

# AUDIT INFORMATION SYSTEMS CORE BANKING SYSTEM USING ITIL V.3 CASE STUDY ON BTPN SHARIA BANK

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## ABSTRACT

This research on the application of information systems audit, namely Corebanking System, is to measure how to handle problems that occur and how long the problems that can be solved in accordance with the ITIL V3 framework at the sub-domain of Service Desk, Incident Management and Problem Management included in the domain of Service Operation. The role of Information Technology Service Management (ITSM) in improving a company's, in this case is Bank BTPN Syariah's, ability to provide the best services that suit the needs of the customer (customer satisfaction) and in line with the interests of the company is becoming increasingly important. IT Infrastructure Library (ITIL) provides an integrated device of best practices to serve the management of Information Technology. ITIL is a set of concepts and techniques for managing the infrastructure, development, and operation of information technology (IT). ITIL V3 using IT approach "Service Life Cycle" is how to improve what they have to ensure adjustment to the new standards that provide adjustments to the process of upgrading hardware and software. The results of the audit assessment (self-assessment) contained the findings for each sub domain procedures are still not in accordance with the standards of best practice ITIL V.3. From the sub domain of Management Service Desk, the level of Intent, Process Capability and Customer Interface need some upgrading/improvement. In the Problem Management sub domain, the level needs to have upgrading/improvement are the External Integration and Customer Interface level. While the upgrading/improvement at the Incident Management sub domain is at the level of External Integration and Customer Interface. For the reason, the company must fix the process steps which are still failing, especially those oriented towards customers.

**Keywords:** *Audit of Information Systems, IT Infrastructure Library (ITIL), Core Banking System, Service Life Cycle*

## 1. INTRODUCTION

The role of Information Technology (IT) is becoming increasingly important because we have entered the era of information (information age). Information technology is used for processing, obtaining, compiling, storing and manipulating data in various ways to produce quality information, which is relevant, accurate and timely used for personal, business, and government needs. In addition, it is a strategic information used for decision making. In this case, the technology uses a computer system to process data and the network system to connect one computer to another as needed. Telecommunications technology is used so that data can be distributed and accessed globally.

The development of information technology has implicated directly to the business world which

always moves to achieve a competitive advantage. A very competitive and rapidly changing business industry has made organizations increasingly aware of the potential benefits of the technology, particularly information technology (IT). Many benefits can be taken if the organizations are able to implement information technology in their business processes. Time reduction in service delivery, quality improvement, functional and ease of use as well as continuous improvement done with minimum cost are several advantages which eventually help the organizations achieve their vision and mission. The amount of benefits the organizations get has encouraged the increased expectations on the role of IT. IT is expected to no longer be a driving tool but to become an integrated part in the implementation of the organizations business strategy.

The role of Information Technology Service Management (ITSM) in improving a company's ability to provide the best services that suit the needs of the customer (customer satisfaction) and in line with the interests of the company is becoming increasingly important. However, the application of IT which is not business oriented, non-customer focus, not centralized, and fragmented, the old paradigm of the application of IT, will not only make it difficult for the company to satisfy its customers, but is also inefficient, ineffective, and costly.

IT Infrastructure Library (ITIL) provides an integrated device of best practices to serve the management of Information Technology. ITIL is a series of concepts in engineering and infrastructure management, development, and operation of information technology (IT). ITIL keeps growing through a variety of processes. In 2005, it was revised by ITMSF (Information Technology Service Management Forum). ITIL Version 3 (ITIL V.3) which is the revision of ITIL and the ITIL version 2 was released in 2007. Amongst IT community, ITIL V.3 is the most popular one of the all versions. It uses IT approach "Service Life Cycle" which improves what they have to ensure its adjustment to the new standards that provide adjustments to the process of upgrading hardware and software. ITIL V.3 is not a standard but it is only a frame containing 8 series of best practices regarding ITSM and distribution of high-quality IT services. There has been a growing awareness that information is a strategic resource that must be managed by an organization. The quality of IT services will be provided to business organizations through the collection, analysis, production and distribution of the information itself. Organizations need to understand and recognize that IT Services is a very strategic and important asset of the organization. Most organizations underestimate some important aspects in IT services. Therefore, organizations must invest adequate level of resources into the delivery and support of IT service management. A good service management must be established to ensure that IT services are in accordance with business needs and actively support business needs.

In banking, the development of information technology, especially the Core Banking System, has become one of the strategic supporters of the business bank itself. That is without Core Banking System, the main activities of the Bank will not work, and it will have a direct impact on the organization losses both materially and morally.

