

DETERMINANTS OF IR 4.0 TOWARDS SATISFACTION AND LOYALTY OF E-BANKING AMONG USERS DURING THE COVID-19 PANDEMIC IN MALAYSIA

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Abstract

The aim of this research is to investigate the determinants of IR 4.0 towards satisfaction and loyalty of e-banking among users during the covid-19 pandemic in Malaysia. The present study has four independent variables (internet connection, cybersecurity, level of financial inclusion and level of technology and innovativeness) will have direct significant influences on satisfaction and loyalty of e-banking. The methodology quantitative approach has applied in this research whereby 230 respondents were sampled from a population by using simple random sampling technique. Employed the SPSS 28 Version, the multiple regression analysis and correlation analysis was created out to test the four hypothesis of the research.

Keywords - E-Banking; Covid-19; E-commerce.

I. INTRODUCTION

Nowadays, technological breakthroughs in electronic sector has proliferated the use of electronic banking. Electronic banking is a type of online payments system that enable to make a range of financial transactions for every individual even the people outside the Malaysia [1]. IR 4.0 implies the fourth industrial revolution which is the launching of the Internet of Things into the manufacturing and production sectors. In the era of industry 4.0, rapid advances in technology are found. Almost every organization including e-banking institutions apply technology to process information and data to improve decision making. The technologies that integrated in e-banking sectors can be found in the forms of electronic wallets, mobile banking and internet banking [2]. The new development in information and communication technology (ICT) has made the exploitation of new banking way which is e-banking. The presence of the system has paved the channel for mutual interactions between banking institutions and customers. It successfully brings enormous advantages to the society when technology is applied in the banking sector. The coming of IR 4.0 has actually enhanced the efficiency of daily banking activities which is changing to e-banking way to bring easy and convenience among users. During these years, most financial institutions are launching and expanding their electronic banking services on a daily basis due of the advantages of technology. During this COVID-19 pandemic, most of the businesses have been affected and changed their business way because of the changing of customer purchasing habits. The COVID-19 outbreak has even caused the situation of lockdown in most countries to prevent the widespread of the virus.

II. Literature Review

2.1 Satisfaction and Loyalty of E-banking

In the term of customer satisfaction, it is known as the assessment on how the e-banking services meet or outperform the user expectation. If the e-banking services met the customer expectations from various

aspects, the level of customer satisfaction is considered to be high and vice versa. From numerous prior studies, it can be concluded that customer satisfaction is capable to buy the future turnover in e-banking services as they have become the long-term loyal customers. The satisfied users will not be easily sensitive to the changing of bank charges or operations. Hence, the customer satisfaction is the major areas which will impact on the formation of experienced customer intentions to reuse the e-banking services in the coming future.

The increase on customer satisfaction will enhance a bank competitiveness and achievement in their banking industry. Once a bank user is satisfied over their expectations, it will help creating a strong branding and profitable relationship between banks and users. The higher the user satisfaction, hence the higher the customer retention on e-banking sectors. Moreover, the development of information technology on e-banking fields have caused a situation of increasing global acceptance towards e-banking. It is convenient and easy for bank users to perform all bank transactions and manage their own bank accounts in anywhere and anytime. The launching of online banking has successfully saves a lot of resources for the bank institutions. For example, investment in Automated Teller Machines (ATM) and branches, employee training and other operational expenses. This current trend of encouraging e-banking is becoming more popular in everywhere since the outbreak of COVID-19. The e-banking business way has improved the experiences of bank users tremendously.

