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IMPROVEMENT OF IT OPERATION PERFORMANCE USING SYNERGY OF ITIL PROCESS IN RETAIL ORGANIZATION

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ABSTRACT

The increasing number of IT incident create issue to organization. Controlling the number of IT incident using ITIL framework is one of the success factor for organization in order to achieve its goals [18]. In the retail organization, the basic implementation of ITIL sometimes cannot fulfil the business requirement. It is requiring process improvement to get successful result to decrease or control number incidents. In this research, we have created new process that able to make synergy of Incident management and problem management process on ITIL version 4. The outcome of this research is to implement the new process to synergy the incident management and problem management in practices that will solve the IT support issues on retail organization.

Keywords: *ITIL, Retail, Incidents Managements, Problem Managements, Synergy, Process*

1. INTRODUCTION

Information technology service management (ITSM) is an essential part for development of a company's Information Technology (IT) department [1]. Many large organizations from small-medium until enterprises have applied the ITSM framework based on Information Technology Infrastructure Library (ITIL) as the best practices framework for their IT Operation on the tactical and operational level [2]. ITIL give them benefit to make the IT Operation and delivery perform better to help the business to achieve the goals. ITIL is commonly known and popular nowadays, it is help many managers to improve their IT Function in company [3]. It has already become one of the influenced framework that being used many of successful organization [4].

The Implementation of ITIL require correct approach and support from the management team. There are many challenge that happen on its implementation that cause by the internal factor of the organization itself. This situation can create a failure of IT Support process and could make the IT operation process is on risk [5]. The design of process that suitable for organization and closing the gap between the users and IT solution is required to avoid the failure of ITIL implementations [6].

Incident Management is common support activity on daily IT support process to ensure the IT services able to run for the organization. It is one of the fundamental things that IT support team must have performed [7]. However, the problem management, since its process is not on 'hands-on' and not on 'daily routines mode' - sometimes being left behind, miss out, or not in place yet [8].

The basic implementation of ITIL cannot fulfill the business requirement on some specific condition. On some specific industries, IT operation is difficult to succeed to achieve its goal by only perform the standard process of ITIL. It is requiring specific process and success factor definition to ensure the process meet the IT Service Management best practices [18]. In IT Operation area, the condition that create issues is on Incident Management process [5]. The main issues on incident managements based on our study on our

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research site are the increasing number of incidents tickets, the repeatable issues, and the unsolved issues are the common case that can be seen on organization that have this problem. They are not succeeding to fulfil the IT Service Managements goals.

In specific industry as Retail, the adoption of new technology nowadays is a must. It is for ensure the company has competitive factor for cover the market. Modern retail is operating digital channel such as E-Commerce, Online-to-offline Channel and Social Media as following their Brick and Mortar Stores [14]. This digital channel utilizes the latest IT technology such as cloud computing that require different approach to manage and deliver its system operations rather than conventional on-premises computing.

To solve the main issue on incident management that been states above, in this research we will create a new process that will create synergy for the Incident Management and the Problem Management process. The motivation of this work is to provide appropriated methods to perform business process improvement, in particular with the aid of ITIL [9]. The ITIL process that been created for ITSM framework is required to have continuous characteristics or a lifecycle form to ensure it is synergy with the current daily IT Support task [10].

We also require the suitable ITSM framework to support the operation of latest IT technology such as cloud computing. ITIL version 4 is one of the latest ITSM framework that develop to support the current IT technology and process [14].

By able to implement the new process that create synergy between Incident Management and Problem Management process based on ITIL version 4 that suitable for current situation, we should have the outcome such as the good performance of IT operations and the efficient IT Support process. This positive condition will give benefit to organizations. The highly performance and efficient IT operations will increase system availability, improve company productivity, able to do cost savings, competitive and all other key parameters to achieve the organization goals [15].

To prove the research outcome, we require the implementation site for implement this new process. The implementation of this new process is happen at PT XYZ, a public listed and one of the biggest retail company in Indonesia. PT XYZ will become the site that we used for this research. It is having more than 1300 retail outlets at most major cities in Indonesia with more than 3000 users. The company has IT operation department that responsible for operate IT Services. There are around 500-600 Incidents per week that need to be solved based on their Service Level Agreements (SLA).