Bank Tabungan Pensiunan Nasional Syariah (BTPN Syariah) is one of Islamic syaria banks in Indonesia using a web-based Core Banking System of the Temenos solution, known as T24, dedicated to Islamic syaria banking. The main benefits of the implementation of the core banking system is to help of BTPN Syariah focus on business growth, risk management, and cost control as well as meet all the requirements of Bank Indonesia as the central bank and the Financial Services Authority (FSA). BTPN Syariah itself is a new Islamic syaria business units run by BTPN. Starting from the acquisition and conversion of Bank Purba Danarta, along with the spin-off of its sharia banking business unit, BTPN Syariah aims at serving customers who want to follow Islamic syaria which is increasing in Indonesia.

The performance level of a Core Banking System is very important in supporting the bank's day-to-day operations. Thus we need further research on whether the current level of performance of the T24 Core Banking System at BTPN Syariah has been optimized in accordance with the vision, mission and goals of the organization. Optimization services can be achieved by referring to the framework of ITIL version 3. ITIL V.3 specifically conduct an assessment on the functions, operations, and organizational attributes needed in order to fully optimize operational governance, in this case the approach used in sub domain Service Desk, Incident Management and Problem Management are included in Service Operation domain.

## 2. BASIS THEORY

In this study, the authors conducted a review study using books and journals related to the selected theme.

### 2.1 Audit

Arens and Loebbecke in Joseph (2001, p.1) suggests: "Audit is a process of gathering evidence and operation of information that can be measured on an economic entity which is carried out by someone who is competent and independent to be able to determine and report the suitability of the information is the criteria specified."

### 2.2 Information Systems

Information system according to (Nash, 1995, P8) in La Midjan and Azhar Susanto (2001, p.30) is "the information system is a combination of human, facilities or means of technology, media, and control procedures which intends to organize essential communication networks, processing of certain transactions and routine, assist management

and internal and external users and provides the basis for making the right decision ."

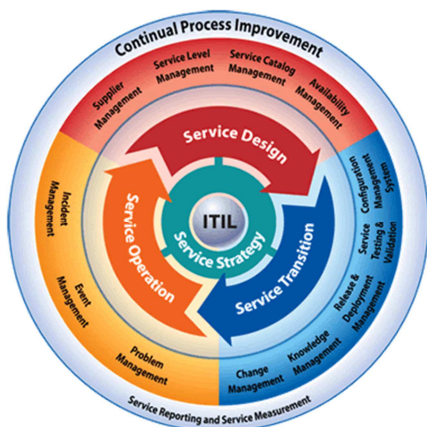
### 2.3 Information System Audit

According Gondodiyoto (2003, p.151), "Information Systems Audit is an evaluation to determine how the level of compatibility between information systems applications with established procedures and determine whether an information system has been designed and implemented effectively, efficiently, and economically, has asset security mechanisms are adequate, and ensure adequate data integrity ."

### 2.4 Information Technology Infrastructure Library (ITIL)

According to Addy (2007, p38), the Information Technology Infrastructure Library (ITIL) is a set of guidelines developed by the United Kingdom's Office of Government Commerce (OGC). This guideline, which describes the integrated processes, provides a best practice approach to manage IT services.

The fifth part of ITIL is usually referred to part of a cycle. It is also known as the ITIL Service Cycle. Briefly, each part is described in the following picture:



Source :  
[http://hci-ital.com/options\\_assessment.html](http://hci-ital.com/options_assessment.html)

Figure 1. Itil Service Cycle

### 2.5 Core Banking System (CBS)

Applications Core Banking System (CBS) is the core application that becomes the heart of the banking system. It is used to process loan, savings or checking accounts (saving), deposits (time deposits), Customer Information File (CIF), up to a

wide range of other banking services. Compared to other industries, the application of Core Banking System is similar to Billing System of telecommunication company, or the ERP of manufacturing company. However, There is a bit different to the two earlier industries, Core Banking System of banking industry is extremely diverse ranging from inhouse development, local vendors to works conducted by the foreign vendor (source: [www.gartner.com](http://www.gartner.com)).

### 2.6 Review of Previous Studies

#### 2.6.1 Devi Fitriana and Yudho Giri Suchayo (2012).

In a journal entitled "Audit of Information Systems/Information Technology with the COBIT Framework for the Evaluation of Information Technology Management at the University XYZ," using the COBIT framework-ISACA and 210 detailed control objectives, they conduct a mapping to the phase of IT audit and its control which were then applied to an organization, namely the University of XYZ to see the performance of the existing IT.

