financial Stability Board (FBS) defines fintech as "technology-enabled innovation in financial services that could result in new business models, applications, processes, or products with an associated material effect on the provision of financial services."

Commercial banks are the financial institutions that accept deposits from the public and give loans to make profit. They are the largest group of financial institutions in terms of the dollar value of assets. Commercial banks are also called Depositary Institutions (DI) that perform essential services to US financial markets.

1.1.1 Evolution of Fintech

Fintech has been around for a very long period. The first fintech was an early form of fax machine, Pantelegraph, in 1865. Fedwire was established by the Federal Reserve Banks to transfer funds and connect all 12 reserve banks in 1918. It has only gotten more advanced with time. It is hugely popular today with the advent of electronic banking and online stock trading. The first electronic system to provide stock quotes in real time to stockbrokers and money managers was Quotron introduced by Quotron Systems in 1960. It was during the late 1960s and early 1970s that saw rapid advances in electronic payment systems. NASDAQ, an American stock exchange, was established in 1971 which then ushered in the rise of electronic trading. Bank mainframe computers, and more sophisticated data and record-keeping systems were rapidly advancing by the 1980s. E-commerce business models flourished in the 1990s. With the launch of Venmo in 2009 and Zelle in 2017, the money transfer and payments system evolved efficiently and rapidly. From the late 1990s to present, the Fintech industry has seen a rise in digital insurance, online banking, crowdfunding, and online stock trading platforms.

1.1.2 Emerging use of Fintech

The emerging use of Fintech can be identified by the demand and supply factors provided by economists and analysts at the Board of Governors of the Federal Reserve System. Factors like macroeconomic conditions and mainly the 2008 global financial crisis were the main supply factors of Fintech. Commercial banks started pulling back from some lending activities because of the burden of high regulations after 2008. This is when new players like Fintech came up with innovative technology to cater to the needs of small businesses and riskier customers. The increasing use of mobile technologies and demographics mostly fueled the demand for Fintech. According to Statista, the smartphone penetration rate was 72.7% during 2019 in the U.S. Emerging use of mobile technologies made is easier for users to perform their financing activities. Millennials and Gen Z are more fluent with technologies than any other age groups because of the availability and access to technology from a very small age. A 2017 UBS Evidence Lab study found that millennials make 2.26 financial transactions per week on average on their smartphones and 0.83 through a physical bank.

1.1.3 History of Commercial Banking

The commercial banking system is one of the oldest and largest industries in American history. The first bank of the United States was opened for business in Philadelphia in December 1791. (Gilder Herman). According to money crashers, the number of commercial banks in the U.S dropped from 14,146 in 1934 to 4,844 in 2021. This is mainly because of the regulations, mergers, and acquisitions after the 2007-2008 financial crisis. Commercial banks were allowed to merge after the 1980s and 1990s. Congress passed the Reigle-Neal Act to allow easy branching by banks across state lines. According to the FDIC, Customers relationships are very important for Commercial Banks because consumer loans, small business loans, and residential mortgages are a big part of their assets. Similarly, customer deposits make up the largest part of their liabilities.

1.2 Significance of the Research

This paper seeks to analyze how the banking and finance industries can change with the advancement of Fintech. A significant proportion of commercial banks' funds comes from customer deposits. The advancements of Fintech have created a huge impact in the banking sector, mostly on the customer relationship side. In the coming years, Fintech can get even bigger with its innovative solutions. With the change in technologies, customers' expectations, and new business models, commercial banks need to plan. This research is important as it identifies the changes in the customer side of the banking industry and foreshadows a hint about the future of Finance in general.

1.3 Objective of the Research

The purpose of the research was to identify the impact of Fintech on customers of the commercial banking industry and how it can affect the future of banking in terms of compliance, capital, and customer relationships. Additionally, the research also aimed to analyze the customer's attitude in adopting new technologies in the finance sector. This can help the banking sector and regulators to determine what important factors are to be considered in new Fintech enabled business models.

