



ANALYSIS THE IMPACTS OF RISKS IN THE USE OF ICT SYSTEMS ON THE PERFORMANCE OF SERVICES PROVIDED BY A BANKING COMPANY

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ABSTRACT

This study aims to answer the main question by learning and analyzing broadly about the risks of the use of ICT systems in Mandiri Bank and also investigating the performance of services provided by this company. Further, There is a limitation which is about the technical risks that are excluded on this study.

Based on the results of this study, the main risk measure that can be applied to mitigate the impacts of the use of ICT systems risks in Mandiri Bank is the implementation of ISO 31000:2018 guidance to their operational risk model. And the suggestion for this research besides implementing ISO 31000:2018 is they should always listen to recommendations that come from their internal and external stakeholders who has the same goals to help Mandiri Bank overcome the effects of risks in the use of ICT systems.

However, in the end it can be considered from these analyses that Mandiri Bank already has a good performance of services that they give to the customers by preventing from the impacts of the use of ICT systems risks properly.

Keywords: Risk Management, The Use of ICT systems, Mandiri Bank, ISO 31000:2018.

INTRODUCTION

Problem Description

The banking industry in Indonesia are supervised and regulates by Indonesia's Financial Services Authority that mainly focuses on monitoring the performance of banks (Bank Indonesia, n.d.). Besides, there is another financial institution called Bank Indonesia in which the function is maintaining monetary stability, create a strong performance of financial institutions and, regulate and maintain a smooth payment system (Bank Indonesia, n.d.). Further, the other institution called Indonesia Deposit Insurance Corporation (IDIC) also involved to insuring customers banks' deposits, actively promoting the stability of banking system, and increase public trust in Indonesia banking system (LPS, n.d.).

Also, Hamidi and Safareeyeh (2019) has introduced that bank's competency to maintain and make excellent customer satisfaction, is playing a role as an essential key in which may affect the success of the business. Therefore, to engage good satisfaction with customers, Indonesia banking companies use the application of Information Communication Technologies (ICT) systems for their internal communication and external communication purposes. The products and services that recently serve to Indonesia banking customers related to the use of ICT systems are electronic banking : mobile banking, internet banking and ATM (Mandiri Bank, 2019). In here, although the connection among external communication and internal communication are very relevant, therefore the focus of this paper is on the external communication of how the bank can deliver good services to the customers.

Additionally, Mandiri Bank is one of the state-owned banks in Indonesia that has been using ICT systems to keep up their service performance since the era of globalization begin such as mobile banking, Mandiri Pay, ATM (Automated Teller Machines) service,

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Internet banking, Mandiri Call, and SMS banking to deal with the changing in the digital era (Mandiri Bank, 2019).

Moreover, Mandiri Bank has formed the risk management committee for investigating, identifying, measuring, monitoring, and controlling the process of risk management information systems. In the implementation, Mandiri Bank has always prioritized caution principles in managing all types of risk such as operational risk, financial risk, legal risk, compliance risk, reputation risk that being a form of Mandiri Bank's responsibility in conducting good corporate governance practices (Mandiri Bank, 2019). However, based on Mandiri Bank (2019), it can be comprehended that this bank seems not to split the committee of risk management yet to focus on solving the risks related to the use of ICT systems.

Next, while bank operates the digital services, there are some challenging risks that bank must confront with it. As told by Ogugua and Emerole (2008), implementation of information technology on the software, hardware and infrastructure sides can be very challenging for Bank firms especially to keep up the performance of services that they obtained externally. There are some consequences like failures and cybercrimes, mainly when Mandiri Bank uses the benefit of information and technology systems. This issues makes Mandiri Bank realizes, to getting better performance and achieving the goals of the company, they have to work hard to improve their quality and not let the lousy event become happen anymore.

Research Objectives

This paper aims to give advices to Mandiri Bank to improve their risk management on external elements between clients and bank relationship by answering the main question about which risk measures suitable for the company to prevent from problems related to the performance of services when the company does not control well the risks in the use of ICT systems. In the end, hopefully, this paper can inform the readers regarding knowledge about managing the use of ICT systems risks in the banking sector and also it can help Mandiri Bank to level up their performance and be more aware of the risks in the use of ICT systems.

