

## THE IMPACT OF DIGITAL ADVANCEMENT IN BANKING INDUSTRY MARKETING: THE CASE OF INDONESIA

**Handy Andriyas, Batara Maju Simatupang, and Kevin Bastian Sirait**

<sup>a</sup>Faculty of Economics, Parahyangan Catholic University

<sup>b</sup>Magister Management, Post-Graduate Program, STIE Indonesia Banking School

Email: 2017811006@student.unpar.ac.id

*Abstract. This article investigates the impact of digital and technological advancement in the Indonesian banking industry based on the perspective of marketing. The application of technology in the marketing field enables the banks to gain a competitive advantage in introducing their product to the potential and current customers. On the other hand, these benefits are also exposing the banks' and its customer to the marketing fraud risk. To find the impact of digital and information technology (IT) utilization with the addition of marketing fraud risk, the questionnaire in this research is answered by the directors of the banks' that are classified to the Book 4 category in Indonesia. The linear regression analysis is implemented to find the relationship between the utilization of IT and marketing fraud risk to the impact of technological and digital advancement. Based on the analysis conducted in this research, it is found that the advancement of digital and technological advancement has a positive relationship with marketing fraud risk and IT utilization by the banks, and it is also found that marketing fraud risk may also increase if the banks increase their utilization on IT in regards to introducing their product to the current and potential customer.*

*Keywords: Digital marketing; Banking product; Technological advancement, Marketing fraud risk*

### INTRODUCTION

In this era of connectivity between software and hardware, the effect of the advancement of the technology is not just limited to the behavior of the bank's customer but to the nature and the operational and the marketing mindset of the bank itself. By this time, technological implementation and adoption have become a crucial role for the banks to fulfill the customer need in the matter of banking and financial activity through the internet. The increases of changes and advancement of technology may affect the banks marketing capabilities in introducing their product to the potential customers and at the same, fulfilling their current customer banking and financial needs at the operational level.

According to the report published by Das, Gryseels, Sudhir, & Tan (2016) of the McKinsey & Company Indonesia and the company of Frost & Sullivan (2018), the reports show that 73% of total internet users in Indonesia have accessed the internet through mobile devices with the mobile penetration rate of 150% in 2016. Based on the reports, most of Indonesia citizens can use mobile banking to conduct financial and banking activities digitally. The improvement in information and communication technology (ICT) has an impact on the behavior of bank's customers which put pressure on banks to adapt to these changes (Tornjanski, Marinković, Săvoiu, & Čudanov, 2015).

The developments of ICT have a significant impact on bank's marketing efforts (Dootson, Beatson, & Drennan, 2016), especially in digital banking that affect customer interface (Mbama & Ezepue, 2018). At the same time, the marketing approaches taken by the banks can be affected by the advancement of technology. The digital world or the internet becomes an essential tool in marketing; however, many marketing managers do not understand how to incorporate their marketing strategies with the potential advantages of the internet (Yannopoulos, 2011). The marketing approaches using the ICT must take into consideration by the banks to introduce their banking product to their potential customer, especially with the diversity of banking and financial demand in this digital era. The advancement of technology and its implementation have produced four challenges, which are (1) big data, (2) social media, (3) the expansion of channels and (4) the changes in consumer demographics (Leeftang, Verhoef, Dahlström, & Freundt, 2014). In the marketing perspective, the implementation of social media, channels and the shift of consumer demographic is part of the marketing implementation and development to inform and fulfill the demand of banking and financial activities of the potential and the current bank's customer. Fortunately, due to the advancement of technology, banks can find the spending pattern of customer transactions (Srivastava & Gopalkrishnan, 2015). In which, it enables the banks to offer a banking product to fulfill the customer demands and needs based on the customer profile and past transactions. The technique of finding the customer pattern from the large volume of information or data is called big data analysis. Furthermore, with the increased on the connectivity through technology, the banks can reach its customer via social media or mobile application to increase the customer insight on the bank's product.