CHAPTER 2

LITERATURE REVIEW

2.1 Summary of Peer Reviewed Literature

According to a journal article by Kao, Blockchain technology has been widely embraced by the financial sector. It mentions that Blockchain technology architecture provides a safe, irreversible, and transparent storage method for supply chain finance. (Kao, 2022). Another journal by Ahmad mentions how Artificial Intelligence (AI) has been heavily adopted by the banking industry. AI is used mostly to understand the needs and behaviors of customers. Banks have used AI to leverage the increased understanding of customers to personalize products and services. The banking industry has also used big data analytics and machine learning to detect any fraudulent transactions and offer secure transactions. However, there are also a number of challenges that come with this adoption in terms of high cost, employment termination and lack of clarity on how AI generates their conclusions. Therefore, banks must strike a balance between efficiency and emotional value derived from customer contact with the use of technology like AI. (Ghandour, 2021)

A journal article by Vasquez mentions trust and confidence of Fintech users as relevant elements for guaranteeing ethical behavior. The paper analyses factors such as risk, reputation, quality of website information, regulation, inclusion, and price to understand the influence on confidence and trust of users. The literature suggests that reputation has a very strong influence on user confidence. (Vasquez, 2022).

2.1.1 Regulations and Risks

As a result of taking customer deposits, commercial banks are more heavily regulated than any Fintech company. Commercial banks are regulated at the federal and state level. There are four primary regulators of commercial banks, including, Federal Deposit Insurance Corporation (FDIC), Office of Comptroller of the Currency (OCC), Federal Reserve System (FRS), and State Bank regulators. These regulators control the commercial banks in terms of monetary regulation, safety and soundness regulation, investor/consumer protection, and credit allocation.

Fintech is also regulated, however, with a lower barrier in forms of virtual bank licenses, fintech charters, and e-money licenses. For instance, fintech services such as cryptocurrencies (bitcoin) and other blockchain enabled services support the exchange of value between two parties without the need for financial intermediaries. Regulatory sandboxes are frameworks set up by a financial regulator to allow early stage fintech startups to test their offerings in a controlled environment under the regulator's supervision. (Lehmnan,2020). Arizona was the first U.S state to launch a fintech sandbox in March 2018. General Data Protection Regulation (GDRP) and Payment Services Directive 2 (PSD2) have given the fintech industry major support to position themselves in the market. However, advancement of technology and evolving business model makes it difficult for Regulators as the company quickly outgrows the limits set by regulation. The inherent risks of illegal financial practices such as money laundering, tax evasion, and data breaches require strong regulation.

2.1.2 Partnerships and Recent Developments

The recent developments of Fintech with mobile wallets, Peer-to-Peer (P2P) / Business-to-Business (B2B) payments, digital currencies, and Value Transfer Networks have made the industry very efficient for customers and banks. Mobile Wallets include Apple Pay, Samsung Pay that store the information from debit or credit card for any transaction. Venmo and PayPal are the examples of P2P that has been widely used. Digital Currencies allow new payments systems with new currencies such as cryptocurrency.

From mobile banks and credit scoring to mobile wallets to e-trading, and Robo advice for investments, the fintech innovation has come a long way. The evolving relationship and partnership between Fintech and Commercial banks can be analyzed with these examples. Firstly, Fintech Companies partnered with different banks. For instance, Lending Club, a peer-to-peer lending site, partnered with WebBank and Marlette Finding, a fintech that provides loans and other financial products, partnered with Cross Riverbank. Secondly, Banks bought stakes in Fintech Startups. The loans originated from Lending Club were acquired by banks like MUFG Union Bank. Thirdly, OnDeck, a finance lending company, and JPMorgan Chase partnered in serving small businesses. Banks have also been developing in-house fintech arms, for example, Goldman Sachs launching its in-house online lending arm called Marcus. Sofi, a FinTech startup, recently achieved its bank charter from the Office of the Comptroller allowing them to gather deposits. These mutually beneficial partnerships between both industries can be expected more in the future.