Research Questions

Main Question:

1. Which risk measures may be advised to Mandiri Bank that mitigate the impacts of the use of ICT systems?

Sub Questions:

1. What are the factors that influence the risk of the use of ICT systems on Banking Performance?
2. What are the consequences of the use of ICT systems for internal control procedures and risk management systems to the company performance?
3. What are the impacts of failures in controlling ICT systems risks on the satisfaction of Mandiri Bank's customers?

Limitation

The limitation is about technical elements that are excluded on this study which about the discussion regarding the risks of technology that should be done by IT specialist, although the technical risks also play a role in this research. The main focus on this research is about the problem related to the impacts of ICT systems especially of how well

the performance of services served by the bank to the clients which it is specifically related to external communication and it is not to technical aspects.

Methodology

This research thesis will design in qualitative research, which means gaining an accurate view of risk management in the use of ICT systems in the banking sector. It will use some analysis of data to give me the best understanding to answer several sub-questions related to the problem that in the end, it will come to formulate the answer for the main question. The data collection divided into two types of data which are primary data and secondary data.

For the first sub-question about the factors that influence the risks of the use of ICT systems, I will use the primary data collection by having an interview session with a staff member from Mandiri Bank that has current knowledge of risk management practices. Furthermore, after checking an annual report from Mandiri Bank (2019), I recognized that I would mainly focus on the part that Mandiri Bank explains their risk management of the use of ICT systems. In addition, for the secondary data that will help me find the answer for the first sub-question, I will get it from the article that wrote by Tirkaso and Cerna (2016). This article described the factors affecting the use of ICT services risks.

Next, the other sub-question that I have to answer is about the consequences of the use of ICT systems on internal aspects and external aspects in Mandiri Bank. The primary data, I will also get it from the interview session with a Mandiri Bank's staff that I already explained before. Moreover, the other primary information is from the part of ICT risks in Banking Banana Skins report published by PricewaterhouseCoopers (2015). Further, about the secondary data, I will find the information from Deloitte (2018) and also from Amiri (2017).

Moreover, the last sub-question is about the impact of failures while control ICT systems risks on the Mandiri Bank's customers satisfaction. It will be answered by having an interview session with customers of Mandiri Bank. I am going to find and debriefing four participants that being a customer from Mandiri Bank for at least a year. In the other hand, the secondary data for the last sub-question, I will get it mostly from journal wrote by Sousa and Voss (2009), Boucher and Rendtorff (2016), and last, I will get the reason for the importance of customer satisfaction is by reading an article from Hose (n.d.).

THEORITICAL FRAMEWORK

Risk Management in Banking Sector

The main goals of risk management in the banking sector are; to improve the financial performance of the bank and to mitigates the bank from encounter significant losses that it cannot cover or consider as acceptable (Yaylali and Safakli, 2015). Based on surveys that conduct by Pricewaterhouse Coopers (2015), It can be recognized, the primary type of risk based on the PWC's survey is about the uses of ICT system, which refers to technology risk.

Risk of The Uses of ICT Systems in Banking Sector

Risk of the uses of ICT systems in banking sector is defines as the risk that banks will fail to keep up with the globalization of technological change as said by PricewaterhouseCoopers (2015). Based on explanation by Tirkaso and Cerna (2016), this is the factor that influences the risk of the use of ICT services in banking company which are technology, system quality, demographic factors and security concern.

The consequences of uses of ICT systems is that banks are vulnerable to cybercrime issues and service disruptions (PricewaterhouseCoopers 2015). Cyber-crime defined by Anderson et al. (2012), as computer-mediated activities In the banking sector,

which are using online technologies to cut out or transfer money to the different accounts illegally is tagged as banking frauds. The banking frauds are sub-categorized in cyber deception, which can be noticed as indecent activities, including stealing, credit card fraud, and intellectual property violations (Anderson et al., 2012). ss

Stakeholders in Banking Sector

According to Freeman (1984), as cited in Rendtorff and Bonnafous (2016), Stakeholder is defined as any group or person who can affect or is affected by the achievements of an organization's goals. Furthermore, in digital transformation of banking company, there are many kind of stakeholders. Murrmann (2018), explained those stakeholders are divided as customers, bank clerk, investors, risk managers, auditor and IT technicians.

