

IMPACT OF CHATBOT SERVICE QUALITY ON
SATISFACTION AND LOYALTY OF BANK
CUSTOMERS

BY

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ABSTRACT

This study seeks to identify the impact of AI Chatbot service quality on customer satisfaction and loyalty among bank customers in Malaysia as well as customer viewpoints on perceived AI Chatbot service quality. The study conducted a mixed-method sequential exploratory approach by conducting a preliminary qualitative elicitation study to measure the dimensions and indicators of the phenomenon of interest—in this case, service quality of AI chatbots. Five discussants were part of the qualitative elicitation study which provided inputs to build the survey instruments for the quantitative study. The results of this study found that customers perceived AI Chatbot dimensions of reliability, responsiveness and empathy were important in offering services to the customers. This study investigated the relationship between customer satisfaction towards the bank and AI Chatbot, and analysed the impact on customer loyalty and the service quality. 310 sets of questionnaire data were collected from respondents having experience with using Malaysian banking service. Thirteen survey instruments for the questionnaire were adopted from previous literature, and fourteen of the remaining survey instruments were built from the result of the exploratory study. Statistical Package for the Social Sciences (SPSS) was used to conduct the preliminary data analysis and Analysis of a Moment Structures (AMOS) was used to analyse the relationship between all independent and dependent variables. The findings indicate that customer satisfaction towards the bank positively impacts customer loyalty towards the banks. On the other hand, the analysis revealed that customer satisfaction towards AI Chatbot has a full mediation relationship through customer satisfaction towards banks and customer loyalty. The research result further exposed that service quality AI Chatbot is insignificant with customer satisfaction towards the bank due to the limited exposure to utilising AI Chatbot as customer services. However, the study results found that service quality of AI Chatbot significantly influences the level of customer satisfaction towards the Chatbot. This study contributes to the body of knowledge by providing empirical results for improving and enhancing use of technology in customer services. Also, this study contributes theoretically by introducing a new construct of framework. The finding of this study will be valuable for researchers and the banking industry. The discovery paves the way for further research avenues in developing countries around the world.

خلاصة البحث

تهدف هذه الدراسة إلى تحديد تأثير جودة خدمة روبوت الدردشة الذكية الاصطناعي (AI Chatbot) على تأثيرات رضا العملاء وولائهم في البنوك الماليزية، فضلاً عن تحديد وجهات نظرهم وإدراكهم حول جودة الخدمة المقدمة. اعتمدت الدراسة منهجاً استكشافياً متسلسلاً مختلطاً من خلال إجراء دراسة استنباط نوعية أولية لقياس أبعاد ومؤشرات دائرة الاهتمام - في هذه الحالة، جودة خدمة روبوت الدردشة الذكية الاصطناعي (AI Chatbot)، تم اختيار خمسة مشاركين لإجراء المقابلة عبر منصة الاتصال الفردية القائمة على تطبيق Zoom. ساعدت نتيجة الدراسة الاستنباطية القائمة على المنهج النوعي في بناء عناصر الاستبيان الموجه لدراسة خدمة روبوت الدردشة الذكية الاصطناعي. كشفت نتائج المقابلات أن العملاء أدركوا أبعاد الذكاء الاصطناعي لروبوت الدردشة من الموثوقية والاستجابة والتعاطف في تقديم خدماتهم للعملاء. فقد ركزت هذه الدراسة على التحقق من العلاقة بين رضا العملاء تجاه البنك وخدمة روبوت الدردشة الذكية الاصطناعي. كما أنها ركزت إلى دراسة تأثير مستوى ولاء العملاء وجودة خدمة روبوت الدردشة الذكية الاصطناعي على رضا العملاء تجاه البنك والخدمة المستحدثة. تم جمع 310 استبيان من المشاركين الذين يستخدمون الخدمات المصرفية الماليزية. تم اعتماد ثلاثة عشر متغير في الاستبيان من الدراسات السابقة، وتم بناء أربعة عشر متغير آخر من نتيجة الدراسة الاستكشافية المستندة على المنهج النوعي للبحث. تم استخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS) لإجراء التحليل الأولي للبيانات وتحليل الهياكل اللحظية (AMOS) لتحليل العلاقة بين جميع المتغيرات المستقلة والتابعة. أظهرت نتائج الدراسة إلى أن رضا العملاء تجاه البنك يؤثر بشكل إيجابي على ولاء العملاء تجاه البنك. من ناحية أخرى، كشف التحليل الإحصائي أن رضا العملاء تجاه خدمة روبوت الدردشة الذكية الاصطناعي له علاقة وساطة كاملة بين رضا العملاء تجاه البنوك ودرجة ولائهم. كشفت نتيجة البحث كذلك أن جودة خدمة روبوت الدردشة الذكية الاصطناعي ذات دلالة إحصائية غير مهمة بالنسبة لرضا العملاء تجاه البنك بسبب تعرض العملاء المحدود لخدمة روبوت الدردشة الذكية الاصطناعي. ومع ذلك، أثبتت نتائج الدراسة أن جودة خدمة روبوت الدردشة الذكية الاصطناعي تؤثر بشكل كبير على رضا العملاء. تساهم هذه الدراسة في إثراء الجانب المعرفي من خلال تقديم نتائج تجريبية لتحسين التكنولوجيا وتعزيزها في قسم خدمات العملاء. أيضاً، تساهم هذه الدراسة من الناحية النظرية من خلال تقديم بنية جديدة للإطار. كما تعتبر نتائج هذه الدراسة ذات أهمية بالغة للأكاديميا والباحثين، فضلاً عن الصناعة المصرفية وأدبيات البحث. يهدف هذا الاكتشاف الطريق لمزيد من سبل البحث في البلدان النامية حول العالم.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Finance).