The Problem statement that we have in this company, there are many incidents management process that not completely solved. The Incidents managements that been performed are mostly only focus for the first call resolutions - It is not being follow by the Problem Management analysis. This situation can create the number of Incident case to numerous, create the repeatable issues that frustrated the users and create the IT support resources depleted. All of this will triggered the inefficient operational cost and manpower. Finally, it will make the company being disturbed to achieve its goals.

This research work is to solve those problem above. The Problem Management process need to be built on IT Support process to creates synergy of Problem solving in IT Operations organization. At the end, the problem management will increase the End Users satisfaction level. This is one of the main function of ITSM process, it will give benefit to organization [11].

This research work will use the ITIL version 4 framework to develop Problem management process that required. We are using the version 4 because - as the latest edition of ITIL (released on February 2019) - the version 4 already included and the current IT modern features such as cloud computing. The cloud computing has different process and model [12]. ITIL version 4 also has capability to support the E-commerce IT system that currently already become one of the most critical issues on any modern enterprises [13]. All of this new technology shifting is because of the business requirement itself.

Retail business which is the PT XYZ main business area also already shifting to follow their customer behavior. The retail business nowadays is shift to multi commerce channel using the power of digital transformation [14].

Therefore, ITIL version 4 is the suitable framework for current business models and organization. ITIL version 4 is aiming the IT and Business can work together much better for getting more value from the current process [15].

This research will be executed by taking assessment on how the IT operation manage the

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Incidents and Problem management. After that, it will follow by gathering the data from IT Service Desk Support ticket tools. We will also will get the feedback from the IT operation team that related on this process. All of those information will become input for mapping process to create the suitable new process to solve the issues. The New process will be implemented, and the result evaluation will be performed by collate with last year data on the same time frame of implementation.

2. RELATED WORK

There are several study that describes how ITIL framework can give benefits to organization. Applying ITIL will make the IT operations will have a better performance when deliver the IT Services ITIL can offer the great benefit for organization for the its process to achieving the goals [16]. ITIL also being used as one of famous framework for lot of business requirement to make organization improve much better [17]. However, some study also describes that implementation of ITIL also can be fail. Implementation of ITIL- as a whole or as parts – have the specific challenges that need to be address carefully by IT Organization. This implementation could be fail if being performed without the correct method [18].

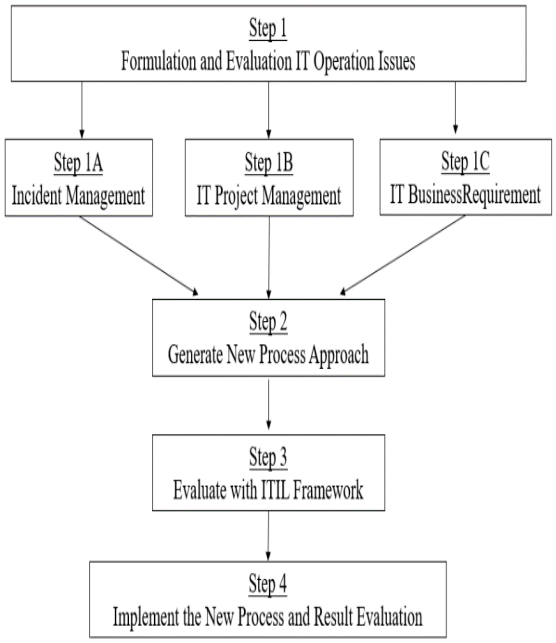
The area of issues that we will use to solve problem statement in this research – Problem Management – has been recommended to be perform side by side with Incidents management [19]. Even the Incidents managements has always been positioned as key indicator of IT operations performance, the decreasing number of incidents should also become an important task [20]. In addition, the integration of this process need to been reviewed carefully to not disturb the current process [21]. There is also a recommendation that clearly stated - the IT organization support services should not stop only until incident managements. However, it should be more than that [22].