Table 1
Matrix Analysis of Stakeholder in Banking Sector

| Stakeholder Indicators | Customers | Bank Clerk | Investors | Risk managers | Auditor | IT Technicians |
|--|------------------|-------------------|------------------|----------------------|----------------|-----------------------|
| Satisfaction of ICT bank services (commercial bank) | V | | | | | |
| Reputation of Bank Company | V | | V | | | |
| Important feedbacks in ICT bank services (commercial bank) | V | | V | V | | V |
| Measure the quality of ICT bank services (commercial bank) | V | | | | | |

Based on this matrix analysis, four indicators are relevant to measuring the performance of the ICT system in the banking company. These indicators are the satisfaction of ICT bank services, the reputation of the company, the essential feedback in responding the performance of ICT bank services and also about the quality of ICT bank services in the commercial bank. Therefore, it can be understood that all of those indicators are checked in the customer's column. Therefore, choosing the customer as the primary stakeholder in this research is essential, especially to investigate their satisfaction when they use ICT system in banking services.

Customer Satisfaction

Customer satisfaction explained as a measurement that determines how happy customers are with a company's products, services, and capabilities. Customer satisfaction information is including method of surveys and ratings, which is very helpful for a

corporation to determine the problems and how to improve best or changes it is products and services (ASQ, n.d.). The consequence of not fulfil customer satisfaction is the negative word of mouth spreads much faster in online media, e.g., via customer feedback systems such as opinions. (Reichheld and Schefter, 2000 as cited in Sousa and Voss, 2009). Moreover, damaging effects on the reputation of the organization also can be happened (Goetzinger et al., 2006 as cited in Sousa and Voss, 2009).

Theories Correlation

In 2009, the International Standard Organization (ISO) formed a risk management framework called ISO 31000 that released an update of the framework which provides more strategic guidance in 2018 that can be implemented to every company (International Organization for Standardization, 2018). This type of ISO standard aims to fill guidelines, provides principles, and process for managing risk (International Organization for Standardization, 2018). The banking sector can use this model, mainly to support and help them asses the risk especially for ICT risk and better decision about risk management (Suyasa and Legowo, 2019).

Based on matrix analyses, those theories are related to each other. As I also realized that the significant one is technology risk even though there are other risks that are integrated. Criminality, technology risk, quality of risk management, reputation risk, social media, corporate governance are the type of risk that has secure connections between them. If the banking company has an excellent performance of ICT services and manage their risk management thoroughly, it will avoid those risks consequences like cybercrime and a bad reputation.

Further, regarding the relation with stakeholder theory is also consolidate well. The connection with technology risk is notable because if the company does not give a high quality of ICT banking services, it will impact to unsatisfied customers in which create damaging effects on the reputation of the organization (Goetzinger et al., 2006 as cited in Sousa and Voss, 2009). In addition, Mckinsey and Company (2016), mentioned in their article about some advice to mitigate the risk of the use of ICT systems in the banking sector which are business risk-first approach, coordinate across the subdisciplines of IT-risk management to increase quality, coordinate with enterprise risk management, change the performance incentives of IT managers, find the best talents that capable in managing IT risk.

Therefore, I recognized that ISO 31000:2018 model is useful, especially to help the company determine and make a decision regarding risks practically as explained by PECB (2018). Nevertheless, unfortunately, this type of ISO guidelines is not focusing on customer satisfaction (Hutchins ,2018). It makes me realized in theoretical spoken, if the company has problem about failures in managing customer satisfaction, they can combine the understanding of ISO 31000:2018 with another model that focus on assistancy of customers satisfaction and loyalty. Perhaps, this elucidation can help the Mandiri Bank to better understanding of how to determine and solve their uses of ICT risk problem in practical situation.