#### 2.6.2 Ria Kurniawati and Augie David Manuputty (2012).

In their journal entitled "An Analysis of Information Technology Services Quality Using Information Technology Infrastructure Library V.3 (ITIL V.3) Domain Service Transition Framework (A Case Study on the Customer Service of Telkom Salatiga Area)", they examine the role and quality of information service transition ITIL V.3. ITIL, or Information Technology Infrastructure Library, is a set of concepts and techniques for the development of the management and operation of information technology (IT).

#### 2.6.3 Diana Trivena Yulianti, Dian Anggraini (2012).

In their writing entitled "An Analysis of the IT management of PT. X Using V.3 ITIL, Service Operation," They conduct their analysis in a system, expected to be one of the alternative data processing and delivery of information which will save time, effort, and cost of PT X.

## 2.7 Organization Overview

BTPN Syariah is a 12<sup>th</sup> Islamic syariah bank in Indonesia, which has the determination to develop the millions of people of Indonesia in order to have a better life. Through its products and activities, BTPN Syariah continues to encourage and involve all stakeholders to jointly provide an ease access to the people in using or utilizing the bank's products and services (financial inclusion), provide information and sustainable and scalable empowerment activities.

BTPN Syariah was born from a combination of the two powers, namely, PT. Bank Sahabat Purbadanarta and BTPN's Syaria Business Unit. Bank Sahabat Purbadanarta, established since March 1991 in Semarang, is a non-foreign bank which 70% of the shares acquired by PT. Bank Tabungan Pensiunan Nasional (National Pesions Saving Bank), Tbk (BTPN), on January 20<sup>th</sup>, 2014. It is then converted into BTPN Syariah based on the Decree of the Financial Services Authority (FSA) on 22 May 2014. BTPN's Syaria Business Unit focusing on serving and empowering underprivileged families throughout Indonesia is one of the business segments in PT. Bank Tabungan Nasional (National Savings Bank), Tbk since March 2008, which was then spined off and merged into BTPN Syariah in June 2014.

## 2.8 Framework

This study includes input, process and output. Visually, the framework can be seen in Figure 2.

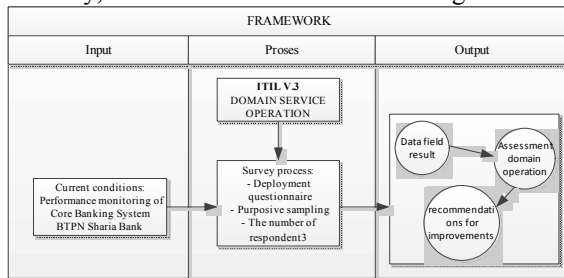


Figure 2. Research Framework

## 3. RESEARCH METHODOLOGY

Methods of research conducted by the author is a combination of survey and experimental research methods by distributing questionnaires from respondents. The study design is one through two stages, namely:

- A. The first stage is explanatory research with the aim at providing insight and comprehension of the object to examine. The method used at this stage is to analyze secondary data, i.e. relevant

previous research studies. Secondary data were also obtained from books and the internet related to ITSM and ITIL.

- B. The second stage is the single cross-sectional descriptive study (a type of study design in which the collection of information from the samples is only done once) by means of field surveys. This study uses primary data that is collected by direct survey using questionnaires filled by the respondents themselves.

## 3.1 Research Steps

The discussion of steps covering all the activities of auditors from the beginning of the event until the end of the audit results obtained. Figure 3.1 is a plot of a series of information systems audit research activities.