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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This writing dedicated to person who may benefit from it, to my best friend Nur Amirah Talaha. It is to my family as my bone at my lowest day. This is an actual real dedication to the two people as my brainer, Dr. Margarita Peredaryenko and Dr. Nazrol Kamil. Thank you so much for this hard work that has been done.

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TABLE OF CONTENTS

Abstract	ii
Abstract in Arabic	iii
Approval Page.....	iv
Declaration	v
Copyright Page.....	vi
Dedication	vii
Acknowledgements	viii
Table of Contents	ix
List of Tables	xii
List of Figures	xiii
List of Abbreviation	xiv
CHAPTER ONE: INTRODUCTION	1
1.1 Introduction.....	1
1.2 Background of the Study	1
1.3 Problem Statement.....	3
1.4 Research Questions.....	6
1.5 Research Objectives.....	7
1.6 Significance of the Study	7
1.7 Organisation of the Chapters	8
CHAPTER TWO: LITERATURE REVIEW	10
2.1 Introduction.....	10
2.2 Role of AI in Banking Sector	10
2.2.1 Benefits of AI Chatbots to the Banking Sector.....	13
2.2.2 Weak versus Strong of AI Chatbots.....	14
2.3 Dimension of Service Quality for AI Chatbot	16
2.4 Relationship Between Satisfaction And Customer Loyalty	18
2.4.1 Satisfaction as an Important Antecedent of Customer Loyalty	18
2.4.1.1 Satisfaction towards the bank	18
2.4.1.2 Satisfaction towards the AI Chatbot.....	20
2.5 Relationship between Service Quality and Customer Satisfaction.....	22
CHAPTER THREE: METHODS	26
3.1 Introduction.....	26
3.2 Research Design	26
3.2.1 Quantitative Approach Using Survey Method.....	26
3.2.2 Mixed Method Sequential Exploratory	27
3.3 Preliminary Exploratory Qualitative Study	29
3.3.1 Discussants.....	29
3.3.2 Instruments.....	31
3.3.3 Data Collection	31
3.3.4 Data Analysis	32
3.3.5 Results	32
3.4 Survey Research Instrument	40