3. RESEARCH FRAMEWORK

This research goal is to implement the recommended process that help the IT operation department on PT XYZ. The recommended process has been reviewed to match with the ITIL version 4 framework. The adoption of ITIL best practices framework is required to get the significant result and to fulfill the correct applicable solution for solving the research problem. All data will be gather from the IT Service desk tool that currently been used in this organization to capture all IT operations issues.

Figure 1 is our research framework diagrams to ensure all of the key steps are being covered in order to fulfill the research result. At the beginning, the evaluation of current IT operation process (As-is) is being performed to find the specific issues that create problem statement to organization. There are 3 areas on IT operation that will impact in this process: 1. Incident Management, 2. IT Project Management and 3. IT Business Requirements. Incident management is the main area since it is the reflection of Problem that not been solved. By review all the issues in this area, we will find what is the specific issues that nominated to become problem. IT project management is deliver the new services; it is required since many changes or new addition is the hidden issues that will become problem. Meanwhile IT Business Requirement is to understand what is user requirement that will reflect their issues that might not been captured on current IT operations area.

Figure 1: Research Frameworks Diagrams



Based on the data that we have, we will create the new process to solve this problems, and evaluate the new process to be comply by ITIL version 4 framework. We need to ensure the base of new process that we have created is match with

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current industrial best practices and able to solve the organization problems.

Finally, we will implement the new process that we built to IT operation environment, and will evaluate the result by seeing some IT support performance parameters such as trends of incident and incident resolution times against the same month on last year.

4. THEORY AND METHOD

4.1 IT Service Management (ITSM) And IT Infrastructure Library (ITIL)

The use of ITSM (on this research is ITIL) is important for modern business process since ITIL has widely known as the best practices. Until today, ITIL still the best framework in purposes to achieve the IT operation goal. ITIL also the most adopted framework on many successful organizations worldwide. According to research, by implement ITIL, the organization will have the better ability to anticipate technology trends, improve the performance, lower the operation cost, and improve the decision making process [23].

The ITIL version 3 having 5 parts and 26 process and include the lifecycle. ITIL version 3 usually being implemented on the organization that has systematic approach on management area and operation area and also the control of IT Services [24] . On more details, there is a study that describes the ITIL important process such as Incident Management, Problem Management, Release Management, Change Management, Configuration Management, Service Level Management, Financial Management of IT Services, Capacity Management, IT Services Continuity Management, and Availability Management [4]. All of this process required the implementation model with methodology for gain the process improvement on the organization itself.

4.2 ITIL version 4

ITIL version 4 has been released on February 2019. It is having new approach (as an addition to ITIL version 3) to answer current trends and modern IT Operation and IT Infrastructure process. ITIL version 4 has been develop to support current IT process that demands more speed on implementation. The features such as agile method, modern services and cloud computing already been fully support by ITIL version 4 frameworks. The terminology of services has been improved to become SVS (Services Value Systems) [15].

ITIL version 4 having 7 guiding principles: 1. Focus on value; 2. Start where you are; 3. Progress iteratively with feedback; 4.Collaborate and promote visibility; 5.Think and work holistically; 6.Keep it simple and practical; 7.Optimize and automate.

ITIL version 4 also having 34 practices that become 3 chapters:

General management practices: 1. Architecture management; 2. Continual improvement; 3 Information security management; 4. Knowledge management; 5.Measurement and reporting; 6.Organizational change management; 7.Portfolio management; 8.Project management; 9.Relationship management; 10.Risk management; 11.Service financial management;; 12.Strategy management; 13.Supplier management; 14.Workforce and talent management;

Service management practices: 15.Availability management; 16.Business analysis; 17.Capacity and performance management; 18.Change control; 19.Incident management; 20.IT asset management; 21.Monitoring and event management; 22.Problem management; 23.Release management; 24.Service catalogue management; 25.Service configuration management; 26.Service continuity management; 27.Service design; 28.Service desk; 29.Service level management; 30.Service request management; 31.Service validation and testing;