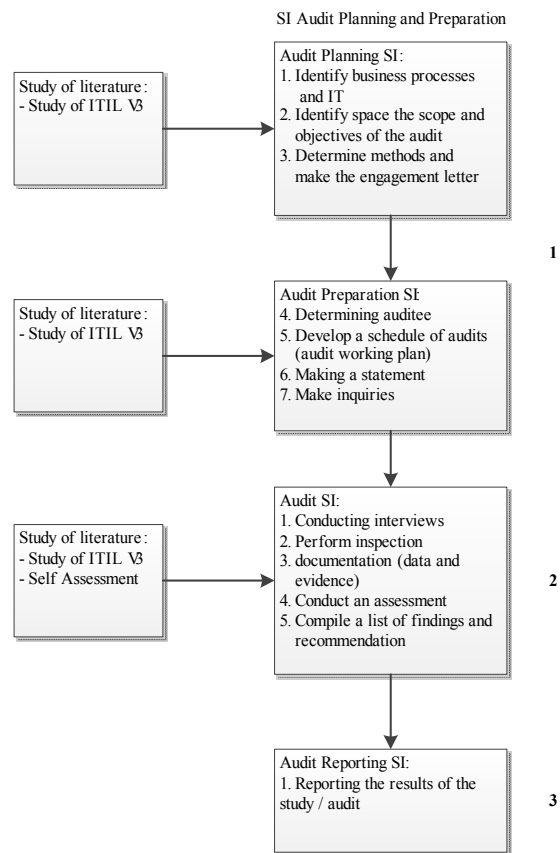


Figure 3. Research System Information Audit Activity Steps

## 3.2 Sample Selection method

In the selection of the sample, the authors take data from the limited population (population limit) using purposive sampling, the sampling is done on the basis of the consideration that the problems that occur and are parts of the decision makers for this assessment. Respondents taken in the selection of

this sample are the IT expert respondents who deal with IT in Bank BTPN Syariah.

Table 1. Expert Respondents

| No. | Respondents                                        | Number |
|-----|----------------------------------------------------|--------|
| 1.  | Head of the Division of IT Data Center Operational | 1      |
| 2.  | Head of IT Application Support Division            | 1      |
| 3.  | Head of the Division of IT Helpdesk                | 1      |
|     | TOTAL                                              | 3      |

### 3.3 Method of collecting data

This study uses primary data and secondary data. Primary data collection is done by using a survey questionnaire filled solely by the respondents to be guided by the statements in the questionnaire. Secondary data were obtained through the study of literature, journals, and articles on IT Service Management.

The sequence of data collection techniques are:

- A literature study related to the evaluation and instruments of IT Service Management in accordance with the vision and mission of the Bank BTPN Syariah.
- Designing the content of the research questionnaire/instrument, which is based on the existing literature on the ITIL V.3
- Data processing. After the data obtained from the questionnaires distributed to the experts respondents, and the expected data has been obtained, the data is then processed using Microsoft Office program, in this case using Microsoft Excel 2007 (according to the format and template of Self Assessment Tools ITIL).
- Analysis and interpretation of data. The results of questionnaires data processing and literature study are serves as the study's findings. Calculations could then determine the expected value. This could be recommendations for improvement for each domain service.

### 3.4 Research Instruments

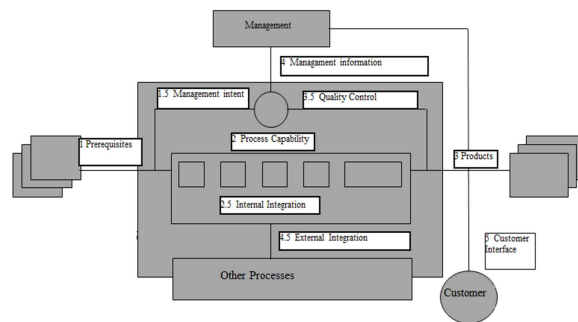
The research instruments used in helping the research process were questionnaires taken based on the existing literature regarding to ITIL V.3. The reason for the use of research instruments are:

- Questionnaire is one instrument that can be used in survey research approach.

- The population of respondents involved in this study are the parties who are involved or have the authority to IT and IT users.
- The filling of the questionnaires is done simultaneously by the respondent at the same place accompanied by the researchers to provide guidelines to fill in the questionnaires so that it is expected that the results are more accurate and describe the state of the overall population.

## 4. RESULTS AND DISCUSSION

The rationale of the assessment system in ITIL V.3 self-assessment is contained in the following Figure 4:



Source: the book of Self Assessment Guide ITIL V.3

Figure 4. The Rationale Of The System Of Assessment (Self-Assessment) ITIL V.3

The respondents in this study are three expert respondents who will represent each sub domain that will be appraised in Core Banking System Audit Information on BTPN Syariah. The assessment of sub domain of Service Desk respondent was the Head of IT Help Desk, Problem Management sub domains was the Head of IT Application Support Division and sub domains of Incident Management is the Head of IT Operations.

Each question in each sub-domain has been determined of how many questions must be answered (there are some mandatory/ compulsory questions) with different scoring weights.

In the assessment phase, researchers used a assessment standard of Self Assessment V.3 ITIL for the existing Service Operation domain to asses the Service Desk, Problem Management and Incident Management sub domain.