2.2 Literature Review of the Variables

2.2.1 Internet Connection

Internet connection is a major determinant that will influence customer emotions in using the e-banking services. When the internet connection is stable, banking customers will make easier for all financial transactions and so that the value of banking transactions will increase. In fact, an internet banking will not be useful without the availability of internet access [3]. Over these period, most of the e-banking users always complain the issue of failure in receiving Short Message Services (SMS) when making their online transaction. There is customer complaint also of not receiving the notice about payment of bank hidden cost as an alert message. These situation is mainly due of the network downtime sometimes. According to the news launched on 27th December 2021, it stated that people who are living in certain areas of Sabah were little to no internet signal at their village [4]. Due of the high expense of laying down internet infrastructure, TM as the monopoly found to be the only reliable ISP in rural and semi-urban areas. Thus, even though it is slow sometimes, the Malaysians must accept and continue settle with TM. Furthermore, there was another report made by cyber-security company, Akamai, it said that the internet speed of Malaysia is still lagging largely behind within the region of Southeast Asian. According to OOKLA speed test, in March 2020, Malaysia's mobile Internet speed is ranked 94th around the globe.

2.2.2 Cybersecurity

Cybersecurity issue is one of the major challenges for online banking users. It is the significant dimensions that need to be consider by e-banking service providers when evaluating the satisfaction level of users. Although e-banking systems look like designing as virtually impenetrable, the fraudulent activity and cyberattacks are still a reality in Malaysia. As there is increase in digitalization, it has also opened up the entry barriers for cybercriminals. In 2021, there is 71% of fraudulent bank transactions among mobile browsers and apps account [5]. The cybersecurity threats have been increased tremendously especially during COVID times. Usually, the fraudsters utilize the poor privacy habits by a part of e-banking users. Those people vulnerable to fraudulent bank transactions due of the issues such as weak passwords and use of unsecured networks. Under the COVID-19 pandemic, cybersecurity has been more serious in electronic banking since more people are more prefer to use online banking rather than go to branches. To prevent the widespread of virus, individuals prefer go cashless and use their electronic money that keeps in their e-banking accounts. Therefore, most customers may have doubts and less trustworthy towards the e-banking privacy policy. The banking users are hesitant to give their personal information to the e-banking system

because they are afraid of it being taken advantages by the hackers or fraudsters. The threats of cybersecurity in digital banking are involving unencrypted data, malware, third-party services, spoofing and phishing. When the data is left encrypted by the banks, the hackers or cybercriminals can use the data easily and store the customers' money.

2.2.3 Level of Financial Inclusion

At the same time, the problem of e-banking sectors in this modern society is the level of financial inclusion in Malaysia especially during the outbreak of this pandemic. Financial inclusion defines that every individual have ability to access to the affordable financial products and services which can achieve their actual needs such as online transfer, bill payments, insurance payment and more [6]. The products and services will be delivered in a responsible and sustainable way to all e-banking users. In other definition, it is the capacity to get the necessary financial services for every category of the population regardless of their gender, age, income level, place of residence and others [7]. According to The World Bank Group, financial inclusion as the key to decrease extreme poverty and improve shared prosperity among Malaysians. The emergence of financial inclusion assists most families and businesses to prepare everything from long-term objectives to unexpected emergencies. Majority of people are more prefer to use the functions of e-banking services such as ability to get manageable credit to start and operate their businesses in order to control any economic risks and financial shocks. The credit services given by e-banking system will let their users to pay their loan for a few months and reduce the users' liability. Hence, the overall quality of their lives can be improved. Generally, financial inclusion will be measured by three dimensions which include access to financial services, usage of financial [8] services and the quality of the product and service delivery. Some categories of individuals are not able to get the loan from banking institutions due of the various reasons. For instance, low income level, lack of permanent employment or high credit risk in their credit history. Those people are limited to access easily to the banks' loan resources even through the e-banking system. It can be observed in the area of rural and geographically remote regions. However, the ongoing COVID-19 crisis has caused the increased in actual need for digital financial inclusion.