Technical management practices: 32. Deployment Management; 33.Infrastructure and platform Management; 34.Software development and Management;

4.3 ITIL Framework Implementation Method

For this research, the literature study has been done to get more information required to produce the correct method of ITIL framework implementations. There will be a challenge, risk, and also suitable approach that we need to consider to achieve the implementation goal. The ITIL implementation for solve the complex IT operation

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issues should have challenges. Some example is from human factor itself. The users are resistance for the implementation. The resistance is because the users not have enough understanding regarding the ITIL framework. This is key topic that need to be anticipated since this resistance could make the implementation fail, which is lead to waste of investments and increase business risk [6].

According to other study, from 52% small medium enterprises in Europe that having knowledge regarding ITIL framework, only 10% that reach the success on its implementation. Based on this study, the implementation of ITIL on this type of organization is required specific method that need to be develop based on the ITIL framework itself. Other issue such as the limitation of ITIL knowledge or consultant on this specific method is the main cause of this failure [16]. However, the ITIL Implementation has more chance to success by using the additional supporting process and the correct approach. ITIL with this new process is able to solve the modern IT issues that appear to follow the trends of IT technologies [25]. ITIL also has techniques and appropriate tools to align business and IT for a good performance [17].

All of literature study that been describes above will become the reference to create the new process on this research. Awareness of Implementations challenges will become the main consideration to produce the most suitable process that can be implemented to solve our current organization problems.

4.4 Problem Management Process in ITIL version 4

On ITIL version 4 framework, it has been stated that Problem management is the source or potential source from incident or many incidents. Problem management is the activity that have functions to reduce or eliminate potential incidents by doing the actual identification of incidents root cause, managing the workarounds and known errors. The steps on problem managements: 1. Problem Identification. It is including incident logs trend analysis, detection of repeatable issues, major incidents risk identification, information analysis from vendors, partner, testing team, software developer or IT project team. 2. Problem Control. It is an activity that consist of problem analysis, workaround documentation and known errors. 3. Error Control. It is an activity that has function to manage the known errors, whereas the not working components already being identified [15]. The figure 2 below is ITIL version 4 Problem management process.

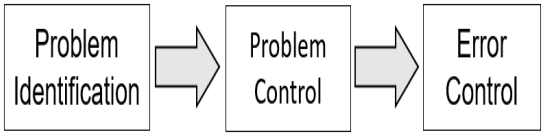

Figure 2: ITIL version 4 Problem Management Process

5. PROPOSE PROCESS

5.1 Current Incident Management Process

From our study on PT XYZ IT operation department, we have found the number of incident request is quite high and having increasing trends. Based on our analysis, it is because there is no Problem Management Process in places. Due of this situation, the current IT operation has experience the repeatable problem, increasing of number or incidents, and heavy utilize support resources. While IT is cost center organization, its operation efficiency is one of the key success for the organization [26].

The current incident management process flow can be seeing on figure 3 below:

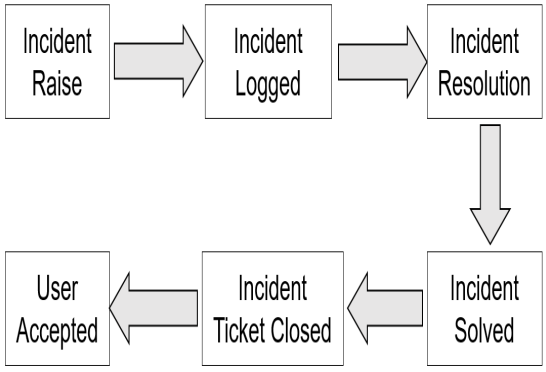

Figure 3: Current Incident Management Process

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5.2 New Synergy Process

By using the literature above and examine the current process, we have built the new process to solve the current issue. We will build the process that have capability to synergy with current incident management process. This purpose is to ensure the problem management process been performed as a mandatory process.

Based on ITIL version 4 book [15], The purpose of the problem management practice is to reduce the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors. Problem management is usually focused on errors in operational environments. The figure 4 shows the contribution of problem management to the service value chain, with the practice being applied mainly to the improve, and deliver and support value chain activities. It is all means to improve the IT support process.