3.4.1 Intentionally Loyalty	41
3.4.2 Customer Satisfaction with bank	42
3.4.3 Customer Satisfaction with AI Chatbot	42
3.4.4 Service quality	43
3.5 Questionnaire Design.....	44
3.6 Population and Sample	45
3.6.1 Population	45
3.6.2 Sample Size.....	46
3.6.3 Sampling Procedure	47
3.7 Research Procedures	47
3.7.1 Data Collection Method	47
3.7.2 Data Analysis	48
3.7.2.1 Preliminary Data Analysis.....	49
3.7.2.2 Data Screening and Missing Data Treatment.....	49
3.7.2.3 Outliers Detection.....	50
3.7.2.4 Normality Test.....	51
3.7.2.5 Multicollinearity	52
3.7.3 Confirmatory Factor Analysis.....	52
3.7.4 Structural Equation Modelling.....	54
CHAPTER FOUR: ANALYSIS AND FINDINGS	56
4.1 Introduction.....	56
4.2 Demographic Profile of Respondents	56
4.3 Preliminary Data Analysis	59
4.3.1 Outliers.....	59
4.3.2 Normality Test	59
4.3.3 Multicollinearity.....	61
4.4 Confirmatory Factor Analysis	62
4.4.1 Measurement Model	63
4.4.2 Measurement Model Assessment and Modification.....	65
4.4.3 Assessment of Reliability and Validity in CFA.....	68
4.5 Structural Equation Modelling (SEM).....	70
4.5.1 Structural Model Evaluation	70
4.5.2 Results of Hypothesis Testing.....	72
CHAPTER FIVE: CONCLUSION	78
5.1 Introduction.....	78
5.2 Research Questions.....	78
5.2.1 What are the Dimensions of the Service Quality of AI Chatbot as Perceived by Malaysian Bank Customers?	78
5.2.2 Does the Perceived Service Quality of AI Chatbot influence Customer Satisfaction towards the AI Chatbot and Customer Satisfaction towards the Bank?.....	79
5.2.3 Does Customer Satisfaction towards AI Chatbot influence Customer Satisfaction towards the Bank?	81
5.2.4 Does Customer Satisfaction towards Chatbot and Customer Satisfaction towards Banks influence Customer Loyalty towards Bank	82

5.2.5 Does Satisfaction towards the Bank Play a Mediating Role between Customers Satisfaction towards the AI Chatbot and Customer Loyalty towards the Bank?	83
5.3 Research Objective	84
5.4 Contribution.....	85
5.4.1 Academic Contribution	85
5.4.2 Contribution to Banking Sector	85
5.4.3 Contribution to the Literature	86
5.4.4 Theoretical Contribution	87
5.5 Limitation of the Study	87
5.6 Recommendation for Future Research	89
REFERENCES.....	91
APPENDIX A: TRANSCRIPT INTERVIEW WITH DISCUSSANTS	104
APPENDIX B: QUESTIONNAIRE.....	127

LIST OF TABLES

Table 3.1 Discussant's Profile	30
Table 3.2 Qualitative Elicitation Study: Themes and Sub-theme	33
Table 3.3 Intentional Loyalty Measurement Items	41
Table 3.4 Overall Customer Satisfaction with Bank Measurement Items	42
Table 3.5 Customer Satisfaction with the Chatbot Measurement Items	42
Table 3.6 AI Chatbot Service Quality Measurement Items	43
Table 4.1 Demography Statistics of Respondents	58
Table 4.2 Outliers detection	59
Table 4.3 Normality test for items	61
Table 4.4 Multicollinearity test	62
Table 4.5 Model Reliability and Validity measure	70
Table 4.6 Correlations	70
Table 4.7 Hypotheses Testing	77

LIST OF FIGURES

Figure 2.1 Conceptual framework of the study	25
Figure 3.1 Overview of the Present Research Process	28
Figure 4.1 Measurement Model	64
Figure 4.2 Revised Measurement Model	67
Figure 4.3 The Structural Model	72

LIST OF ABBREVIATION

AI	Artificial Intelligent
AMOS	Analysis of Moment Structures
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CMINDF	Normed Chi-Square
CR	Composite Reliability
C-R	Critical Ratio
DF	Degree of Freedom
e. g	<i>(exempligratia)</i> ; for example
Emp	Empathy
et al.	<i>(et alia)</i> : and others
etc	<i>(et cetera)</i> : and so forth
GFI	Goodness of Fit Index
IL	Intentional Loyalty
MI	Modification Indices
n. d.	no date
Rlb	Reliability
RMSEA	Root Mean Square Error of Approximation
Rsp	Responsiveness
SB	Satisfaction Bank
SCB	Satisfaction Chatbot
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Science
X ²	Chi-Square

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter provides a simple overview of the research, following the introduction with an inspection background of the study that is explored. The following section provides the statement of the problem that occurs in the present study whereby the researcher examines critical justification for conducting the research and continues with an outline of research questions and objectives of the study. It is followed by the significance of the study and the structure of the thesis is outlined briefly in each chapter.