Despite the potential benefit of the adoption of technology in marketing activities in the banking industry, these potentials come with its challenges and risks. Based on UK Finance, an estimated £393.4 millions of e-commerce fraud took place on cards in 2018, accounting for 59% of all card fraud and 78% of total remote purchase fraud (UK Finance, 2019). In Indonesia, awareness of fraud on the internet stands at the level of 83,98%, and awareness of the importance of data on the internet at the level of 65,98% (Indonesia Internet Service Provider Association, 2018). The risks faced by the banks due to the implementation and adoption of technology are data breaches, fraud activities, and business disruption (Bouveret, 2018). In preventing the occurrence of digital fraud, the Ministry of Communication and Information Technology of Indonesia made the website of cekrekening.id to report fraudulent accounts (KOMINFO, 2018). On September 2018, there were 16.678 electronic crime actions reported to cekrekening.id (TEMPO.CO, 2018). There was also a sharp difference between foreign banks and local banks, 80% of local banks noted fraud risk increase, as compared to only 25% of foreign banks in 2018 (PricewaterhouseCoopers Indonesia, 2018a).

Although attacks can occur on all payment systems, there have been attacks against payment card issues resulting in severe fraud losses. With the IT utilization on the digital banking product, it enables the banks to mitigate the risk fraud risk that may occur to the customer. Some of the technologies that can be applied by the banks to prevent fraud risk to the customer are: (1) implementing personal identification number (PIN) for every financial and banking activity conducted by the customer or (2) by implementing an authentication mechanism to verify the intended receiver and sender (European Payments Council, 2018).

This research focuses on what is the perception of the bank in Indonesia about the impact of technological advancement toward utilize digital banking and minimize marketing fraud in Indonesia. The implication of this research is to provide suitable and appropriate solutions to protect the customers and the banks' itself from the marketing fraud risk. Furthermore, the objective of this research is to provide an understanding of digital marketing in the banking industry and providing advice to integrate the function and benefit of ICT to introduce the banking product to the potential and the current customer to fulfill the demand of digital transaction. Moreover, protecting the customer and the bank itself from fraudulent activities in terms of marketing in Indonesia.

#### *Hypothesis development*

Hypothesis 1: There is a considerable relationship between the impact of digital advancement and digital utilization.

Some research seeks to know the impact of digital advancement in the banking industry on the marketing perspective. In the annual Economist Intelligence Unit survey on the future of retail banking reported that 55% of respondents said that the changing of customer behavior and demands would have the most significant impact on retail banks to the years 2020. Besides, new technology and digital such as artificial intelligence, machine learning, and blockchain by 54% are now more significant trends than regulatory fines and recompense orders by 40% (The Economist Intelligence Unit, 2018).

Hypothesis 2: There is a considerable relationship between the impact of digital advancement and marketing fraud risk.

One of online fraud is Card Not Present (CNP) transactions fraud, CNP fraud is growing at an even faster rate in the United States, fraud losses associated with transactions account for 60-70 percent of all card fraud the UK, spending on e-commerce has reached £248 billion, with CNP fraud losses at £309 million in 2016 (Rolfe, 2017; Accenture, 2018). According to the Australian Payments Network in 2017, CNP fraud accounted for more than 80 percent of all card fraud in Australia, resulting in up to \$476,4 million in losses (Australian Payments, 2018). In September 2017, it was estimated that there are 5 million customer credit card numbers were taken from US-based fast-food chain Sonic. The hackers used malware to acquire card information when the card is used at the Point of Sale (POS) and send it automatically to the hackers (USA Today, 2017; Accenture, 2018).

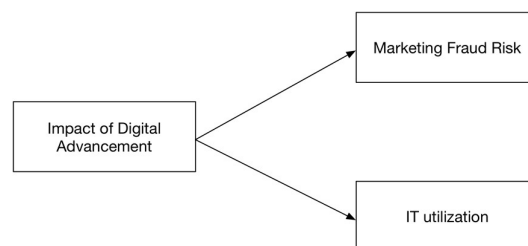


Figure 1. Conceptual Framework of Digital Advancement to Marketing Fraud Risk and IT Utilization

Hypothesis 3: there is a considerable relationship between digital utilization and marketing fraud risk.

The banking industry is proactively using technology to cope with any fraudulent activities. One example is the use of a system described as a global digital identity tool which has been adopted by several leading banks to help identify and prevent potential

fraud. The system analyses billions of real-time transactions with additional data, including device, geographical, behavioral, and threat intelligence input. By combining this with historical data, the bank determined the pattern of a customer's behavior so that any unusual and potentially fraudulent activity can be identified and marked by the banks.