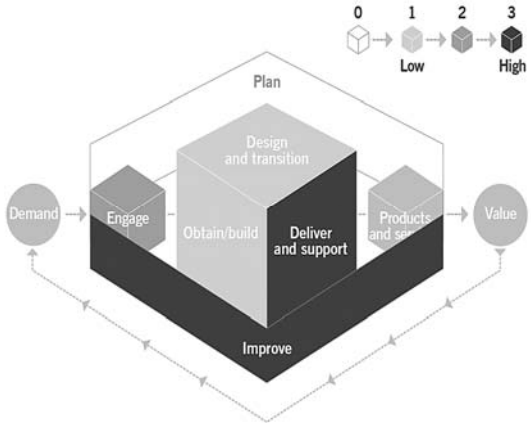

Figure 4: The Heat map of Problem Management [15]

Based on the questionnaire that been taken from the related member of IT Operation team on PT XYZ, the result is appear on table 1. According to their experience, the new system deployment whether it is a new features of system, patch deployment, or any system installation is the main cause of high number of incidents. (54,5% responders choose this categories). Therefore, the two related team that responsible for adding new system features or create system changes: IT Project Management and IT Business User Requirements; will be require to be involved to this synergy process creation.

Table 1: Potential cause of high Incidents Number

Events	Result
System Maintenance	9,1%
New System Deployment (New Features, Patch, Installation)	54,5%
3rd Party issues (Network Provider, Software Developer, Vendor)	18,2%

The new process has been created by focusing how the problem management can be performed on this environment. The Problem Management process need to get proper input from other related process that leads to problem. As we can see on figure 5, all necessary existing process that active in organization such as Incident Managements, IT Project Managements, and IT Business User Requirements must be giving the proper information to problem management process regarding the potential of incidents types that lead to become problem.

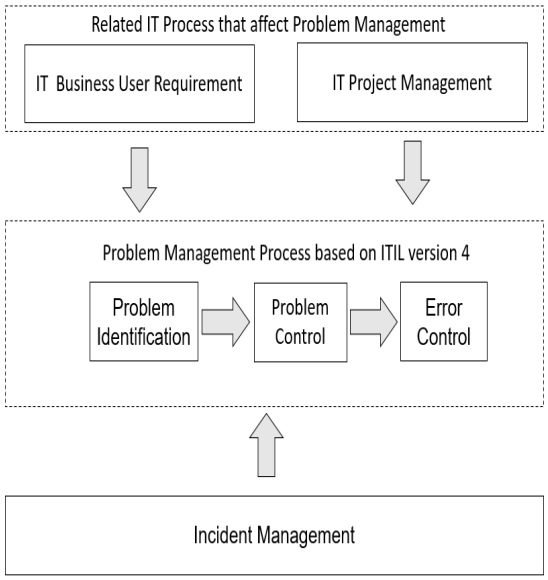

Figure 5: The Input for Problem Management

Based on process mapping above, we will create new process that applicable on this retail organization environment. It is important to create the process that able to run on the company's IT operation support flow. We will describe the 3 main process that will be involved: 1. Current Incident Management Process. This is the process that already been performed by IT operations of PT XYZ. Most of incidents data will be taken from here. 2. Problem Management. This the Problem Management that should be in place to create

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improvement on IT Operations support. For supporting the current retail company features such as E-commerce and modern IT architecture such as cloud computing, the Problem Management process that we use in here will be based on ITIL version 4. 3. Related Process that affect Problem Management. This process is creating the system changes. Based on the study, it is a potential factor to create the high number of incidents. This process is consisting of two process. They are IT Project Management and IT Business Requirements. On figures 6, we have described the breakdown for each process that will interact on each other. This 3 process might be independent to deliver its work functions, however in this study we will make them coordinated to give proper input to problem management process. While the main factor is still from the Incident management process. It will become the most source of input for the problem management that will do its main function to reduce the incidents.