2.2.4 Level of Technology and Innovativeness

The emergence and development of e-banking sector would be impossible without the development of technologies and also innovativeness. Technological innovation is an economic function which is the process of introduction of new technologies into the industry including e-banking sector [9]. It plays significant role in improving the living standards of Malaysians. One of the current technological innovation is internet transactions. This is applying peer-to-peer online platforms to enables the connection between banks and users by passing the banking system and other non-bank financial intermediaries. Especially during this pandemic, the average use of internet transaction has been increased tremendously because everyone in Malaysia are forced to minimize the use of cash in order to reduce the physical contact points between retailers and customers. In fact, the right selection of technology platforms, vendors and partners is much vital towards e-banking sectors. A good innovation will help to support a seamless operation upon go-live in an e-banking system. From the survey in 2019, it revealed that 45% of Malaysians are always seeking for the virtual banking service providers to provide them a better mobile and digital experience [10]. Many e-banking users have experienced the technology problems such as system downtime. As the digital banking service providers are still new services to a part of populations in Malaysia, the system downtime will create a bad impression and experience among these customers. It even may waste the efforts and time that spent to build trust with the users as the customers will think about the data and fund security of the e-banking system. As compared to foreign country such as China. On 18th February 2022, Apple company has launched 'Apple Pay' through UnionPay which can just directly pay anything through their own smartphones to every convenience store such as Starbucks, Family Mart and McDonalds.

III. METHODOLOGY

3.1 Research instrument/measurement

This research will be discussing the determinants of IR 4.0 towards satisfaction and loyalty of e-banking among users in Malaysia. So, this research will be using the quantitative method to do surveys. For the survey form will have a Likert Scale which is strongly disagree, disagree, normal, agree and strongly agree. There will be 200 respondents who live in the Selangor area.

3.2 Research Hypotheses

Based on the rule of thumb, hypothesis is rejected when an independent variable that has a P-value higher than alpha value of 0.1/10% and vice versa. In this research, four hypotheses were being formulated after the preliminary analysis on the collection of survey questionnaires from the participants.

H1: The satisfaction and loyalty of e-banking during the COVID-19 pandemic depends directly on the internet connection

H2: The satisfaction and loyalty of e-banking during the COVID-19 pandemic has a directly dependence on the cybersecurity

H3: The satisfaction and loyalty of e-banking during the COVID-19 pandemic depends directly on the level of financial inclusion

H4: The satisfaction and loyalty of e-banking during the COVID-19 pandemic depends directly on the level of technology and innovativeness

IV. DATA ANALYSIS

4.1 Reliability Test

Table 4.1: Reliability Test of Overall Study Variables

Reliability Statistics	
Cronbach's Alpha	N of Items
.955	25

Reliability test is a measure of whether the data is consistent with the stability and consistency of the test. The items and measurements of the scale belong to the same structure and the scale has a high internal consistency credibility. In this research, a total of 200 respondents were given questionnaires to ensure the reliability of all data received. As before, all Cronbach Alpha values must be higher than 0.7 in order to ensure valid reliability of the data. As shown in the above table, Cronbach's Alpha value is 0.955, so the data collected are highly reliable.

Table 4.2: Reliability test for each variable

	Cronbach's Alpha	N of Items
Satisfaction and Loyalty of E-Banking	.829	5
Internet Connection	.860	5
Cybersecurity	.874	5
Level of Financial Inclusion	.885	5
Level of Technology and Innovativeness	.897	5

From 200 sets of data in this investigation, the reliability test for all dependent and independent variables is provided in the table above. All of the variables' Cronbach's Alpha were more than 0.7, indicating that they were dependable and that additional analysis may be undertaken.

4.2 Normality Test

Table 4.3–Kolmogorov-Smirnov and Shapiro-Wilk

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Satisfaction	.162	230	<.001	.900	230	<.001

a. Lilliefors Significance Correction

Normality tests are used to identify whether a sample data has been drawn from a normally distributed population. To analyse the test, the tools which will be used to determine the normal distribution of data are Kolmogorov-Smirnov and Shapiro-Wilk [11]. A data is regarded as normally distributed data when it achieves a non-significant result which the sig-value is more than 0.05 [12]. However, when sign-value is less than 0.05, it shows significant outcome but does not follow the normal distribution. Based on the Table 4.3, both of the Kolmogorov-Smirnov and Shapiro-Wilk were below the 0.001. Hence, this sample data is a significant result which implies that the data was not normally distributed.