1.2 BACKGROUND OF THE STUDY

Often known as Artificial Intelligence (AI), Machine Learning, and Big Data Analytics, all of these terms have carried some similarities in their definition because these systems are all built using programme methods that understand, behave, and make judgments like humans. With the advent of artificial intelligence, the next revolution in industry happened, following digital innovation and more and more businesses using artificial intelligence to enhance the company's success. AI is most commonly found in insightful and supportive performance and actions performed by software, devices, or robotics that are in support of humans and companies (Prentice, Dominique Lopes, & Wang, 2020).

In the current study, the primary AI tool is focusing on the adaptation of AI Chatbot in customer engagement via customer service in the banking sector. In AI Chatbot technology, a computer program provides the power to participate in a constructive, conversational interaction with a human user without direct human

control. This enables chatbots to serve as customer service, answering queries and delivering details. In a report issued by Accenture (2017), approximately four out of five banking sector professionals believe that artificial intelligence will have a revolutionary impact on how banking is carried out. According to the report, artificial intelligence will have an impact on banking by improving the customer experience. In their report, they also stated that banking goods and services would become more customized by fostering consumers' belief that their banking institutions recognize individual needs and desires, and that the business strives to best serve its customers.

However, the introduction of AI Chatbot technologies in the banking sector does carry the potential for challenges and risk. The challenge comes when it is likely that consumers will choose to communicate with people with certain problems, which implies AI-based interfaces are refused (Kelly, 2017). McKendrick (2018) stated that AI may only perform basic activities but not work. This claim concurs with Prentice, Dominique Lopes and Wang (2020) which mentioned it is just low-skill, low-wage work that is particularly vulnerable to being substituted by robotics. In other words, these AI Chatbot services can facilitate human tasks rather than eliminating them. In contrast, Anna and Weißensteiner (2018) believe that chatbots will begin to develop as a 'better way to interact,' allowing the chatbot to be more popular than today's mobile applications and provide a more convenient experience for the user.

The AI Chatbot will act as an agent for customer services in assessing them as problem solvers. The service quality portrayed by their AI Chatbot will influence the level of customer satisfaction toward the AI Chatbot and bank, which will influence their intention to remain with the bank. This pandemic that occurred globally is one of the major catalysts for AI Chatbot to be utilized more and to maximize their function in addressing the constraints of a company faces in reaching out to customers. Throughout

the coronavirus (COVID-19) pandemic, institutions like as the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) have used chatbots to aid with routine tasks such as offering personal help and giving self-prevention information (Miner, Laranjo, & Kocaballi, 2020). In Thailand, the Department of Disease Control (DDC) has faced overwhelming numbers of calls from the public regarding the COVID-19 in the earliest days, that they decided to create an AI Chatbot to be used to support the hotline service where it communicates on behalf of public health authorities (Chonnatee et al., 2020).

The present study aims to break down the service quality dimension of AI Chatbot as perceived by the user based on their experience. This will be focused on the customer's overall satisfaction with the bank's services and customer satisfaction with the AI Chatbot impact on customer loyalty to the bank as well as the AI Chatbot service quality dimensions.