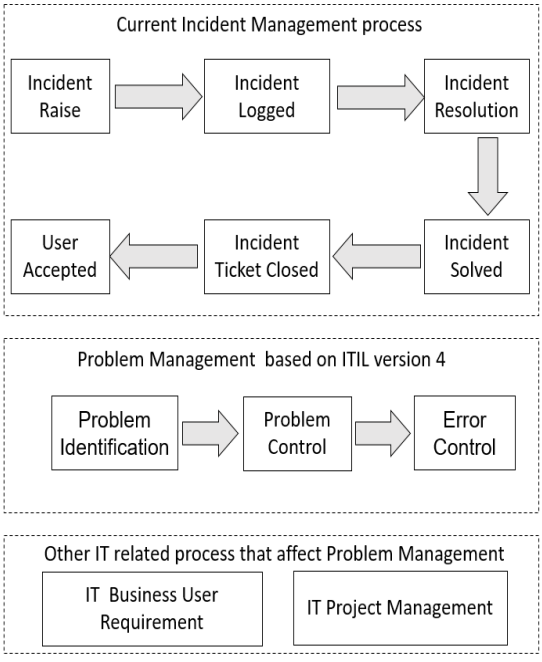

Figure 6: The Breakdown of the process related

As we can see on Figure 7, we merged a problem management process into the current "running-well" incident management process. The incident management process flow will go into problem management after the incident has been handled. The function of this new process is to examine the parameter required to justify whether the incidents are meet the criteria to be classified as problem. The main criteria for trigger this: 1. The huge number of same category incidents (above 100 incidents) per hour. These criteria have categorized as problem control. 2. The same category incidents that appears on specific time (specific time, date, or some dates). These criteria have categorized as Known Errors. 3. The incidents with same category and same way of solving. These criteria have categorized as Error controls.

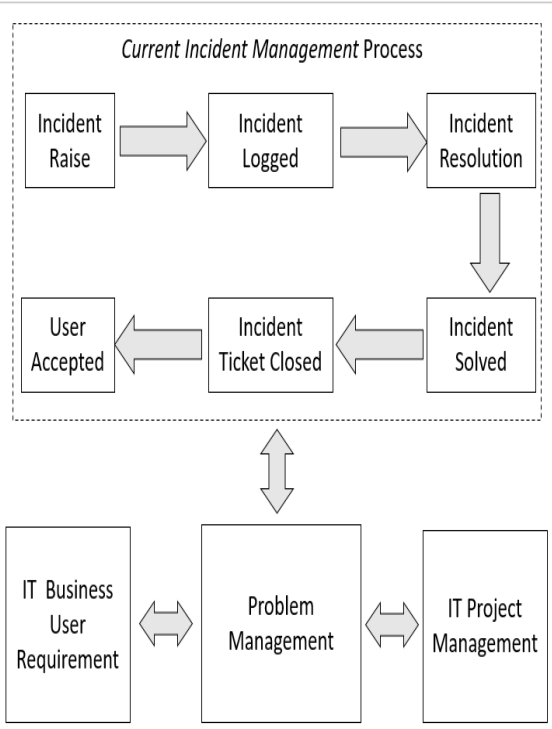

Figure 7: The New Synergy Process

To continue the explanation of figure 7, this new process will interact with 2 other process, they are IT Project Management and IT Business Requirement. These two process have function to add, improve, or install one or more features on IT systems that been required by business. On some conditions, these processes can create issues that require to be handle by the problem management process. IT Project Management and IT Business Requirements process have possibility to create unknown errors or issue that cannot be detected while performing their process (adding new functions). Therefore, it is required for any organization to have the specific process to manage and control the addition and changes to the systems [27]. This new process also able to create chance of the future development of IT Organization. The resilient IT operations will make IT can leverage its

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focus to deliver more outcome for IT solution to the business, rather to be trap on troubleshooting issues on daily basis. As been stated on previous study, the advancement of information technologies continued its run without any interruption [28]