DATA COLLECTION AND DATA ANALYSES

Interview Session

Table 2
Results of Interview Session With Customers of Mandiri Bank

| No. | Indicators | Customers of Mandiri Bank (C) | | | |
|-----|------------|-------------------------------|----|----|----|
| | | C1 | C2 | C3 | C4 |

| | | | | | |
|----|--|---|---|---|---|
| 1. | Be customers of Mandiri Bank more than a year. | V | V | V | V |
| 2. | Often uses mobile banking and ATM provides by Mandiri Bank. | V | V | V | V |
| 3. | Satisfaction and loyalty from customers is important. | V | V | V | V |
| 4. | Satisfied with Mandiri Bank's performance and customer services. | V | V | V | V |
| 5. | Have problem while use Mandiri Bank's digital services. | | V | V | V |
| 6. | Change to other bank if the problem still happen in the future and not managed well. | V | | V | |
| 7. | Recommend this bank to other people. | V | V | V | V |

Based on this table, it can be realized that Mandiri Bank already achieved their good performance on fulfilling customer needs and service by knowing whether customers are satisfied or not (Personal communication, 2020).

Table 3
Other Results of Interview Session With Customers of Mandiri Bank.

| Customers of Mandiri Bank (C) | Opinions | |
|-------------------------------|--|---|
| | Factors effect customer satisfaction | Advices to increase Mandiri Bank online services |
| Customer 1 (C1) | Easy to use services provides by bank. Customer service are responsive and active. Strategic place to located ATM machines. | Maintain their security systems. Do prevention strategy as soon as possible. stay up to date with risks that might happen in the future. |
| Customer 2 (C2) | Customer service are responsive and active. Fast and satisfying service. Strategic place to located ATM machines and provide lots of ATM machines. | Improve and maintain security systems. Always give the best services to customer banks. for Cybercrime issue: suggestion to set difficult password that hard to be traced by hackers. |
| Customer 3 (C3) | Fast and satisfying service. Customer service are responsive and active. Strategic place to located ATM machines and provide lots of ATM machines. | Make it more easy and efficient for customers to use mobile banking. Hire consultant for develop good quality of banking systems security. Training the employee. |
| Customer 4 (C4) | Customer service are responsive and active. | Improving prevent strategy by learn from the past problem. Engage good trust building between customers and bank to feel more secure. |

Table 3, is a table that gives information regarding the other data that I got by interviewing the customers of Mandiri Bank. There are two main points in here that should be considered, which are the factors that affect customers satisfaction, and also pieces of advice that gave by customers for Mandiri Bank to increase Bank ICT services performance. To summarized it, for the factors that affect customer satisfaction data, All of the customers said responsive and active customer service is the key to getting good achievement value from customers (Personal communication, 2020). As well as the other

factors which are fast and satisfying banking services, a strategic place to located ATMs and the last one is easiness to use services provided by Mandiri Bank (Personal communication, 2020).

Results of Interview Session With a Staff Member of Mandiri Bank

Based on the interview it can be noticed that operational risks is being the essential risks out of the other types of risk managed by bank (Personal communication, 2020). And the uses of ICT systems risks, is categorized as the operational risks (Personal communication, 2020). Moreover, Mandiri Bank also implement the operational risk management policy and procedures that already established by the company for the process of identifying, analyzing, treating, monitoring and reporting the operational risks (Personal communication, 2020).

Furthermore, the important answer that I got from this interview session is how the bank deals with the impacts of use of ICT systems risks especially on services provided by bank. There are several actions that already perform by bank. Those actions are finding error or strange things in services provided by bank that can make failure and losses in bank, giving restriction regulation among employees to not sharing passwords which it is for safety purposes (Personal communication, 2020). The other approaches is doing on-time reporting to regulator bank in Indonesia such as IDIC, Indonesia Authority of Financial Services and Central Bank of Indonesia and tell them if there are any ICT systems problems happen in bank (Personal communication, 2020). Next, the solution for cybercrime issues, they are currently trying to develop bank security systems (Personal communication, 2020). And the last one, for the case of technical problem that has significant impact to the services provided by bank which is about error in recording customer account balances. Their IT specialist give pre-notification for all of the employees to do double checking before they proceed the systems (Personal communication, 2020).

