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Analysis of Bank Performance with Information Technology Perspective

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ABSTRACT. XYZ Bank provides several digital banking services for various segments, including the D-Bank mobile banking application, XYZ Online Banking, D-Card Mobile for credit card management, D-Financial for SMEs, D-BisMart. for the supply chain, as well as XYZ Trade Connect and Cash Connect for various customer businesses. It is known that 1) IT risk on the D-Bank application is still high. This can be seen from the number of risk events for IT system failure in its application. 2) The handling of IT problems is still not optimal, this can be seen from customer complaints that often reappear in the D-Bank application, such as failed logins, failed transactions and slow performance. 3) Lack of handling of IT Security services. This can be seen from the number of cyber-attacks that have successfully entered the D-Bank application. The final result shows that there are several domains and principles that need to be considered by management in order to improve the performance of information technology .

Keyword: bank, information technology, performance

INTRODUCTION

In today's digital era, the internet has grown into a basic human need, in addition to shelter, food, and clothing. Internet growth in Indonesia has increased enormously. This is also a necessity in the industrial world, especially the banking industry, where there is an increase of the internet usage for banking transactions by up to 270% (Surjandy et al., 2020).

The use of information technology in the industry has been a basic requirement to win the competition. Fulfilling the need for information systems for all organizations has led to the rapid development of information systems. The application of Information Technology (IT) in a business process is one of the reasons for a boost in company performance to join in a competition. Besides, the development of information technology has a very large impact on various aspects of life, starting from government, banking, administration, economy, education, and others. Advances in information technology (IT) have become an inseparable need for almost all corporate organizations, both government and private, which are instrumental in providing support for increasing efficiency and effectiveness of performance and growth (De Haes et al., 2020).

IT implementation by the company is successful when it is aligned properly and supports the company's vision, missions, and business goals. Therefore, it is necessary to measure the extent to which information technology governance has been running, so that the existence of information technology can multiply the business values of the company and the company can compete in the business world (ISACA, 2012a).

One type of company that uses information technology in the banking sector that is currently being discussed is Neobank. Neobank operates completely digital without the presence of a branch office. Neobank has also started from non-bank companies, which is from chat technology application companies such as KakaoBank. KakaoTalk in Korea, WeBank which was born from WeChat in China, YouTrip in Singapore, Judobank and Volt in Australia, Atom and Monzo in the UK, Jibun Bank in Japan, and Juno and Axos in the US (NeobankMarket.com, 2021). These technologies are what the millennial generation utilize for their daily activities (Rasyid, 2020).

The Neobank or other digital banks are ready to compete with the business and market for technology-based financial companies (fintech). Neobank offers various bank financial services, from payments to loaning and borrowing, but everything is done digitally without having to go to a physical branch office. The utilization of Information Technology (IT) in a company, especially Neobank, requires large costs and has a high risk of failure. At the same time, IT applications can also provide benefits by providing opportunities to increase the productivity of ongoing businesses. IT management at Neobank must be adjusted to the problems and needs of the company, including the delivery and support of IT services to run optimally.

The use of information technology at Neobank is to support business strategy in achieving the goals as stated in the vision and mission of Neobank itself, but this does not guarantee that the company has implemented the information technology governance properly. How much success supported by information technology is still difficult to identify, calculate, and measure.

Information System must be balanced with proper regulation and management. Information technology has the potential to support both existing business strategies and new ones that will be formed. IT does not only play a role in successful daily operations, but also as an important facilitator for increasing the company's competitive values (De Haes, Van Grembergen and

Debreceny, 2013). The information system in Neobank can minimize and prevent losses that may occur. The losses itself can be in the form of inaccurate information caused by wrong data processing that cause wrong decision making and can be used as a measure how much alignment is among the business processes, applications, and business strategies.

Risk is an unwanted event, factor or threat that has negative consequences for an organization, and can affect the success of the organization in achieving the desired results (D. Gantz, 2012; Triana and Pangabean, 2021). The use of IT in the banks cannot be separated from various problems or risks. Risk for IT utilization can certainly impede the activity of business activities of an institution or organization. Risks to the use of IT in organizations, can endanger the confidentiality, integrity and availability of information within an organization (Lopes and Oliveira, 2014). So that it can affect the performance of the use of IT in an organization, which in turn can hinder the organization in achieving a goal. Therefore, any Management of organization needs to have a way to solve problems and control the various risks that arise.