5.3 Data Collection

IT support has been seen as an extra function to the core services of corporations. It was not up until beginning of 2000s that it was realized that customer support should be enhanced. [29]. User is key elements for IT support function for improve its quality [30]. To ensure the implementation result meet the requirement, we will do the data collection by doing Questionnaire. It has been done to approximately 20 participants with related roles on IT operation team. The data been gathered using Google form. The interview has been performed to leaders or management level. Related System log and IT operation report also will be used for this research. In this case, all of this information is coming from current IT Service Desk tools that being used in company

6. MAIN RESULT

The result of this new process is based on the live IT support performance data on the system production environment of PT XYZ. The new process in-place is affecting directly to the way of IT Support team perform its service to users on company. We have taken 2 result to justify the outcome of this research. They are result from IT service desk tools and result from questionnaire.

6.1 Result from IT Service Desk Tools

As the main result of this study, the result being taken on the time frame of Implementation that we have captured with duration of 3 months from week 33rd 2019 to week 47th 2019, we can see the trends of current incident (average is 979,86 per week) decrease against the same week of 2018 (average is 701,29 per week). In this result also, we include the other parameter which is number of outlets since PT XYZ is retail based company, the number of IT issues is related with the population of stores. In the current result, we can see even the number of stores increasing, the number of incidents follow to be increase as well. The graphic result can be seen on figure 8. By this figure we can see the synergy of process between problem management and incident management successfully create the expected result.

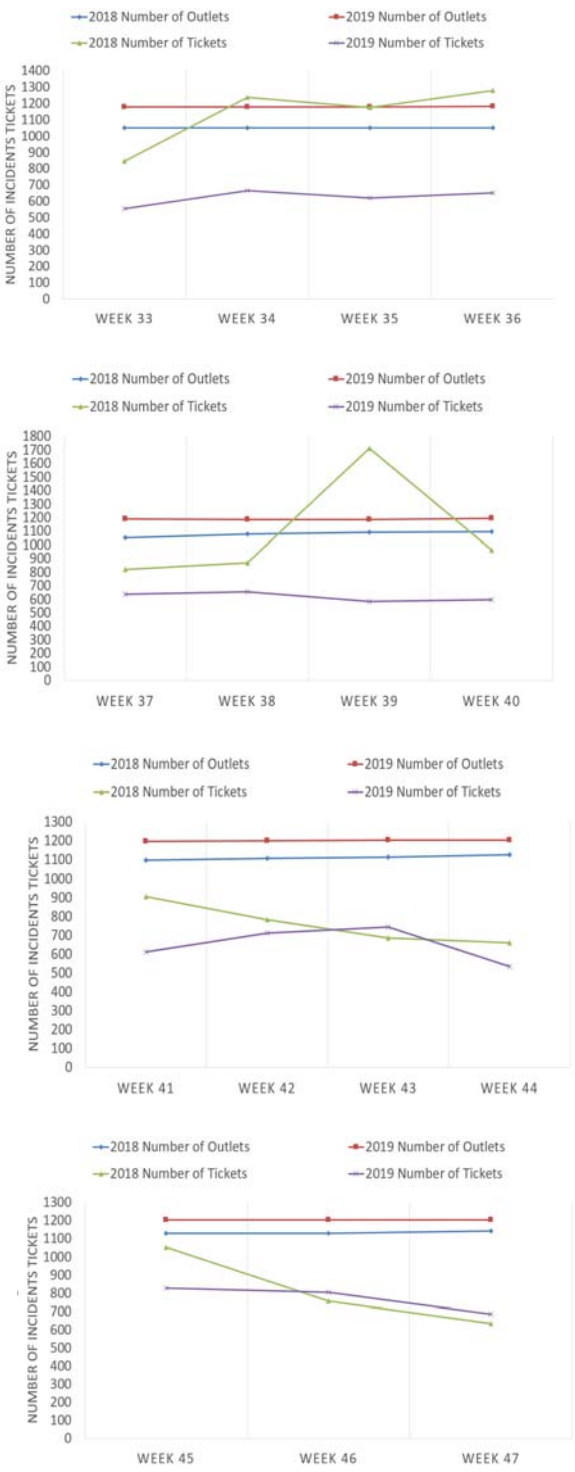

Figure 8: The Result of Number Incidents that Decreased

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Based on the data that we have been taken by IT organization Service Desk's tools log, as the positive result from this study, we have found many problem management process been performed.