To combat telephone banking fraud, some banks are using technology which allow them to identify the different sound tone that every phone has and the environment that they are in, if someone is calling from an environment which is not their usual one, this can be picked up and investigated further to detect if fraud is being attempted.



Figure 2. Conceptual Framework of IT Utilization to Marketing Fraud Risk

## LITERATURE REVIEW

In this section, it contains several works of literature regarding the concept of the digital revolution and its implementation in the banking industry, especially in regards to marketing activities. Moreover, the literature regarding the marketing risk fraud which is faced by the customer and the banks itself that may potentially inflict financial and non-financial losses; with the addition of previous cases regarding the marketing fraud risk.

### *Impact of Digital Advancement in The Banking Industry*

In the year of the 1970s, is the year of the emergence of ICT and marked the beginning of the digital revolution (McMillan, 2014). The digital revolution has replaced the typewriters with computers, and the transmission of information had changed to digital channel from the analog. These changes are also affecting the financial institutions, where all the record on lending and transaction have stored into electronic account, and all the payment and transaction have been managed electronically to enhance the bank's operational process. Furthermore, the transformation also happened with their back-office operations where the automated process has supported the operational process. In simple terms, the digital transformation and revolution helped the banks to revolutionize their banking and financial activities and no longer confined to the traditional recording and managing their capital and lending. The digital revolution and transformation in the banking industry enable the banks to redistribute their credit over the chain of balance sheets at a minimum cost (McMillan, 2014, pp. 20-22).

According to the pattern of the transformation of the banking industry due to technological advancement, the banking industry can utilize the potential benefits and competitive advantages of providing better banking services to its customer. The future of the banking industry will be affected by the advancement of technology regarding digital banking services, such as artificial intelligence, biometric technology, and block-chain (Arner, Barberis, & Buckley, 2015). The adoption and the implementation of technological and digital advancement also happened in Indonesia due to the changes in customer behavior on using digital services. According to the seminar conducted by Bank Indonesia (2018), the usage of card payment (e-money) had increased by 81% by 2018, and there is a changing of behavior on the customer payment habit over the last ten years. In which, the changes in customer behavior regarding payment transaction had increased the usage of electronic money (Bank Indonesia, 2018).

### *IT Utilization in The Marketing Activity*

The technological advancement is also applied by the bank to introduce their product to the potential and current customers. The implementation of technology, such as digital banking, is used to fulfill the demands and needs of the bank's customers' on conducting digital banking. In which, these implementations of technology need to be simplified. These simplifications need to be applied in order to be understood by the service users, and this will determine how they see the provided services (Mbama & Ezepue, 2018). Deloitte (2018) explained that for the banks to maintain digital engagement, the banks must create a product that can maintain an emotional connection between the brands and customers. In this case, the emotional connections are in the matter of digital services provided by the banks.

In this era of connectivity, consumers have come to expect seamlessly connected, convenient, and positive service interaction at every stage of the financial lifecycle. Oracle Financial Services (2018) reported that 67% of customers (globally) are active on digital platforms and often access their bank accounts through digital channels, including mobile banking apps and web-based banking platforms. PricewaterhouseCoopers Indonesia (2018b) reported that 64% of the total respondent of Indonesian bankers believes that mobile banking is essential for developing customer experience in conducting banking activities. Based on the percentage, the digital services provided by the banks are still in need of development and optimization to further enhance the customer experience on using the offered product. In this case, the banks need to find a better approach to utilizing digital channels to introduce their digital banking services to the current and potential customers. However, several factors determined the customer

commitment on using the digital services by the banks; one of the factors regarding the customer commitment on using the digital services are the approaches taken by the banks to protect them against risk (UK Finance, 2019).

#### *The Marketing Fraud Risk*

PricewaterhouseCoopers Indonesia (2018a) reported that 59% of the total respondent focuses on their risk management resources on mitigating fraud risk. The target of fraud activities is not only limited the bank's customer but to the banks itself. If the fraud risk becomes a reality, either the banks or the customer that becomes the target of fraudulent activities may be resulting in financial and non-financial losses. In simple terms, fraud can be defined as an act of deception to secure an unfair or unlawful gain (Muduri, 2012).