The Internal Control System (ICS) is a method that can be used to overcome various problems or minimize risks to the organization (Spira and Page, 2003). ICS has an important role for the organization, because in addition to dealing with problems and minimizing risks in the organization, a good ICS performance can also help in achieving organizational goals (Badara, 2013). There are several frameworks that can be used in relation to internal control systems such as SAC Control and Audit System, SAS 55 & SAS 78, Article 404 of The Sarbanes - Oxley Act (SOX), CoBIT and COSO Internal Control Framework (Mukhina, 2015)

METHODS

This is a case study research conducted at Bank XYZ Indonesia Tbk (BDI) using mix-method approach which consists of several stages. In this study, the elaboration of mixed methods uses qualitative and quantitative approaches. The adoption of these two methods serves to create new insights into the real-world conditions of the research. The data collection technique in this study was carried out by using the judgment sampling method. Judgment sampling method is a sampling technique which already has certain characteristics and has a bearing on the object of research (Sekaran, 2011). Respondents are selected as experts which are people who are involved and have experience in the system that is the object of research. There are several processes carried out to collect research data including:

Questionnaire, the questionnaire is a data collection technique by asking written questions through a questionnaire to the consumers who use the system as the research respondents. The questionnaire method can be applied in two ways: 1) Direct questionnaire, where the researcher directly faces the respondents asking a list of questions; 2) Indirect questionnaire, which means the researcher writes his list of questions to be given to the respondents to be filled in and returned at a predetermined time (Arikunto, 2015).

The questionnaire is used to analyze COSO. The questions listed used in this questionnaire are based on the principles of COSO Internal Control (COSO, 2013). In this questionnaire, the respondents will be requested to provide an assessment of whether the statements submitted in the questionnaire related to the principles of COSO Internal Control have been applied or are available at Bank BDI. The literature studies are in the form of theoretical data related to the theme to be studied, including textbooks, theses, and journals.

The data are collected through observation and recording directly on the field regarding the occurring processes. The observation is done to analyze COBIT 5 using an observation sheet based on COBIT 5. It aims to collect information about the research object. The researcher conducts interviews with authorized parties and deals with the subject matter being studied.
Soft System Methodology (SSM) was first developed by Peter Checkland (1995) and is used as a method in learning systems with certain features and high intervention by humans. SSM is an action research methodology aimed at exploring, asking and learning about unstructured problem situations (soft systems) in order to solve them. SSM is centered on the decomposition, explanation, and synthesis of a problem, while according to William (2005), this system is a tool that can be used for modeling, learning, and development (Zarei et al. 2014). This research focuses on describing the model as a bridge between the two methods used.

RESULT AND DISCUSSION

Validity is used as a measure of whether a study is of high quality or not. A research is considered objective if anyone with the same working procedure produces the same research conclusion. Basically, validity in research shows the extent to which the level of interpretation and concepts obtained have an appropriate meaning between the researcher and the participants. In contrast to quantitative research, in qualitative research truth is not measured by frequency and variance, but is based on finding things that are essential and intrinsically true.
Based on the results of discussions with IT and Business Lectures at Private Universities, it can be summarized as follows: 1) The research framework described already provides a good view and flow of the process. This is known from the appropriate stages in an ongoing process. In the case of research, it must be started from the relevant observation, then analyzed from the data collected. 2) The description of the condition of the infrastructure is able to provide important information for any party who wants to know the condition of the infrastructure and the system environment briefly. Feedback, it is necessary to provide additional complete information on the D-Bank information system ecosystem, for example, but not limited to, types of data/information such as those related to Customer PII data, other confidential information such as passwords, PINs, are they stored, forwarded, processed? disposal (if any), on the process and data flow to improve the knowledge picture more comprehensively. 3) The data obtained and analyzed using COBIT and COSO are able to provide a comprehensive picture of the situation scientifically and systematically through the results of maturity levels and spiderwebs. 4) The combined matrix and/or mapping between COBIT and COSO reinforces that there are linkages which becomes the main of the research and need to be prioritized to answer research questions. Feedback, from the mapping, it should provide clearer and deeper recommendations on which domains of the two frameworks still need to be improved.
Based on the results of discussions with IT professionals and practitioners at Global Bank, his opinion can be summarized as follows: 1) The research framework can provide a good overview, especially for the flow of the research process. This is very good considering the accuracy of the data management obtained. However, it is useful to provide additional information related to the educational background and experience of the respondent's experts that support these results. 2) The description of the company's Infrastructure and System Environment is basically correct. There are some notes that need to be added related to the updating process of the system from time to time this will strengthen the system development in particular. 3) COBIT has better