CHAPTER 3

METHODOLOGY

3.1 Systematic Review

The methodology used for this project is the systematic methodology approach to deliver a summary of all the available resources in response to the research question. The chosen database includes Google Scholar, UTA Library, and ProQuest. A well-structured search strategy was developed to provide the best available evidence in terms of the future of banking and Fintech. The three big Cs of commercial banks are Capital, Compliance, and Customer. To understand how Fintech has affected the consumer side of Commercial banks, the use of Fintech in the commercial banking industry was divided into two main categories: Money/Transfer Payments and Financial Planning.

3.1.1 Technology Acceptance Model (TAM Model)

The Technology Acceptance Model (TAM) model was used to understand the perceived usefulness and ease of Fintech. TAM is an information system theory that identifies how users come to accept and use technology. It was first proposed by Fred Davis in 1986. According to Wikipedia, the TAM model has been continuously studied and expanded. For this project, Venmo and Robinhood were used as examples from each category of Money Transfer/ Payments and Financial planning to run through the TAM model. The following diagram depicts the constructs of the TAM model.

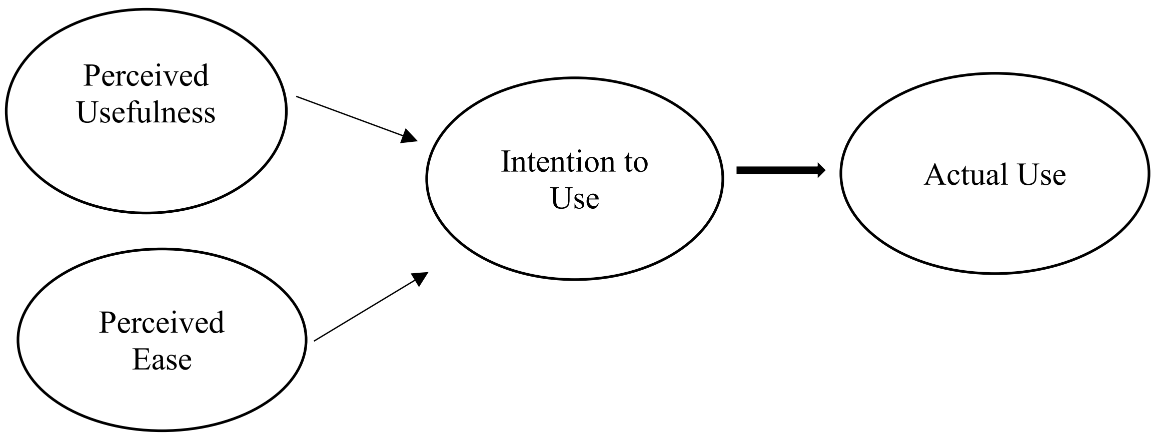

Figure 3.1: Graphical Presentation of TAM Model

The factors considered in determining the perceived usefulness and ease are as follows:

3.1.1.1 Perceived Usefulness (PU)

According to Wikipedia, Fred Davis defines PU as “the degree to which a person believes that using a particular system would enhance their job performance.” To determine the perceived usefulness, the following questions were analyzed: Does it save time? Is it quick to use? Does it help accomplish more work?

3.1.1.2 Perceived Ease (PE)

According to wiki, Fred Davis defines PE as “the degree to which a person believes that using a particular system would be free from effort.” To determine the perceived ease, the following questions were analyzed. Is it confusing to use? Are there any errors? If so, how long does it take to resolve the error? Can it be used anywhere, anytime, with anyone? How difficult is it to learn how it works?

CHAPTER 4

DISCUSSION

4.1 Findings

The use of Fintech in the commercial banking sector was divided into two main categories: Money Transfer/ Payments and Financial Planning. Money Transfer/ Payments included the P2P and B2B payments. Examples of Money Transfer/ Payments include Venmo, Cash App, and PayPal as these apps allow online money transfer and payments. These apps were chosen based on their popularity and awareness among users of Fintech. Financial planning included apps that help facilitate investments, loans, and savings. Robinhood and Coinbase were analyzed for Financial Planning as these apps allow to invest in stocks online and trade cryptocurrencies.