Based on the report of PricewaterhouseCoopers (2018), 56% of the total respondent believes that the financial services were one of the sectors with the most numerous fraud cases. Based on the survey regarding the most frequent fraudulent activities in the financial sector, the banks must find a solution on how to reduce the risk of marketing fraud that may happen to the banks and its customer. Muduri (2012) explained that there are five types of fraudulent activities that operate within the perspective of marketing, which is: customer-driven fraud, business partner-driven fraud, system administration fraud, and mobile financial services provider.

Marketing fraud risk can take many forms; several forms of them are scams and identity fraud. The fraudulent activities are potentially resulting in financial and non-financial losses to the unsuspecting banks and customers. The form of fraudulent activities are grouped into four categories: (1) pretending to sell non-existed product to gain profit, (2) selling or providing goods or products of a lower quality than the original price, (3) forcing or persuading the customers to buy something they do not need and (4) using someone identity to perpetrate a fraudulent activity (Button, Lewis, & Tapley, 2009; Kumar, 2015). Also, due to the advancement of technology, the form of fraudulent activities has become more sophisticated. The digital and technological advancement has the potential to enables the banks to provide better services to its customer. However, these benefits also increase the opportunity of fraudulent activities to occurs (Button, Nicholls, Kerr, & Owen, 2014). Marketing fraud risk in the payment industry consists of a payment card, remote banking, authorized remote banking fraud, Authorized Push Payment (APP) fraud, and cheque fraud (UK Finance, 2019).

## **METHODOLOGY**

In fulfilling the objective of understanding the relationship and effect between these three variables, the regression analysis is applied to understand the effect and relationship. To be precise, the regression analysis conducted to find the effect of ICT impact on IT utilization and marketing fraud risk, as shown in Figure 1. With the addition of analyzing the effect of IT utilization on marketing fraud using as shown in Figure 2 using the regression analysis as well. The data we used in this research is obtained based on the questionnaire, which is answered by people who work in the Indonesian banking industry. The questionnaire which is used in this research consisted of question regarding the subject of: (1) the impact of digital and technological advancement to the banks itself, (2) the utilization of digitalization in the marketing of the banking product and, (3) previous cases and the impact of marketing fraud risk which are faced by the banks. In regards to the questionnaires used in this research, it is answered by the directors of the Book 4 category banks' in Indonesian banking sector. Furthermore, the analysis of the digital utilization and marketing fraud risk in regards to the impact of digital advancement is conducted using the Statistical Package for Social Sciences (SPSS) program.

The purpose of implementing the regression analysis on the selected three variables is to provide: (1) to understand the current state of digital utilization in the banking industry. (2) to provide an overview of the risk and challenges facing the bank industry concerning marketing fraud risk. (3) to determine the impact of using digitalization banking products in reducing marketing fraud risk.

In the research conducted by Cambra-Fierro, Kamakura, Melero-Polo, & Sese (2016) the multivariate analysis is implemented to understand the effect of the balance held by the customer on credit services, deposits and investment, cost of servicing and tenure in respect with the market effort in the context of banking services. Based on the research, Cambra-Fierro, Kamakura, Melero-Polo, & Sese (2016) have found that multichannel customer is not the most profitable customers to the banks. The customers that used all the channels of the banks has the potential to decrease the bank's profitability. In other words, the profitability of the multichannel approach depends on the type of banking product.

And finally, in the case of Pinto & Picoto (2018), the multivariate regression analysis is combined with a qualitative comparative analysis to analyze the effect of 2008 financial crisis with its sovereign debt in the European banks; the investigation regarding the 2008 financial crisis orients on capital management and the existence of earning in the European banks. Based on the research, it

shows that the results have an indication of the bank's manager using the loss loan provisions to control the regulatory capital and earning from 2007 to 2014. However, Pinto & Picoto (2018) explained that these findings did not show clear evidence regarding the reduction of managerial discretion at the post-2008 financial crisis.

Based on the brief explanation above, the approach of the linear regression analysis is selected to find the effect of ICT utilization in the marketing approach and the risk of marketing fraud risk faced by the banks; the effect of each variable is analyzed to find the impact on the digital and technological advancement on the banks itself. The result of the analysis using the linear regression analysis is used to produce solutions and insight on finding the most suitable and appropriate approach on introducing their banking product digitally; and, protecting the banks and the customer from the marketing fraud risk that may potentially cause financial and non-financial loss if it turns into a reality.