Table 2 will summarize the results of Self Assessment Scoring for the sub domain V.3 ITIL Service Desk.

*Table 2. The Results Of Self Assessment Scoring Service Desk*

| Criteria                         | Minimum Value | Assessment Value | Pass/Fail |
|----------------------------------|---------------|------------------|-----------|
| Level 1 - Pre-requisites         | 3             | 3                | Pass      |
| Level 1.5 - Management Intent    | 5             | 3                | Fail      |
| Level 2 - Process Capability     | 21            | 18               | Fail      |
| Level 2.5 - Internal Integration | 4             | 6                | Pass      |
| Level 3 - Products               | 3             | 3                | Pass      |
| Level 3.5 - Quality Control      | 5             | 6                | Pass      |
| Level 4 - Management Information | 7             | 7                | Pass      |
| Level 4.5 - External Integration | 7             | 8                | Pass      |
| Level 5 - Customer Interface     | 5             | 2                | Fail      |

The results of Self Assessment Scoring ITIL V3 for Problem Management sub domain can be summarized in Table 3 below:

*Table 3. The Results Of Self Assessment Scoring Problem Management*

| Criteria                         | Minimum Value | Assessment Value | Pass/Fail |
|----------------------------------|---------------|------------------|-----------|
| Level 1 - Pre-requisites         | 4             | 5                | Pass      |
| Level 1.5 - Management Intent    | 4             | 5                | Pass      |
| Level 2 - Process Capability     | 16            | 19               | Pass      |
| Level 2.5 - Internal Integration | 7             | 8                | Pass      |

|                                  |    |    |      |
|----------------------------------|----|----|------|
| Level 3 - Products               | 4  | 5  | Pass |
| Level 3.5 - Quality Control      | 5  | 6  | Pass |
| Level 4 - Management Information | 3  | 3  | Pass |
| Level 4.5 - External Integration | 18 | 11 | Fail |
| Level 5 - Customer Interface     | 5  | 3  | Fail |

The results of Self Assessment Scoring for the sub domain ITIL V3 Incident Management can be summarized in Table 4 below:

*Table 4. The Results Of Self Assessment Scoring Incident Management*

| Criteria                         | Minimum Value | Assessment Value | Pass/Fail |
|----------------------------------|---------------|------------------|-----------|
| Level 1 - Pre-requisites         | 3             | 4                | Pass      |
| Level 1.5 - Management Intent    | 3             | 4                | Pass      |
| Level 2 - Process Capability     | 14            | 17               | Pass      |
| Level 2.5 - Internal Integration | 7             | 9                | Pass      |
| Level 3 - Products               | 5             | 5                | Pass      |
| Level 3.5 - Quality Control      | 5             | 6                | Pass      |
| Level 4 - Management Information | 12            | 13               | Pass      |
| Level 4.5 - External Integration | 62            | 61               | Fail      |
| Level 5 - Customer Interface     | 5             | 3                | Fail      |

#### 4.1 Findings

Based on the Self Assessment ITIL V3 done on the Service Desk, Problem Management and Incident Management sub domains as parts of the

Information Systems Audit Core Banking at Bank BTPN Syariah, it can be concluded that each sub-domain needs repairment and enhancement. The parts to be developed are as the following:

- A. In Service Desk Sub-domain, level of Intent Management, Process Capability and Customer Interface are parts need to be developed.
- B. In Problem Management Sub domains, parts to be developed are level of External Integration and Customer Interface.
- C. In Incident Management Sub-domain, level of External Integration and Customer Interface need to be developed.

#### 4.2 Recommendation

From some of the findings of the ITIL assessment (Self Assessment) and based on the analysis of the incidents occurred, the following recommendations are given:

- A. In the subdomain of Service Desk, the needs for some improvement to the level of Intent Management, Process Capability and Customer Interface are as follows:
  - 1) In Intent Management level, there are two things that need to be improved. Firstly, the current Service Desk does not have a manual to handle calls or incident reports from users. This is a mandatory question (required), so that it is expected that it will be fulfilled. Secondly, currently, there is no support for the first-line in handling the incident occurred so that the handling of the incident is still handled by the vendor. Thus it is hoped that, in the future, there will be a special team to handle such incident—at least, it will give first aid to handle the incident until the incident is completely solved by the vendor.
  - 2) At the level of Process Capability, there are three things that need to be improved. Firstly, the current Service Desk operators haven't got a strategy in obtaining detailed data or information of the user who reported the incident, but note taking. In the future, it is hoped that Service Desk operators must, in detail, inquire and ask for attachments, evidence and data needed when an incident occurs. Which function as an investigative tool in tracking incidents and make improvements. Secondly, currently, BTPNS does not have a bulletin for some lists of incidents and the progress

of repairs to the user. In the future, it is hoped that bulletin can be made to be used by the user to monitor the progress of the activity of incidents solving. Thirdly, the current Service Desk has not been informed of the requirements of the new support in carrying out their activities. In the future, it is hoped that there will be a mechanism to inform new support requirements as the tools needed to carry out their daily activities.