The data from BusinessOfApps was used to create the following diagrams showing the users of these apps overtime.

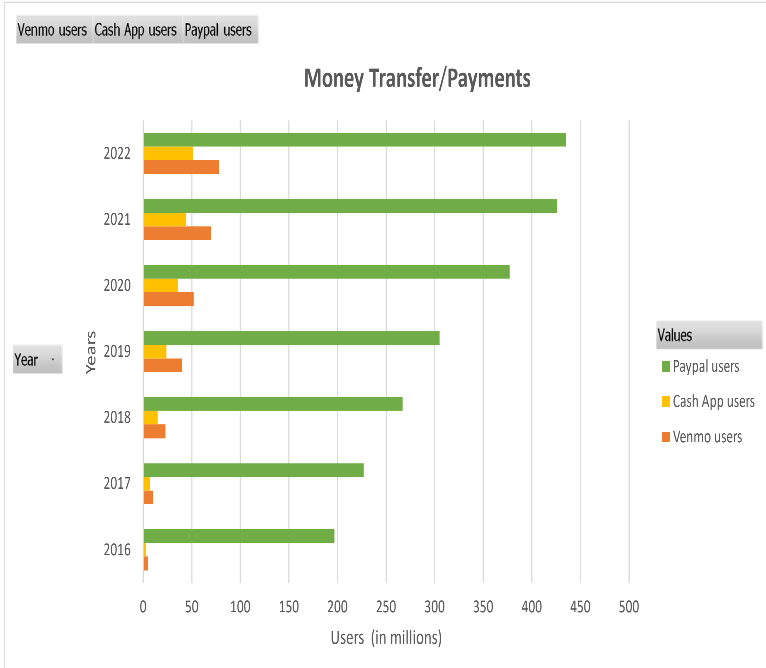

Figure 4.1: Money Transfer/ Payments Users

Figure 4.2: Financial Planning Users

The graphical presentation from the above data shows that the users of these apps have grown significantly from 2016 to 2022. The decline in the users of Robinhood during 2021-2022 was due to the volatility of the stock market. Overall, customers have been adopting these technologies more and more because of their efficiency and ease.

4.1.1 TAM Model for Money Transfer/ Payments Using Venmo

Venmo was chosen as a representative for the Money Transfer / Payments use of Fintech to identify how banking customers are adopting new technology to perform this section of banking through Venmo. Venmo is an American mobile payments services founded in 2009. It is a social payments platform that allows electronic transfer of funds.

4.1.1.1 Perceived Usefulness (PU)

Venmo saves a lot of time as it only takes about 1-3 business days for bank transfers. The Venmo feed allows checking of the estimated arrival date after initiating a transfer. This helps instant money transfer without the hustle of writing a check or carrying cash to send the money to friends or families with a few taps on your phone. Money transferred with the Venmo app is not FDIC insured, however, it allows the user to link their banks accounts making it safer. These factors can make people perceive that Venmo is useful.

4.1.1.2 Perceived Ease (PE)

Venmo is mostly used for small amounts of money and can make it hard for people to move large amounts of money around. There are also a lot of errors reported using Venmo. An article by WSJ mentions that PNC clients were having trouble connecting their bank accounts to their Venmo apps. Banks have security concerns in terms of providing limited access to the customer’s data to some Fintech. However, Venmo is convenient to send and receive money with friends and families. It can be easy to use for younger generations as it works like social media. It can also be used anywhere and everywhere with a valid Venmo account. The younger generation perceived Venmo more useful than the older generation.

4.1.1.3 Intention to Use

Venmo is well ordered despite some disadvantages like errors, fees, and concerns about privacy. An article examining the evolution of mobile apps concluded that Venmo users with public profiles who use the platform past their first day will most likely become regular users. (Clive, 2020). Venmo has been growing exponentially and processes many transactions today because it is mostly perceived as useful and easy by the users. Many properties of Venmo have remained consistent with its growth. The research from this source also concluded that many new users of Venmo only interact with the one who initiated the payment and no one else.