## FINDINGS

### *Correlation and Linear Regression Analysis*

Based on the analysis conducted in this research, the relationship of each variables using the correlation matrix analysis is presented in Table 1. This approach is used to understand if one of the variables moves with each other. In simple terms, it is used to find if the variables have a positive or negative relationship with each other.

Table 1. Correlation IT Utilization and Marketing Fraud Risk

Indicator	Variables	ICT Impact	IT Utilization	Marketing Fraud Risk
Pearson Correlation	ICT Impact	1.000	0.765	0.981
	IT Utilization	0.765	1.000	0.741
	Marketing Fraud Risk	0.981	0.741	1.000

Based on the table above, it is found that ICT impact and IT utilization have a positive relationship. In which the relationship level stands at the level of 0.765 or 76.5%. ICT impact and marketing fraud risk have a positive relationship. In which the relationship level stands at the level of 0.981 or 98,1%. It is found that marketing fraud risk and IT utilization has a positive relationship. In which the relationship level stands at the level of 0.741 or 74.1%. The positive relationship indicates that if one of the variable increases, then the variables tends to be increasing as well and vice versa.

In regards to the regression analysis result following Figure 1 is shown in Table 2 and Table 3. Based on Table 2, it is found that the ICT impact is statistically significant to explain the movement of marketing fraud risk; in which the ICT impact has the p-value below 0.05 or 5%. Furthermore, the linear regression equation from the result represented in Table 2 is given as follows:

$$\text{Marketing Fraud Risk} = 0.924 \times \text{ICT Impact} \quad (1)$$

Based on the equation (1), it is indicated that any changes in the impact of ICT will also dictate the marketing fraud risk that is faced by the potential and the current customer of the bank itself. Especially in the situation where the marketing fraud may happen to the bank's customer is using any digital banking product. On this result, it can be interpreted as the impact of ICT does not only bring benefit to the customer on conducting digital banking activity but at the same time, it is also exposing the bank's customer to the risk of fraudulent activity.

Table 2. Coefficients of Marketing Fraud Risk as Dependent Variable to ICT Impact

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Partial	Tolerance	VIF
1 (Constant)	0	0.294		-0.00	0.99	-0.719	0.718					
ICT Impact	0.924	0.075	0.981	12.361	0	0.741	1.107	0.981	0.981	0.981	1	1

a Dependent Variable: Marketing Fraud Risk

On the other hand, based on Table 3, it is found that the ICT impact is also statistically significant to explain the movement of IT utilization of a bank in regards to introducing their product to the current and the potential customer. Furthermore, any changes in the ICT impact also determine the movement of IT utilization of the banks. The regression equation from the result presented in Table 3 is presented in equation (2).

Table 3. Coefficients of IT Utilization as Dependent Variable to ICT Impact

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Partial	Tolerance	VIF
1 (Constant)	2.175	0.74		2.938	0.026	0.364	3.987					
ICT Impact	0.549	0.189	0.765	2.911	0.027	0.087	1.01	0.765	0.765	0.765	1	1

a Dependent Variable: IT Utilization

$$\text{IT Utilization} = 2.175 + (0.549 \times \text{ICT Impact}) \quad (2)$$

Based on the equation (2), it is indicated that the impact of ICT determined the movement of IT utilization of the bank to fulfilling the demand of the digital transactions of the bank's customer itself. In simple terms, the movement of ICT impact dictates the movement of IT utilization. In terms of the p-value of the regression model presented in equation (2), the p-value stands at the level of 0.027; where the p-value of the regression model is below the 5% threshold. In which the equation (2) is determined to be able to explain the movement of IT utilization with respect to ICT impact.

The result of regression analysis following the conceptual framework presented in Figure 2 is shown in Table 4. This regression analysis is conducted to find the estimated value of the IT utilization to predict the marketing fraud risk. In other words, the marketing fraud risk is acted as a dependent variable; meanwhile, the IT utilization is acted as an independent variable in the regression analysis. Furthermore, the regression equation of the marketing fraud risk in respect with IT utilization is presented in equation (3).