1.3 PROBLEM STATEMENT

The implementation of AI chatbot, the new technology where a computer-based program acts as a real-life assistant while simulating human conversation, in the financial services industry is still at its very nascent stage. However, there have been expectations that this technology will take over the mundane responsibilities of customer service representatives while freeing up a significant amount of financial and human resources that could be channelled towards a higher value creation activity within the value chain. According to Yellin (2009) it costs on average \$7.50 per call to have a live American agent to answer a call. Freeing up and efficiently deploying this significant amount of financial and human capital may become an essential source of competitive advantage, specifically when faced with disruptive forces that have been

reformatting the banking sector for the last couple of years at an unprecedented pace. In line with this trend, several banks in Malaysia have also started to make use of AI in their financial services. For instance, HSBC Bank launched Chatbot Amy for their corporate banking clients. Meanwhile, CIMB Bank launched an Enhanced Virtual Assistant in December 2016. These AI can provide a response to banking queries 24/7 instantly when a customer is in need of information.

Despite its great potential, customer adoption of AI chatbots lacks momentum (Adam, Wessel, & Benlian, 2020). However, a business entity that intends to adopt AI Chatbot in their customer services system has to understand the main reasons for utilising chatbots were to boost consumer satisfaction by improving engagement and making services more personalised. Today, real-world market opportunities have now started to be delivered through artificial intelligence. According to Liu (2018), the level of acceptance of AI chatbots by customers worldwide in the banking sector, as of 2017, has reached the 20 per cent level. These statistics depicted the interest of a consumer in interacting with the AI rather than live customer service representative for their customer service enquiries. In tandem with these findings, a survey conducted by Jassova (n.d) indicated that almost 75 per cent of respondents would still prefer the customer service queries to be handled by the live customer service agent, while only 13 per cent have expressed their confidence in using AI chatbot as the customer services assistance. These findings are also supported by the survey conducted by Staff (2018) where almost 50.7 per cent of respondents found the idea of using chatbot for customer service as uncool and expressed their preference to continue dealing with live customer services. Furthermore, the State of Chatbot Report (2018) showed that 43 percent of respondents would still prefer to deal with a real-life assistant rather than using a

chatbot. The above statistics are strong evidence of the fact that customers at large are still very uncomfortable with the usage of chatbots in customer services.

The Malaysian banking sector has utilized the advancement of technology today in providing their services to the customers. It is crucial for every bank to focus on their service quality to attract new customers to their bank. However, keeping the existing customers is arguably more important than capturing new customers. Therefore, it is vital for the bank to assess their customer service quality by using AI Chatbot as it may influence customers' satisfaction.

Given the aforementioned advantages and strategic importance of AI chatbots implementation for the customer services within the financial services industry, a very cold response from the general public towards this technology poses a severe challenge to the banks. Thus, this is also due to the fact that, according to Grant (2013), 85% of customers will retaliate against the company with bad customer service and 49% of customers just stop doing business with the company and silently walk away. This warrants the importance of a close and detailed exploration and understanding of the AI chatbot users' experience. The purpose of this study is to identify and explore the capacity of AI Chatbot service quality which impacts on customers' satisfaction in influencing their loyalty towards the bank. Therefore, it is vital for the bank to assess their customer service quality by using AI Chatbot as it may influence customer satisfaction.

AI Chatbot is something that can provide the same information in the website but they are only look similar but not the same type of service quality. Their service quality is more profound in terms of direct answer in queries required by the customer and the readiness of information that store up in their system. SERVQUAL is the established theory in observing the service quality that observe the overall outcome in

delivering the services by an organization. Service quality of an AI Chatbot from different industry was explored through the discussants because there some AI Chatbot attributes were present and some are not. Hence, getting to the depth of customers' appreciation in receiving service from and organization is vital in order to influence them to be loyal customers. Directly, customer satisfaction will be imprinted on the customers' loyalty to them. Hence, delivering good customer service quality to them is essential to ensure the business will keep running for a long period. To the best of researcher knowledge, it found that there are only a few studies that have been done currently with regards to the customer service quality of AI Chatbot in the Malaysia's banking sector. Therefore, this research endeavours to fill this gap which will benefit the Malaysian banking sector in the future.

1.4 RESEARCH QUESTIONS

As previously stated, in accordance with the background of the research and the problem statement, the study has been generated to answer the following main questions:

1. What are the dimensions of the service quality of AI chatbot as perceived by Malaysian bank customers?
2. Does the perceived service quality of AI chatbot influence customer satisfaction towards the AI chatbot and customer satisfaction towards the bank?
3. Does customer satisfaction towards AI chatbot influence customer satisfaction towards the bank?
4. Does customer satisfaction towards chatbot and customer satisfaction towards banks influence customer loyalty towards bank?