4.3 Homoscedasticity

Levene's test has known as an equal variance test to examine whether the sets of data meet the homogeneity of variance assumption before performing the t-test or ANOVA test. From above statistic, the significant value is used to determine the constant variance of this study. According to [13], when the significant value of the Levene test is below than 0.05, it means the absence of homogeneity. The homogeneity will exist when the significant value is higher than 0.05. The table 4.4 shows clearly that the homogeneity will present within this sample data. This is because the significant values of all the independent variables (internet connection, cybersecurity, level of financial inclusion and level of technology and innovativeness) is greater than 0.05.

Table 4.4-Homogeneity – Levene Statistic

Variable	Levene Statistic	df1	df2	Sig.
Internet Connection	1.578	11	207	.107
Cybersecurity	2.486	11	208	.006
Level of Financial Inclusion	1.244	11	205	.260
Level of Technology and Innovativeness	0.786	10	208	.642

4.4 Scatterplot

Diagram 4.1–Scatterplot for homogeneity test

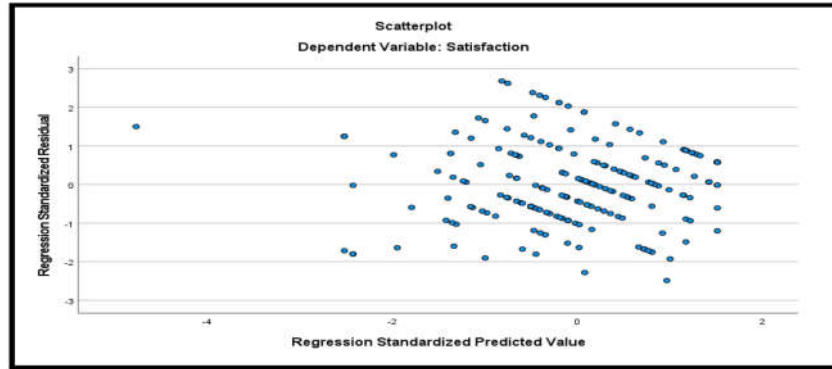


Diagram 4.1 illustrates that a scatterplot in homoscedasticity which is applied to identify the constant variance of this study. Based on the general rules, if absence of clustering and systematic pattern in the plotting, it means that the variances are constant. Hence, there is presence of homoscedasticity in this data model. In this population, it can observe that the data is only distributed rectangular between (-3 to 3) and does not have clustering or systematic pattern in plotting. As a result, the homoscedasticity is considered presence in this investigated data model.

4.5 Descriptive Analysis

In this study, mean and standard deviation will be discussed and analysed. The standard rule of standard deviation is the smaller the standard deviation, the more accurate the information [14]. From the observation on Table 4.4, the minimum mean and standard deviation have shown in the category of race which is 2.07 and 0.651. It indicates that race has the most accurate information under the demographic part. On the other sides, the highest mean and standard deviations are age and the questions of the possibility of recommendation to friends if satisfied with the online services which will be 2.3699 and 0.82358 respectively.

Table 4.4: Descriptive Statistics for Demographic Part

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Gender	220	1.00	2.00	1.4636	.49981
Age	219	1.00	5.00	2.3699	.57086
Nationality	220	1.00	2.00	1.0909	.28814
Race	220	1	4	2.07	.651
Education_Level	220	1	6	3.37	1.196
GQ1	220	1.00	2.00	1.0455	.20877
GQ2	220	1.000	2.000	1.06818	.252632
GQ3	220	1.00	3.00	1.4545	.82358
Valid N (listwise)	219				

V. DISCUSSION AND CONCLUSION

The objective of this study is to determine the factor that influencing satisfaction and loyalty of e-banking during COVID-19 times in Malaysia and verify whether the independent variables are significantly correlated to the dependent variable or not.