Table 4. Coefficients of Marketing Fraud Risk as Dependent Variable to IT Utilization

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Partial	Tolerance	VIF
1 (Constant)	-0.691	1.55		-0.446	0.671	-4.484	3.101					
IT Utilization	0.974	0.36	0.741	2.707	0.035	0.093	1.855	0.741	0.741	0.741	1	1

a Dependent Variable: Marketing Fraud Risk

Based on Table 4, it is found that IT utilization is statistically significant to explain the movement of marketing fraud risk, where the p-value of IT utilization stands below the threshold of 0.05 or 5%. However, the constant variable is found to be not statistically significant. Based on the result, the linear regression equation of marketing fraud risk for IT utilization is given as follows:

$$\text{Marketing Fraud Risk} = 0.974 \times \text{IT Utilization} \quad (3)$$

Based on the equation (3), it is indicated that the movement of IT utilization dictates the movement of marketing fraud risk. In other words, if the IT utilization by the banks increases to fulfill the demand of digital transactions of its customers, then the risk of marketing fraud will be increasing as well and vice versa. Furthermore, in regards to the performance of the linear regression to explain the movement of marketing fraud risk in respect with IT utilization is given as follows:

Table 5. ANOVA of Marketing Fraud Risk as Dependent Variable

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	7.818	1	7.818	7.325	.035 <sup>b</sup>
Residual	6.403	6	1.067		
Total	14.221	7			

a Dependent Variable: Marketing Fraud Risk

b Predictors: (Constant), IT Utilization

Based on Table 5, it is found that the regression model of the marketing fraud risk in respect with IT utilization is statistically significant. To be precise, the p-value of the regression model stands at the level of 0.035 or 3.5% (below the 5% threshold). The result indicates that the regression can predict the movement of the marketing fraud risk in respect with the IT utilization by the banks. However, the standard deviation of the prediction of the linear regression model is (plus/minus) 1.033. Which indicates the prediction of the marketing fraud risk, which is dependent on the IT utilization may deviate at a high degree, as shown in Table 6.

Table 6. Regression Model Summary of Marketing Fraud Risk to IT Utilization

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 <sup>a</sup>	0.55	0.475	1.03307025

a Predictors: (Constant), IT Utilization

b Dependent Variable: Marketing Fraud Risk

#### Solutions

Bank are increasingly looking at behavioral biometrics tools to identify potential cases of fraud and prevent them where possible. Behavioral biometrics technology offers robust, risk-appropriate identity authentication and anti-fraud measures that are effortless for the user and which require no additional security steps. In its implementation in digital banking, banks need to consider flexibility, convenience, efficiency, and security of customers. For example, it is combining the result of each transaction like customer login, one-time password, and fund transfers (International Biometrics Identity Association, 2017). For mobile devices, always monitors applications stores and internet for fake applications. And implement controls to protect commination channel and mobile device verification (European Payments Council, 2018).

Based in UK Finance, in fighting telephone banking fraud, banks are using technology to identify the different sound tone that every phone has and the environment in which they are located. If someone is calling from an unusual environment, this can be taken and investigated further to detect whether fraud is being carried out (UK Finance, 2019).

In Indonesia, Customer education is an essential point to prevent, more in particular "low-tech" fraud. Public service announcements, scam alerts, and other publications outlining specific scams maybe can be posting from regulators like the ministry of communication and information technology website and banks. When more people become aware of online fraud especially in marketing fraud and method utilized to carry them out, potential victims are equipped with an extensive understanding of online activity and are in a better position to avoid the fraudulent activities (Federal Bureau of Investigation, 2018). For increasing awareness about fraud in digital banking. Banks and regulators can create an awareness campaign to educate consumers on how to avoid the previous fraud scenarios (European Payments Council, 2018).

## CONCLUSIONS

Based on the analysis conducted in this research, it is found that marketing fraud risk, IT utilization, and ICT impact have a positive relationship with one and another. In other words, if one of the variables increases, then the other variables tend to be increasing as well. In regards to the result obtains using regression analysis, it is found that (1) the ICT impact dictates the movement of marketing fraud risk, in which the bigger the impact of ICT then the bank's customers are more expose to the risk of fraudulent activity, (2) it is also found that the ICT impact dictates the IT utilization of the banks which means that the more engage the banks on implementing the IT to support and fulfill the demand of digital transactions of its current and potential customer. And finally, (3) IT utilization of the bank's dictates the movement of marketing fraud risk. In other words, the more engaging the banks in implementing the technologies to conduct marketing activity and as well to fulfill the demand of digital transactions of its customer then it will higher the risk of marketing fraud to occur and to expose the banks' customer to such risk.