4.1.1.4 Actual Use

Table 4.1: Venmo Users' Ages

18-29	57%
30-49	49%
50-64	28%
65+	15%

Table 4.2: Venmo Users' Income

Upper Income	54%
Middle Income	41%
Lower Income	26%

Two demographics variables were selected. The variables are age and income. The table was created with the data provided by Pew Research Center. The table shows that Venmo is most popular among users aged 18-29. This is supported by the fact that Venmo is like any other social app and is efficient among younger generation with the popularity of social media. Also, 61% of Venmo's users are male. Adults with upper incomes are most likely to use Venmo.

Table 4.3: Venmo Total Payment Volume

Venmo	
Year	Total Payment Volume (in billions)
2014	2.3
2015	7.5
2016	20
2017	34
2018	62
2019	101
2020	159
2021	230
2022	244

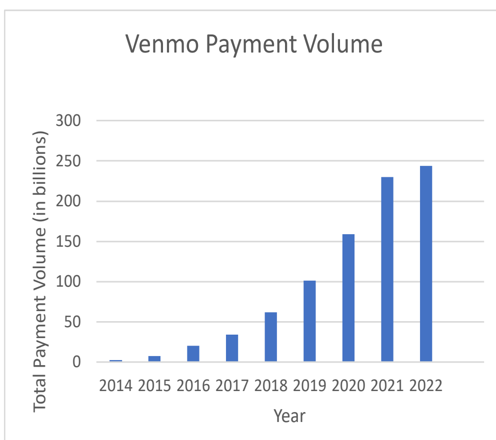

Figure 4.3: Graphical Presentation of Venmo Payment Volume

Table 4.3 and Figure 4.3 supports that Fintech app, Venmo, have been used by the banking consumers with the increase in the payment volume from $2.3 billion in 2014 to

$244 billion in 2022. According to Yahoo Finance, 45% of Americans did not write a check in 2022 and the presence of ATM machines across the country declined by 3.9%. Therefore, customers today mostly avoid retail banks to conduct any money transfer or payment transactions and perceive services provided by Venmo and other Fintech app efficient and quick. The fees that commercial banks receive from customers for such services as check clearing, cashier's checks, money orders and other direct account payments have declined by tens of millions of dollars per year because of Fintech and payment apps like Venmo.

4.1.2 TAM Model for Financial Planning Using Robinhood

Robinhood was chosen as a representative of Financial Planning services because of its popularity. According to Investopedia, it is a popular financial service with more than 12.2 million monthly active users (MUA) in September 2022. Robinhood is an American financial services company that facilitates commission-free trades of stocks, and exchange traded funds via a mobile app. It was launched in 2015 and has significantly changed the online brokerage industry.

4.1.2.1 Perceived Usefulness (PU)

Robinhood has been extremely easy to use even for inexperienced traders. Robinhood has even made complex trading strategies like options trading. It is also considered user-friendly with no fee and no minimum trading. It also saves a lot of time for users who have to connect to a broker to trade securities. It helps solid cash management features and recurring investment functionality to accomplish more tasks. Users perceive Robinhood useful because of these factors.

4.1.2.2 Perceived Ease (PE)

Robinhood being a registered broker-dealer is regulated by the U.S Securities and Exchange Commission (SEC). This can help customers trust Robinhood more. Robinhood platform allows ETF, cryptocurrency, stock, and options trade. Robinhood requires the users to be 18 years or older and have a valid Social Security Number. Investing through Robinhood is as easy as opening an account. Users perceived Robinhood to be easy to use because of these factors.

4.1.2.3 Intention to Use

Users' primary intention to use Robinhood is for trading purposes. It is mostly perceived to be easy and useful by users because of its mobile app platform. It can be easily accessed from everywhere making it attractive for frequent investors.