Primary Data from Annual Report of Mandiri Bank Year 2019

It can be considered that the use of ICT system risks is included in the bank's operational risks. Based on the explanation in the risk management part of Mandiri Bank annual report, it is stated that operational risks are the risks that related with non-functioning of internal processes, systems failures, human errors or external events that will influence the bank's operational activities (Mandiri Bank, 2019). If a bank can manage operating risks effectively and consistently, the possibility of other risks can be reduced (Mandiri Bank, 2019). In order to implement effective operational risks management, Mandiri Bank developed a methodology of identifying, measuring, controlling, mitigating and monitoring of operational risks exposures utilized in each working unit (Mandiri Bank, 2019).

Furthermore, to avoid from some unfortunate issues, Mandiri Bank also uses operational risk management tools which are Risk and Control Self-Assessment (RCSA), Loss Event Database, Key Risk Indicator (KRI), Issue and Action Management (IAM), and capital management. The aims are to preventing and to controlling from any cases that make losses in Bank (Mandiri Bank, 2019).

Data Analyses

Based on this analysis, it can be considered that Mandiri Bank already has a risk management framework. The risk management team always evaluate risk management regularly at least once a month (Mandiri Bank, 2019).

After this understanding, I can answer the sub-questions to assist me to find the best answers for the primary question in this practical way. The first question is about "what are the factors that influence the risks of the use of ICT systems on banking

performance?". According to the interview session, the factors are lack of operating the ICT systems that commonly caused by human errors and technical issue of defect in software system that leads to unexpected result that can be obstacle for Mandiri Bank when their run the online banking services (Personal communication, 2020). Next, is about the second sub-question, which is about "what are the consequences of the use of ICT systems for the internal and external aspects on the company performance?". As said by the officers from Mandiri Bank (Personal communication, 2020), for the negative impact on internal communication that may face by bank is inefficiency of information exchange inside the organization. It can be among management and employees. Next, it is about the consequences to the external elements which are high level of cybercrime issues and the impact of reputation risks which customer may not satisfy with the performance of bank (Personal communication, 2020).

Furthermore, the last sub-question is "what are the impacts of failures in controlling ICT systems risks on the satisfaction of Mandiri Bank's customers?". The response to this question is leads to lack of loyalty of Mandiri Bank customers. If the bank can mitigate and solve this problem quickly, they would change their mind to stay loyal with Mandiri Bank (Personal communication, 2020).

Further, by comprehending all of those sub-questions, it can proceed to know the answers regarding the main question. The question is about "which risk measures may be advised to Mandiri Bank related to the performace of services provided by the bank that mitigate the impacts of the use of ICT systems risks?". From the annual report of Mandiri Bank (2019), they already have software to tackle the ICT risk related services issues which are Risk and Control Self-Assessment (RCSA), Loss Event Database, Key Risk Indicator (KRI), Issue and Action Management (IAM), and capital management. However, these measures are not strong enough to mitigate the impacts of the use of ICT systems risks. Because in practical situation the condition may not be the same as like they already expect.

In addition, about the risk of cybercrime issues, the customers from Mandiri Bank has a good recommendation to prevent from these issues which are develop the security systems by setting a strong password that combines letters, numbers and punctuation to login and sign up to their account (Personal communication, 2020), The bank should investigate and analyse this kind of recommendation in order to avoid from the cybercrime issue, improving the services served by Mandiri bank and also by hiring the consultant that capable of supervising the quality of risk management security related to banking services, it can be other way to develop their performance (Personal communication, 2020).

Theoretical Application

In this chapter which about the theoretical application, I want to combine and apply the sub conclusion in theoretical framework into practical data from Mandiri Bank. As already discussed before, by understanding the model which describes the integration between theories about ISO 31000:2018, it is determined as other alternatives for company to help them avoid the impact of the use of ICT systems risks. It can be considered that Mandiri Bank already has a risk management framework that supervised by Indonesian banking regulators. However, it can be more significant and better for the bank to implement the guidance of ISO 31000:2018 to their risk management framework.