- 3) At the level of Customer Interface, there are two things that need to be improved at this level. Initially, There is no customer survey on any agenda of service improvement for its customers. In the future, it is hoped that there is a customers survey questionnaire regarding the complaints or critics and suggestions from customers for service improvement. Second, there is no process or mechanism that monitors customer assessment. It is hoped that monitoring of customer assessment can be run to determine the needs of customers of Bank services.
- B. At the subdomain of Problem Management, the need for process improvement is at the level of External Integration and Customer Interface:
  - 1) At the level of External Integration, there are two things to improve. The first one is the absence of information exchange between Configuration Management and Problem Management in terms of the quality of the incidents recording that cause the potential of the occurrence of failure on the system configuration. It is expected that there will be an exchange of information between Configuration Management and Problem Management in order to facilitate monitoring if there are incidents related to the system configuration. The second one is the absence of information exchange between the Service Desk and Problems Management related to incidents that occurred in the initial handling follow-up such as bulletin. The existence of information exchange between the Service Desk and Problem Management in following up the initial handling of incidents occurred is hopefully made to let users know the progress.

- 2) There are two things that must be improved at the level of Customer Interface,. The first thing is the lack of interaction between the bank and its customer for the incident occurred, particularly regarding to the customer's account. The interaction between the bank and its customer in case of incidents related to transactional services which impact the Bank services to the customer is expectantly made to solve the problem. Secondly, there is no activity to monitor customer satisfaction trends. In the future, it is hoped that there is some activities regarding to monitor the level of customers satisfaction.
- C. There must be a process improvement on the Incident Management subdomain, namely at the level of External Integration and Customer Interface.
  - 1) At the level of External Integration, the thing need to be improved is the absence of regular meetings with the Service Desk to discuss the progress of incidents solving, escalated incidents and closed incidents. The meeting with the Service Desk is hopefully done regularly.
  - 2) At the level of Customer Interface, the absence of interaction activity between the bank with its customer to monitor the level of customers satisfaction with the services that have been given over the years. It is hoped that there will be a mechanism to monitor the level of customer satisfaction to improve service.
- D. IT development team should be given product knowledge, specifically in technical training, in handling occuring incident on T24 Core Banking application from the license owner directly.
- E. It is necessary to develop functional features that comply Indonesia regulation.
- F. There sould be improvement in terms of infrastructure so that applications can be more optimal.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

From the research, it can be drawn several conclusions, as follows:

- A. The research on on the Information Systems Audit T24 Core Banking Bank Syariah Bank in measuring the handling of the incident that

occurred using V.3 ITIL method for the Service Operation domain on Service Desk, Problem Management and Incident Management sub domain is very useful and quite effective in measuring the process of handling the incident, best practically, in BTPN Syariah whether it is already sufficient or good or still need to be increased in accordance to the ITIL V.3assessment standard.

- B. The ITIL V.3 assessment standard method is very useful to be applied in measuring the efficiency and effectiveness of Information System corporate governance within the organization BTPN Syariah, especially in the Service Operation domain including Service Desk sub domain (in this case is the division of IT Help Desk), Problem Management sub-domain (in this case is the IT Application Support division) and the sub domain of Incident Management (in this case is the IT division Operation).

### 5.2 Recommendations

Based on the results of Self Assessment (assessment) used in this study is consistent with ITIL V.3 method, there are some suggestions to put forward:

- A. The domain measured in Information Systems Auditing in this research is only one domain, i.e the Service Operation. While other domains within the framework, namely Service Design, Service Strategy, Service Transition of ITIL V.3 can also be applied to be more comprehensive in the organization of BTPN Syariah so that the whole unit can be more optimal in carrying out their respective functions and in accordance with best practice exist.
- B. The audit can be done regularly so that it can reduce the risks of things that do not fit either in regulation or functionally.
- C. As soon as possible, there should be some handling on the findings identified in this study to minimize the risks that might arise as the result of the problems existing.

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