5.1 To determine the relationship between internet connection and satisfaction and loyalty of e-banking

The purpose of practicing this research is to examine the relationship between internet connection (IV) and satisfaction and loyalty of e-banking (DV). Based on the hypothesis outcomes shown, this hypothesis is accepted and there is significant relationship between internet connection and satisfaction and loyalty of e-banking. The result of the findings is also supported by prior research [15]. The research has stated that e-banking can get its better dealings with customers when it can offer a speedier, quicker and dependable services to users. It will improve the customer pleasure when using the e-banking services. The research of [16] also pointed that internet availability is the important key point to the points of interaction between banks and customers. If customers unsatisfied an e-banking service, they may tend to use frequently the traditional banking way instead of using internet banking.

5.2 To determine the relationship between cybersecurity and satisfaction and loyalty of e-banking

The purpose of practicing this research is to examine the relationship between cybersecurity (IV) and satisfaction and loyalty of e-banking (DV). Based on the hypothesis outcomes shown, this hypothesis is accepted and there is significant relationship between cybersecurity and satisfaction and loyalty of e-banking. The result of the findings is also supported by prior research [17] which focused on cybersecurity aspects impacted to electronic banks. A high percentage of “extremely poor” security level will increase the anxiety among e-banking users. Hence, the users may stop the particular e-banking service and change to another bank’s e-banking service. The research of [18] has concluded that there is close relationship between the level of cybersecurity and customers’ trust in internet banking. The increased cybersecurity level will influence negatively the trustworthiness of customers due of the fear of losing their e-money. Security concern also mentioned in the research of [19]. If ignoring the cyber-attacks aspects, a bank will face a higher risk in losing the customer information which will lead to the case of stealing money by the hackers. These 3 researches have enhanced more the reliability of this study’s findings which is significant association between cybersecurity and satisfaction and loyalty of e-banking.

5.3 To determine the relationship between level of financial inclusion and satisfaction and loyalty of e-banking

The purpose of practicing this research is to examine the relationship between level of financial inclusion (IV) and satisfaction and loyalty of e-banking (DV). Based on the hypothesis outcomes shown, this hypothesis is accepted and there is significant relationship between level of financial inclusion and satisfaction and loyalty of e-banking. The result of the findings is also supported by prior research [20] which declared that financial inclusion is the critical step to long-term growth in e-banking system as it can improve the customer satisfaction level among low-income people. It helps to contribute the overall economic development of poor population. Therefore, all populations including poor and rich people can enjoy the benefits of e-banking services and the level of satisfaction among the users can be increased. On the other hands, the findings of another research [21] defined the emergency of financial inclusion will affect positively the adoption of internet banking. According to research of [22], it became insignificant relationship between financial innovation and economic growth after controlling the level of financial inclusion. It means that a low level of financial inclusion will lower down the satisfaction and retention of

most citizens that will decrease the overall economic growth. These 3 researches have enhanced more the reliability of this study's findings which is significant association between level of financial inclusion and satisfaction and loyalty of e-banking.

5.4 To determine the relationship between level of technology and innovativeness and satisfaction and loyalty of e-banking

The purpose of practicing this research is to examine the relationship between level of technology and innovativeness (IV) and satisfaction and loyalty of e-banking (DV). Based on the hypothesis outcomes shown, this hypothesis is rejected and there is non-significant relationship between level of technology and innovativeness and satisfaction and loyalty of e-banking. The result of the findings is also supported by prior research [23], it concluded that older people are less convenience towards new technology. The people with old age usually have very less knowledge about the computerized e-banking that integrated the latest technology and innovativeness. This made them to take a longer time in making any transactions that will influences negatively their satisfaction level. However, some researches including [24] which has mentioned that the measurement of technology of e-banking will achieve competitive advantages. The latest internet technology will support smooth and ease of e-banking activities that will increase more the customer pleasure and satisfaction towards the services. These 2 researches have different views on the association between level of technology and innovativeness and satisfaction and loyalty of e-banking. One research found out that it is significant relationship but another has shown insignificant relationship between level of technology and innovativeness and satisfaction and loyalty of e-banking

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