4.1.2.4 Actual Use

The data from BuyBitcoinworldwide mentions that the average age of Robinhood users is 31 and it is popular among young people learning to invest for the first time. It is less popular among older people who prefer traditional investment strategies over Robinhood. However, in general the users of Robinhood have been rapidly increasing from 1 million users in 2016 to 22.5 million users in 2021.

Table 4.4: Robinhood Assets Under Management

Robinhood	
Year	Assets under management (in billions)
2019	35
2020	63
2021	98

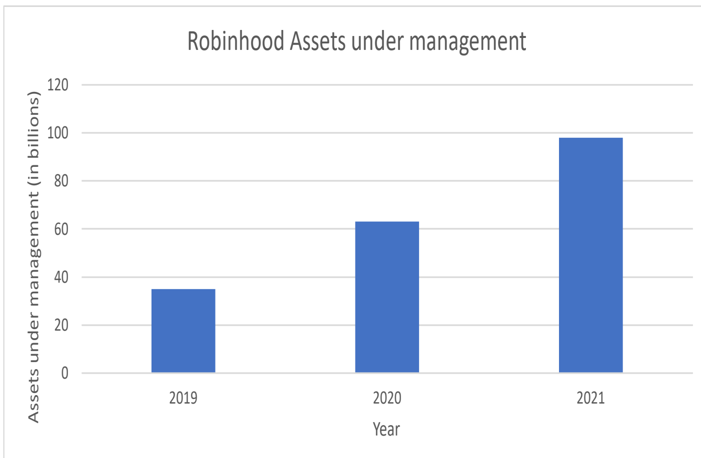

Figure 4.4: Graphical Presentation of Robinhood Assets Under Management

The change in assets managed by Robinhood can be seen from Table 4.4 and Figure 4.4. Assets Under Management (AUM) is best described as the total value of funds, assets, or capital managed by Robinhood on behalf of investors. $98 billion of assets was managed by Robinhood in 2021. AUM for Robinhood has increased significantly with an increase of almost 180% in the last two years. This shows that Robinhood has been successful in attracting and retaining customers to perform their financial planning. If an abundance of assets is managed by a Fintech like Robinhood, this can have a huge impact on traditional banks and traditional finance companies.

CHAPTER 5

CONCLUSION

5.1 Research Results

The increase in users of apps like Venmo and Robinhood that facilitate financial services such as money transfer/payments and financial planning can give fintech the advantage over customer relationship and how customers consume banking services. Technologies used by the Fintech companies have the capacity to help banks be more efficient in terms of more informed decisions and solve complex problems. McKinsey's 2015 annual report suggested that 10 to 40 percent of revenues of commercial banks will be at risk by 2025 because of Fintech in retail banking business including consumer finance. With the users accepting the technologies so rapidly, banks can take advantage of these technologies to stay ahead in the market competition. However, retail banks will still hold and retain a huge advantage in the areas of Compliance and Capital relative to Fintech companies. Existing regulatory and supervisory policy tools may not be adequate to cover the emerging fintech companies for system stability and consumer protection. Additionally, Fintech and Banks can have mutually beneficial partnership opportunities in which fintech can benefit from the bank's reputation while the banks can benefit from the fintech companies' technology infrastructure.

5.2 Research Limitations and Implications

The research has only used the two apps to conclude the adoption of fintech over change in customer's attitude. The change in technology is very advanced and can be limited to the use of only two apps. However, this gives an idea of how new technologies have been perceived easy and useful by customers because Venmo and Robinhood are the two most popular and used apps among users in the financial sector. Additionally, McKinsey & Co experts predicted that commercial banks may lose up to 60% profits in favor of new financial companies. The research can be used to understand the importance of reshaping retail banks in the future for the next digital age.

5.3 Future Research Opportunities

The next step is to take surveys of Fintech users to better understand different perspectives of people and cover a bigger audience in terms of TAM model. Additionally, International Fintech companies and commercial banks can be considered to understand the topic better and deeper. This can also be important because international fintech startups like Klarna, Chime, and Nubank are some of the biggest startups in the world.