In terms of the hypothesis in this research, it is found that marketing fraud risk, IT utilization, and ICT impact have a significant positive relationship. To be precise, all the variables relationship stands at the above 0.7 or 70%. In other words, if one of the variables increases, then the other variables tend to be increasing as well and vice versa.

In regards to the nature of the findings in this research, it has a similarity with the report implication of the digital impact towards the digital utilization and marketing fraud risk conducted by The Economist Intelligence Unit (2018) and Accenture (2018). Also, it has a similarity with the report in regards to the relationship of the digital utilization toward marketing fraud risk that are conducted by UK Finance (2019). In simple terms, the findings on this research has an implication on establishing a policy or a decision taken by the banks to protect their potential and current customer and even the bank itself from the risk of marketing fraud. Especially, on the fraudulent activities that uses the advantage of technology to trick the unsuspected banking customer and the bank itself that may potentially causes financial losses.

This research considers a several solutions to mitigation marketing fraud risk with respect digital impact and IT utilization. Firstly, the bank is increasingly looking at behavioral biometrics tools to identify potential cases of fraud and prevent them where possible. Secondly, the banks are using technology to identify the different sound tone that every phone has and the environment in which they are located. And thirdly, the customer education is an essential point to prevent, more in particular "low-tech" fraud.

The limitation of this research is that it solely focuses on the opinion of the directors of the banks that are classified into the book four categories in Indonesia. In other words, this limitation limits us to see the perspective on the relationship between the marketing fraud risk, IT utilization and ICT impact based on the situations faced by the bank's directors that are operating in Indonesia.

Based on the conclusions above, it is recommended to conduct future research that is focused on two perspectives; to be precise, the perspectives of directors of the banks and the perspectives of the bank's customer in using a digital product provided by the banks to cope with the marketing fraud risk.

## REFERENCES

- Accenture. (2018). *Unmask Digital Fraud Today: Boosting Customers and Companies Defense Against Digital Fraud*. Dublin: Accenture.
- Arner, D., Barberis, J., & Buckley, R. (2015). *The Evolution of Fintech: A New Post-Crisis Paradigm?* Sydney: University of New South Wales.
- Australian Payments. (2018). *Australian Payment Card Fraud 2018*. Sydney: Australian Payments Network Limited.
- Bank Indonesia. (2018). *Digital Payment Transformation*. Jakarta: Bank Indonesia (BI).
- Bouveret, A. (2018). *Cyber Risk for the Financial Sector: A Framework for Quantitative Assessment*. International Monetary Fund. Washington DC: International Monetary Fund (IMF).
- Button, M., Lewis, C., & Tapley, J. (2009). *Fraud typologies and the victims of fraud: literature review*. London: National Fraud Authority.
- Button, M., Nicholls, C. M., Kerr, J., & Owen, R. (2014). Online frauds: Learning from victims why they fall for these scams. *Australian and New Zealand Journal of Criminology*, 47(3), 391-408.
- Cambra-Fierro, J., Kamakura, W. A., Melero-Polo, I., & Sese, F. J. (2016). "Are multichannel customers really more valuable? An analysis of banking services". *International Journal of Research in Marketing*, 33(1), 208-212.
- Das, K., Gryseels, M., Sudhir, P., & Tan, K. T. (2016). *Unlocking Indonesia's Digital Opportunity*. Jakarta: McKinsey&Company.
- Deloitte. (2018). *Accelerating digital transformation in banking: Findings from the global consumer survey on digital banking*. London: Deloitte Development LLC.
- Dootson, P., Beatson, A., & Drennan, J. (2016). Financial institutions using social media – do consumers perceive value? *International Journal of Bank Marketing*, 9-36.
- European Payments Council. (2018). *Payment Threats and Fraud*. Brussels: European Payments Council.
- Federal Bureau of Investigation. (2018). *Internet Crime Report*. Washington DC: Federal Bureau of Investigation (FBI).
- Indonesia Internet Service Provider Association. (2018). *Penetrasi dan Perilaku Pengguna Internet di Indonesia : survey 2017*. Jakarta: Kementerian Komunikasi dan Informatika Republik Indonesia.
- International Biometrics Identity Association. (2017). *Behavioral Biometrics*. Washington DC: International Biometrics Identity Association (IBIA).
- KOMINFO. (2018, September 12). *Situs Cek Rekening Viral Di Medsos, Ini Penjelasan Soal Cekrekening.Id*. Retrieved from [www.kominfo.go.id: https://www.kominfo.go.id/content/detail/14341/situs-cek-rekening-viral-di-medsos-ini-penjelasan-soal-cekrekeningid/0/sorotan\\_media](https://www.kominfo.go.id/content/detail/14341/situs-cek-rekening-viral-di-medsos-ini-penjelasan-soal-cekrekeningid/0/sorotan_media)
- Kumar, H. (2015). *Mass Marketing Frauds in the garb of Mobile Towers in India : Evolving a Framework to handle it*. Post-Graduate