coverage become an internal control system standard than other standards, moreover it is ranked according to ISO's assessment of the capabilities of each process in COBIT. COBIT has a wider and more detailed spectrum of IT processes. Meanwhile, COSO has shallow details related to technical and operational areas, this is because COSO is more based on high-level management principles. The adoption of attribute assessment at COSO using an ISO rating is a something new and can be practically, including in banking. Some feedback, perhaps in the future, the measurement of 17 principles in COSO can be developed by adopting the capability level process assessment process in COBIT. 4) The combination of COSO and COBIT provides added value, especially on the attributes and principles that need to be managed. Experts provide the view that research has provided an overview of the effective application of principles and recommended improvements to help the IT cycle run efficiently and effectively. In future research, the need to develop a domain needs to be explained or criteria made. This is intended so that there is objectivity in the achievements of each section that is tested or reviewed, so that it can improve both in providing recommendations for each affected stakeholder.

This elaboration provides an overview of the managerial implications. Where it is a recommendation obtained from the results of the analysis. The basis for the formation of managerial implications takes parts that are considered still not optimal. The approach used for implication is COBIT 7 enablers, CATWOE, 5 E and system design. COBIT and COSO are said to be comprehensive approaches to assist Bank in discovering, creating and delivering optimal value from information technology and governance perspective. In other words, both of them are to improve the enablers' function that exist in the Bank. COBIT 5 itself has 7 types of enablers categories which are the factors that affect personal and team work in bankwide IT governance. Therefore, the real implications of the results of the assessment of the two frameworks are based on the seven (7) COBIT enablers functions, as follows: 1) Principles, Policies and Framework. The implications of domains and principles that are still less than optimal, require Bank to established policies that regulate related procedures, e.g., for handling raise known incidents/issues, communication procedures with the LoB team, investigative and forensic procedures related to IT/security incidents. 2) Processes. The domain that is still not fully, shows that there are still processes that need to be improved to get a better overall output achievement. Some of these processes include, how to classify and prioritize requests and incidents, the process of conducting root cause investigations and diagnostics with existing best practices, the process of managing problems/errors that often occur and awareness of each team towards managing Bank information security services. 3) Banking Organization Chart. The domains that are still not optimal can provide justification that the current IT organizational structure still needs to be improved. As for answering these domains, this enabler function is closely related to the enabler function that handles human resources, experiences, skills and competencies. The addition of IT Enterprise Architecture as a new division is expected to answer the problems that often occur today. Further, to support the acceleration of the process of digitizing Bank products, Bank Management and IT should establish IT Mobility and IoT divisions that are in charge of architecting cloud-based applications, including cloud computing security in it. Additional recommendations to the IT org. 4) Bank Culture, Ethics and Behaviors. The Bank currently has the motto BISA value as the culture and basis for the behavior of its employees. BISA stands for Berkolaborasi (Collaborating), Integrity, Sigap Melayani (Agile to Serve) and Adaptive. This culture should be the basis of behavior for the IT team in dealing with problems that often occur in IT applications and systems, but in practice there are still silos between internal IT teams, as well as the LoB team.