5. Does satisfaction towards the bank play mediating role between customers satisfaction towards the AI chatbot and customer loyalty towards the bank?

1.5 RESEARCH OBJECTIVES

This study as an illustration of the research questions aim to realise the following objectives:

1. To explore the dimensions of the service quality of AI chatbot as perceived by Malaysian bank customers.
2. To identify the most influential dimension of the service quality of AI chatbot.
3. To examine the role the customer satisfaction towards AI chatbot plays in relationships between customer satisfaction towards the bank and customer loyalty towards the bank.
4. Provide recommendations to the bank with regards their AI chatbot strategy.

1.6 SIGNIFICANCE OF THE STUDY

This research is particularly relevant because of the numerous aspects it covers. It can be contributed to the banking and financial service industries. Further, the study may also serve to contribute to the overall body of knowledge about AI Chatbot, which will be integrated into the standard of service quality. As far as the researchers' best knowledge, there has not been any prior empirical study performed on the subject matter in the Malaysian context. Since the introduction of AI Chatbot into the customer service sectors in banking is still in the experimentation and exploration phases, this topic is new and unique, and doing so is an enticing choice. This study intends to make a variation on the administrator or bank's continuing research and development on AI

Chatbot advancement. It attempts to contribute by reinvigorating AI Chatbot as a personal agent that interacts with customers in their day-to-day lives.

The outcome of this study was anticipated to support financial institutions by providing them with an accurate understanding of the necessary levels of investment in their own AI chatbot design and growth to further enhance their services. The knowledge and ideas learned from this study may also be useful in research in a similar field from other regions in exploring the prospects and challenges of adopting AI Chatbot in their organization. This AI Chatbot adaptation may have an effect on customer satisfaction as well as their intent to remain loyal to the organization.

This study also allows the Malaysian banking sector to enhance their customer service by leveraging interactive technologies by using AI Chatbot to provide an opportunity for customers to communicate with them in an efficient way. In addition, banks should use what they have observed and appreciate about public sentiment and opinions on AI Chatbots to extend and improve their own AI Chatbot.

1.7 ORGANISATION OF THE CHAPTERS

This thesis is organized into five chapters and each chapter focuses on a particular subject as followed: The first chapter, which is the introductory chapter, reflects on the purpose of the research and focuses on subsections such as the background of the study, problem statement, research questions and objectives, and the significance of the study. The second chapter is a literature review that discusses previous studies done by scholars and researchers on AI Chatbot, customer satisfaction, customer loyalty, and service quality. Chapter Three of the thesis discusses the methodology adopted to conduct the current research. Chapter Four includes and shows all the results and discussion after the analysis has been done. Chapter Five, as the final chapter of this

thesis, provides recommendations, limitations and answers to all the research questions of current study as well as suggested areas for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter highlights prior scholars' work on AI as applied to chatbots, notably in the banking sector. This chapter has five sub-divisions: in the beginning, researchers discussed the role of AI in the banking sector. Followed by the topic of the relationship between satisfaction and customer loyalty, and service quality and customer satisfaction. It continues with the dimension of service quality for AI Chatbot and a summarised conclusion.

2.2 ROLE OF AI IN BANKING SECTOR

According to Techopedia, the definition of AI is an area of computer science that emphasises the creation of intelligent machines that work and react like humans that are able to do activities such as speech recognition, learning, planning and problem-solving. AI is not a new concept in the financial services sector, as the banking sector has long used it to detect fraud or money laundering in its early phases, as well as for risk assessment and credit scoring (Koning, 2016). Therefore, it is imperative for the Malaysian banks to embrace all the technological changes that have happened and brought them into the financial services. In 1994, Bill Gates once said, "Banking is essential but banks are not". The rise of Fintech and challenger digital banks are getting full licenses in establishing their company and this enormous change has been driven by changes in consumer demands where consumers want to experience their financial transactions in the most frictionless and efficient way possible.