- Programme in Public Policy Management. Gurgaon: Management Development Institute Gurgaon.
- Leeflang, P. S., Verhoef, P. C., Dahlström, P., & Freundt, T. (2014). Challenges and solutions for marketing in a digital era. *European Management Journal*, 32(1), 1-12.
- Mbama, C. I., & Ezepeue, P. O. (2018). Digital Banking, Customer Experience and Bank Financial Performance: UK Customers' Perceptions. *International Journal of Bank Marketing*, 230-255.
- McMillan, J. (2014). *The End of Banking Money, Credit and Digital Revolution*. Zurich: Zero/One Economics GmbH.
- Muduri, J. L. (2012). *Fraud in Mobile Financial Services*. Lucknow: MicroSave.
- Oracle Financial Services. (2018). *The New Digital Demand in Retail Banking: From Customer Experience to Engagement Across Life Moments*. Redwood Shores: Oracle.
- Pinto, I., & Picoto, W. N. (2018). Earnings and capital management in European banks – Combining a multivariate regression with a qualitative comparative analysis. *Journal of Business Research*, 89, 258-264.
- PricewaterhouseCoopers. (2018). *Pulling Fraud Out of The Shadows: The Global Economic Crime and Fraud Survey 2018*. London: PricewaterhouseCoopers.
- PricewaterhouseCoopers Indonesia. (2018a). *2018 Indonesia Banking Survey: Technological Shift in Indonesia is Underway*. Jakarta: PricewaterhouseCoopers (PwC).
- PricewaterhouseCoopers Indonesia. (2018b). *PwC Survey: Digital Banking in Indonesia 2018*. Jakarta: PricewaterhouseCoopers.
- Rolfe, A. (2017, July 5). *European card fraud for 19 countries hits record €1.8 billion in 2016*. Retrieved July 2, 2019, from [www.paymentscardsandmobile.com](http://www.paymentscardsandmobile.com): <https://www.paymentscardsandmobile.com/european-card-fraud/>
- Srivastava, U., & Gopalkrishnan, S. (2015). Impact of Big Data Analytics on Banking Sector: Learning for Indian Banks. *Procedia Computer Science*, 50, 643-652.
- TEMPO.CO. (2018, September 12). *16.678 Laporan Tindak Pidana Elektronik Masuk ke cekrekening.id*. Retrieved from <https://www.tempo.co/>: <https://bisnis.tempo.co/read/1125840/16-678-laporan-tindak-pidana-elektronik-masuk-ke-cekrekening-id>
- The Economist Intelligence Unit. (2018). *Whose Customer Are You? The Reality of Digital Banking*. London: The Economist Intelligence Unit Limited 2018.
- Tornjanski, V., Marinković, S., Săvoiu, G., & Čudanov, M. (2015). A Need of Research Focus Shift: Banking Industry in The Age of Digital Disruption. *Econophysics, Sociophysics & Other Multidisciplinary Sciences Journal*, 5(3), 11-15.
- UK Finance. (2019). *Fraud The Fact 2019: The Definitive Overview of Payment Industry Fraud*. London: UK Finance.
- USA Today. (2017, September 27). *Sonic Drive-In Hit by Security Breach*. Retrieved from [www.usatoday.com](http://www.usatoday.com): <https://www.usatoday.com/story/tech/2017/09/27/sonic-drive-hitsecurity->
- Yannopoulos, P. (2011). The Impact of the Internet on Marketing Strategy. *International Journal of Business and Social Science*, 2(18), 1-7.