To answer the deficiencies in the DSS02, DSS03, DSS04 and DSS05 domains, the "CEPAT" value can be added to the "BISA" value to get more optimal results. The proposed values consist of Communicate, Empathy, Professional, Achieve, and Totality. The description is as follows:
Communicate: Both the IT team and the Business team in collaborating always prioritize more intense communication to be able to resolve problems that may recur or will arise or try to prevent them from happening.
Empathy: The IT team must also have concern for the potential losses that will be experienced by the Bank represented by the LoB so that they do not only think about the technical side.
Professional: The IT team is expected to work more professionally when dealing with situations and problems that often occur and are handled repeatedly.
Achieve: The expected results are the best efforts of both teams in optimizing each other's performance capabilities.
Totality: With the spirit of togetherness in working to resolve problems that may arise, both teams can put aside conflicts of interest that will have a positive impact on the development of the Bank's application/system, re. D-Bank.
Proposed: Centralized Knowledge Database Management System which contains, among others, but is not limited to, information on IT incidents that often occur and their solutions, the main library for new joiners in IT organizations so that there are standard operating procedures in solving problems when incidents related to IT.
Bank services need to be further improved, especially to catch up with digital transformation from competitors who are not only from the banking industry but also from fintech. The development that can be done is by accelerating open banking technology based on smart APIs and collaborating with digital start-ups in the financial sector. However, it also continues to prioritize the prudential principles of the Bank, especially those relating to confidential Customer Data.
To answer the lack of domains related to the capabilities of IT personnel, such as the COBIT domains DSS02.4, DSS02.5, DSS03.4, mostly in DSS05 and COSO Principle 3, it is necessary to increase the competence and expertise of the Bank's IT personnel, not only in dealing with problems which often occurs, but also in the designing, maintaining of the applications and other IT systems. Therefore, the Human Capital Bank needs to align IT recruitment needs by referring to national ICT competency standards, e.g., the National Occupational Map for the ICT area, the national cyber security occupational map, and the ICT SKKNI.
Basically priority is needed to make an implementation flow work well. In this study, priorities are obtained based on the level of importance in overcoming existing problems. Priority order in future management, etc. 1) bank culture, ethics and behavior, this was chosen because management only needs to emphasize the existing ecosystem besides that it is aimed at achieving a quick win. 2) Principles, policies and framework, this is chosen because in order to run better, it is necessary to adjust the rules. 3) Improvement of human resource capability and competency improvement as the basis for organizations that think about future sustainability, 4) Process effectiveness and efficiency, 5) Banking organization efficiency, 6) Accelerate the flow of information and 7) Improve and improve banking services.
Analysis of the system design is used as the bridge of the COBIT 5 and COSO analysis information. Use of the system design to provide a comprehensive picture by looking at each part that affects the D-Bank system. The information summarized is described as follows:

Table 1. CATWOE of the D-Bank

Element	Identification	Result
Customer	Who benefits	Employees, Vendors, Government and Customers
Actor	Who is involved in the process?	Board of Directors (BOD), employees, customers
Transformation	What changes do you want occur in the system?	Management of the technology system from D-Bank must be able to be integrated in various work units and all parts have proper competence.
Worldview	Big picture of the expected changes?	Fast service easy and safe for all customers Synergy between all stakeholders within the company, as well as improving
Owner	The broad impact of the challenge?	D-Bank products
Environment	Who is the owner of the issue being researched?	Technology, Value, Communication, Leadership, external trust, policy.

The development process of D-Bank is used as the basis for improving Bank XYZ's performance and increasing the synergy of every stakeholder in the banking industry to be ready to provide the best response in neo bank or open banking transformation readiness. In this case, it is known that a CATWOE description has been obtained which needs to be given a measure in order to obtain qualitative accuracy. The depiction of the size using the 5E approach is presented in Table 2.

Table 2. D-Bank Management Performance Measurement

Element	Information
Efficacy	The implementation of D-Bank management that is fast, easy and comfortable
Efficiency	The change process takes place with optimal financial resources, time and manpower
Effectiveness	The achievement of the performance index set by management in the overall development process of D-Bank
Elegance	The achievement of a change resistance index for XYZ employees
Ethicality	The management process can be morally and ethically accepted by stakeholders.

Based on Table 2 it is found that there are five measures in achieving D-Bank management. The process of change must be in accordance with the optimal needs for financial resources, time and manpower. The achievement of a sustainable performance appraisal achievement index. The achievement of a change resistance index for Bank XYZ employees. The change process can be morally and ethically accepted by stakeholders.