The reason why I think it is fit for bank to use ISO 31000:2018 framework as alternative guidance is because ISO 31000:2018 has the guidance to mitigate the internal issues and external issues that faced by the bank. And some of research papers that I found also recommend the banking industry to use this generic guidance for the operation of risk management framework in banking company. In addition, regarding customer satisfaction as a prior aspect to improve the bank services, it is also play a vital role. I realized in a

practical situation, Mandiri Bank always prioritizing the customers' convenience as follow by the mission of the company which stated market needs fulfilment and gaining maximum benefit for the stakeholders (Mandiri Bank, 2019). Therefore, provide the best services by developing customer service efficiencies, well manage and maintain the services, especially in the field of technology it can create a good performance of Mandiri Bank.

Moreover to check whether this measurements already applied to Mandiri Bank or not, I asked the officer to see the result of this analysis and match it with some points that Mandiri Bank already done to measure their use of ICT system risks. Although, it recognized the reality in Mandiri Bank is not sufficient enough to ensure the reliability and validity of data.

It can be noticed in real situation there are two measurements that does not apply yet by Mandiri Bank which about applying understanding of ISO 31000:2018 guidance with Mandiri Bank operational risk framework and build safety programme to mitigate the technical problem regarding password safety by setting strong password that combines uppercase letters, lowercase letters, numbers and punctuation to login and sign up to customers and employees account (Personal communication, 2020). The measurement that focusing on technical issues should be investigated more by Mandiri Bank because it can be considered that technical also play a role in this use of ICT systems risks. For the other measurements, the Mandiri Bank officer said, this measurements already implement and develop by the company. This is means that they already used and managed this measurements to help them increase performance and reduce the risk of the use of ICT Systems (Personal communication, 2020).

Therefore, this fact makes me realized that they already do mitigation of the impacts of the use of ICT systems risks well, despite of the fact that two of those measurements are not implement yet by the company. Further, Mandiri Bank already perform well also recognized by knowing that they already get good satisfaction from their customers of how well they maintain their online banking services and also of good relationship with their customers (Personal communication, 2020).

CONCLUSION

In the end, It concluded that Mandiri Bank already performs high performance by maintain their risk of technology well and engage excellent customer services. However, there might be a bit of issue that face by Mandiri Bank itself while managing the risk in a practical situation. Also, it makes me realized that this bank already develops their better performance in managing the uses of ICT system risks because they have reasonable satisfaction from their customers who always use their online banking services. They already do their best to solve the ICT problems quickly.

Nevertheless, in order to make the performance superlative, my advice is that the bank should take into consideration to implement those two measurements. The measurements are applying the guidance of ISO 31000:2018 to their operational risk framework and also making security programme regarding password to sign up or log in their online banking account by setting a strong password that merges uppercase letters, lowercase letters, numbers and punctuation. This advice hopefully will value up to their accomplishment.

POLICY

Next, it is about policy that divided into three parts which are recommendation, limitations after conducting this research and also reflection of the choice I made. As already mentioned before, the aim why I decided to do this research is because I want to give some advices to Mandiri Bank regarding the problem that caused by the impact of

ICT systems risks. And furthermore, It noticed that the effects of this risks can cause damage if the bank cannot solve the issues immediately. But according to the fact in the data collection and data analyses, overall judgement so far I think they already do their risk management well especially in the terms of the use of ICT system risks which included on their operational risk management part. Besides, by writing this paper hopefully the readers of this paper can gain more informations about the study of the risk management to the impacts of the use of ICT systems especially in banking sector.

Recommendations

Besides, suggestions to Mandiri Bank based on the findings in this research, highlight the importance of applying the measurement of ISO 31000:2018 element to their operational risk model. For the technical recommendation that suggested by the customer regarding the protection of data, Mandiri Bank must do a research about it because I cannot do a further research regarding technical risks, although it is play a role in this study. Besides, they should always listen to suggestions that come from their internal and external stakeholders who has the same goals to help Mandiri Bank become more profitable and help them avoid from the impacts of the use of ICT systems risks. Further, the other recommendations that I think it is good for Mandiri Bank is keep on engaging the relationship with customers proactively by increasing the performance of their customer services. The bank also can make some back-up plans in order to mitigate the impacts of the use of ICT systems risks.