REFERENCES

1. “Almost Half of Americans Have Not Written a Single Check in the Past Year - Here's What They're Doing Instead.” *Yahoo!*, Yahoo!,

2. “App Data.” *Business of Apps*.

3. “Here's Why Atms Are Becoming Harder to Find.” *Yahoo! Finance*, Yahoo!,

4. “The Decline of Physical Banks in America – 2020 Study.” *Yahoo!*, Yahoo!,

5.“The Gilder Lehrman Institute of American History Advanced Placement United States History Study Guide.” *The US Banking System: Origin, Development, and Regulation | AP US History Study Guide from The Gilder Lehrman Institute of American History*, 9 Aug. 2012

6. Anderson, Monica. “Payment Apps like Venmo and Cash App Bring Convenience – and Security Concerns – to Some Users.” *Pew Research Center*, Pew Research Center, 21 Nov. 2022

7. Chatenay, Victor. “What Fintechs Need to Do Now That Most US Consumers Use Them.” *Insider Intelligence*, Insider Intelligence, 14 Oct. 2021

8. Clive Unger The University of Texas at Austin, et al. “Examining the Evolution of Mobile Social Payments in Venmo: International Conference on Social Media and Society.” *ACM Other Conferences*, 1 July 2020

9. Ghandour, Ahmad. “Opportunities and Challenges of Artificial Intelligence in Banking: Systematic Literature Review.” TEM Journal, vol. 10, no. 4, Nov. 2021, pp. 1581–87.

10. Hayashi, Yuka. “Venmo Glitch Opens Window on War Between Banks, Fintech Firms: Fintech Firms Accuse Banks of Blocking Their Access to Customers’ Account Information.” Wall Street Journal - Online Edition, 16 Dec. 2019, p. N.PAG.

11. Kao, Yu-Cheng, et al. “Selecting the Fintech Strategy for Supply Chain Finance: A Hybrid Decision Approach for Banks.” Mathematics (2227-7390), vol. 10, no. 14, July 2022, p. N.PAG.

12. LEHMANN, MATTHIAS. “Global Rules for a Global Market Place? - Regulation and Supervision of Fintech Providers.” Boston University International Law Journal, vol. 38, no. 1, Spring 2020, pp. 118–56.

13. Li, Gang, et al. “Fintech, Bank Risk-Taking, and Risk-Warning for Commercial Banks in the Era of Digital Technology.” *Frontiers*, Frontiers, 24 May 2022,

14. Vasquez, Oliver, and Leire San-Jose. “Ethics in Fintech through Users’ Confidence: Determinants That Affect Trust.” Ramon Llull Journal of Applied Ethics, no. 13, Jan.2022, pp. 99–149.

15. Zhuang, Lei, et al. “An Evolution Model of Fintech Supports Technology-Based SMEs Innovation and Growth.” Discrete Dynamics in Nature & Society, Apr. 2022, pp. 1–1

BIOGRAPHICAL INFORMATION

Pratikshya Dhakal is a Senior at The University of Texas at Arlington. She is graduating in Spring 2023 with an Honors Bachelor of Business Administration in Finance and Economics. She is interested in Finance and Accounting Department. She joined UTA during the Fall 2019 and joined the Honors College during the Spring 2020 semester. She is extremely grateful for all the opportunities and resources provided by the Honors College. She even had a chance to be a member of the Honors Programming Board. She helped plan, organize, and execute many events during the Spring 2022 semester for Honors College students. She has been developing her career opportunities since Spring 2022, when she had a chance to work as an intern for a real-estate company located in Addison, Texas. She worked as a part-time Finance and Accounts Intern and was offered a full-time position after graduation.

After graduation, she is planning to work in a full-time position for a year. She wants to gain more experience in the job market before getting her master's degree. She is planning to get her master's degree in finance because she wants to become a Senior Financial analyst with more experience and knowledge.