The model is built based on the results of the COBIT and COSO analysis and matrices. Where the formation uses a qualitative basis as well as advice from experts to optimize performance. In the end, the model is expected to be a general reference for formulating strategies. Descriptions are needed to provide information related to the overview of the D-Bank ecosystem as well as a description of activities based on information from COBIT analysis and COSO analysis. In Figure

1 it is known that the system will run if it is started from a leader who is able to provide appropriate direction to each part. This indicates that the leader knows and maintains to achieve the company's vision and mission. The IT team is required to be able to implement the functions and evaluations of the COBIT and COSO assessments, so that the system is able to run properly and sustainably. The business team (LoBs) is required to increase the number of users, it is intended that the system can run when customers use it for their needs. The two teams must work together and integrate in order to accelerate the achievement of goals. Consumers are expected to provide an assessment in order to improve performance.

In this case, Figure 1 provides an important concept in particular on the combination of attributes and principles of COBIT and COSO that need to be better managed. In addition, the relationship between stakeholders is used as the basis for improving each part. The validation process follows the face validity approach. Interviews were conducted with experts in their fields, re. from an academic and a practitioner. The two experts provide the view that the model described can be used as an approach to the two relevant stakeholders, in this case IT and LoBs in managing an application that requires speed in providing services to customers quickly and accurately, including if there are issues and/or incident on the application. One input from academic experts is to add a synergistic process in the model in addition to integration to improve some domains in COBIT DSS02 and DSS03 and COSO Principle No 5. Accountability of employees for internal control responsibilities. By synergizing with each other between the IT Team and LoBs, any incident that has a high level of risk can be immediately mitigated. Furthermore, the two experts gave an opinion that the picture can be a generic model for the Governance & Control Model between the IT Team and the Business Team.

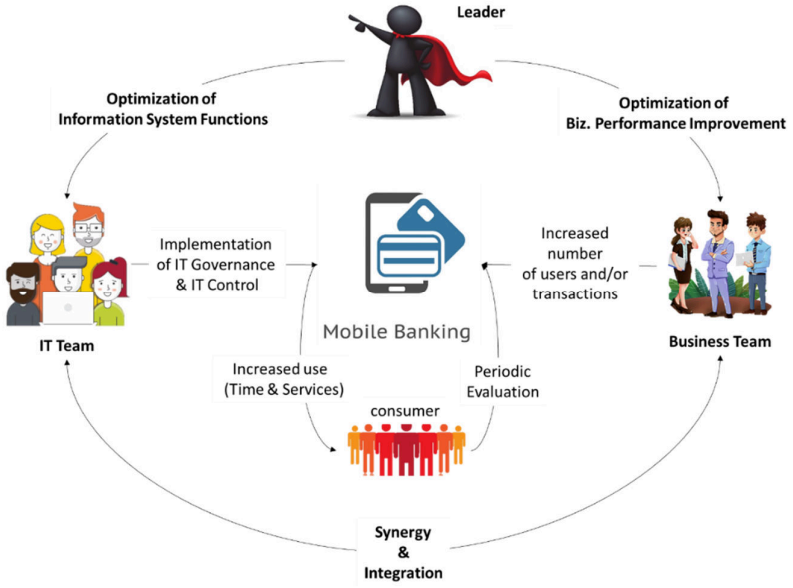

Figure 1. D-Bank Governance & Control Model Improvement

CONCLUSION

The research found that in developing D-Bank, Bank XYZ has a clear Architecture and Data Flow Diagram and is able to provide information on future plans. This shows that management has a clear understanding of the product to be developed. In addition, it is known that the infrastructure

description can provide a description of the development process that will be carried out. The two analyzes are used as the basis for making CATWOE and performance measurement. The relationship and activity model is a visualization of activities that need to be considered by management in order to improve and optimize the performance, governance, and control of D-Bank.

For the Bank's Staff, it is necessary to evaluate the domains that are considered important. Other than that, the upgrade will be smooth as expected.In addition, in this case it is necessary to adjust the repair and improvement of IT infrastructure, management makes a rule so that integration and synergy can be optimal. For the public, it can be used as a basis for conducting audit processes and developing information systems at the Bank. In addition, the development of the concept of governance and control modeling can be used as a reference in aligning the implementation of digital transformation carried out by Business and IT, including how to evaluate every incident that often arises so as to improve services to Bank customers.

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