Limitations

Further, it is about the limitations after I did this study. I realized the result and the data interpretation of this study is not 100% sure to be noticed as valid and reliable. Because, there is an uncertainty about the real interpretation of data that I got while did this research. Further, it is caused by the lack of time and place while conducting this thesis, especially when organized interview session with staff of Mandiri Bank and also with customers of bank in which I am only asked to one staff in Mandiri Bank, although there are many employees. And also with customers that I am only interviewed four customers out of almost 85 millions customers that capable to bring different experiences and also different thoughts related to the contents of this study.

Reflection

In this reflection part, it is focused on the decision that I made in this research. First, it is about the choice of a company which is Mandiri Bank. The reason why I want to help Mandiri Bank mitigate problems about the impacts of the uses of ICT systems is because I realized that this conventional bank is being one of the biggest banking company in Indonesia. In which I hope I can find an exciting topic discussion that suitable with the theme of my research which is about risk management. Therefore, I found the problems that recently happened that makes me curious and excited to know of how the bank solved the problems regarding the impacts of the use of ICT systems risks related to the performance of services provided by the bank that nowadays it is pervasive to discussed in the banking world.

Further, the effect after I chose this banking company makes me understand the problem faced by the bank itself. Furthermore, it is also informing me to better know about what is the real situation faced in the bank and also how they solved their problem. Besides, for the findings of the data about Mandiri Bank seems to be easy to find. It considered by the transparency of data in their annual report that published on their website. Moreover, most of my friends are being the customers of Mandiri Bank. It makes me easy to collecting data of Mandiri Bank customers. In addition, regarding my

compromise to decide the sub-questions to assist me answers the main question is absolutely on the right path. Because the sub-questions are integrated each other and help me analyses the risks of the use of ICT systems deeply by comprehending to the factor influencing the use of ICT risks, the consequences on internal and external aspects and also the impact of failures on customer satisfaction.

Furthermore, about the finding of literature in part of the theoretical framework that guides me to formulate the answers for the main question and also for the sub-questions is quite convenient to be found in, some of theories that published in journals were difficult to find in English written. And it is much easier to find the articles regarding the topic that published in websites rather than in type of journals. Besides, the decision of choosing customers as the main stakeholders in this research is correct, because instantly, I noticed that the use of ICT systems risks are affecting the customers' aspects than other stakeholders. The reason is that the satisfaction of customers is essential to measure the performance of online banking services. Therefore, I can quickly formulate the answer to determine whether the bank already perform their mitigation of the use of ICT risks well or not.

My decisions about conducting interview session in this study is really necessary in order to know the real performance that served by Mandiri Bank. The reason is, if I only focus on the literature review, I cannot expect the real problem faced by the bank. Unfortunately, due to the lack of time and place, I am only interviewed one staff member of Mandiri Bank that has knowledge in bank risk management and also four customers of Mandiri Bank. The reliability of data that I got is not strong enough to be determined as appropriate data in the real situation which is not enough to ensure the data accuracy reflect to the real situation that faced by the bank. Because there are lot of workers that works in risk management and internal audit division that may have different opinions regarding of how Mandiri Bank compete with the use of ICT risks issues. And also there are millions of Mandiri Bank customers that has different thoughts and experiences regarding this topic. My suggestion for the future research, it is should contain more employees to be interviewed and it would be better if I can interview the manager or head of risk management committee to get the reliable data. And also it would be better if the duration of research is extended. Next, increasing the amount of interviewees that be the subjects of knowing the opinions and experiences from the customers also necessary. Furthermore, for the further research, it can also be great if I can interview the customers from different Mandiri Bank branches around Indonesia although it will takes more efforts to do it.

Besides, for the technical risks, as I already explained before, the bank should investigate this risks well. Especially for the IT division that capable in the field of technology. Because, as I realized that in this research it is not specifically checked. It caused by knowing that I am not capable enough in the field of technology. Last, further investigation should be done to know whether the bank already implement the procedure of risk management well or not. Because, I am not quite sure whether the data that showed in the result is reliable enough to be trusted. Because, I do not know how substantial is the data whether their employees are really doing the right procedure that explained in their annual report or not. Overall, after conducting this research, it can be realized that I am satisfied with the study that I have done, although there were some efforts and challenges to finish this research.

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