Problem Management List from CODESK

Period: 1 August 2019 12:00:00 AM - 30 November 2019 02:25:00 PM [Created Time]

No	Problem ID	Logged On	Owner
1	267	01 Aug 2019 09:47:11	Service Desk
2	268	05 Aug 2019 09:51:05	Service Desk
3	269	05 Aug 2019 15:47:08	Service Desk
4	270	08 Aug 2019 14:30:56	Service Desk
5	271	09 Aug 2019 20:51:59	Service Desk
6	272	09 Aug 2019 20:52:00	Service Desk
7	273	09 Aug 2019 20:52:01	Service Desk
8	274	15 Aug 2019 11:30:53	Service Desk
9	275	24 Aug 2019 18:33:09	Service Desk
10	276	25 Aug 2019 11:00:19	Service Desk
11	277	27 Aug 2019 11:10:38	Service Desk
12	278	01 Sep 2019 10:10:46	Service Desk
13	279	07 Sep 2019 17:22:01	Service Desk
14	280	08 Sep 2019 15:07:45	Service Desk
15	281	09 Sep 2019 12:03:25	Service Desk
16	282	09 Sep 2019 12:09:35	Service Desk
17	283	11 Sep 2019 10:56:49	Service Desk
18	284	11 Sep 2019 15:40:03	Service Desk
19	285	11 Sep 2019 16:24:12	Service Desk
20	286	14 Sep 2019 00:05:39	Service Desk
21	287	18 Sep 2019 21:11:10	Service Desk
22	288	25 Sep 2019 08:18:18	Service Desk
23	289	30 Sep 2019 15:22:02	Service Desk
24	290	03 Oct 2019 12:24:39	Service Desk
25	291	03 Oct 2019 12:34:35	Service Desk
26	292	03 Oct 2019 12:49:25	Service Desk
27	293	08 Oct 2019 10:48:35	Service Desk
28	294	10 Oct 2019 14:44:19	Service Desk
29	295	11 Oct 2019 18:13:04	Service Desk
30	296	12 Oct 2019 09:28:44	Service Desk
31	297	14 Oct 2019 09:59:59	Service Desk
32	298	16 Oct 2019 13:37:54	Service Desk
33	299	21 Oct 2019 15:06:15	Service Desk
34	300	22 Oct 2019 00:00:39	Service Desk
35	301	29 Oct 2019 13:53:52	Service Desk
36	302	01 Nov 2019 14:06:39	Service Desk
37	303	05 Nov 2019 11:52:58	Service Desk
38	304	05 Nov 2019 11:56:09	Service Desk
39	305	08 Nov 2019 01:35:08	Service Desk
40	306	11 Nov 2019 18:48:17	Service Desk
41	307	14 Nov 2019 11:40:55	Service Desk
42	308	14 Nov 2019 11:40:56	Service Desk
43	309	18 Nov 2019 15:14:22	Service Desk
44	310	18 Nov 2019 15:14:23	Service Desk
45	311	19 Nov 2019 09:49:30	Service Desk
46	321	23 Nov 2019 00:16:36	Service Desk
47	313	28 Nov 2019 15:57:25	Service Desk

Figure 9: Problem Management List after implementation

The new process is able to encourage the IT support team to register the problem management continuously based on the trigger of the process. The synergy process that been implemented has force them to do that exercise to become one cycle of process from Incident Management to Problem Management. It can be seen on figure 9, based on the data that we captured from IT Service Desk tools on PT XYZ, there are 47 problem category have been successfully registered on system during the time fame of implementations.

While in contrast we can see on Figure 10, the condition before we implemented the new process there are only few problem management being registered during 2016 until 2019.

Problem Management List from CODESK

Period: 1 January 2016 12:00:00 AM - 26 May 2019 09:23:00 AM [Created Time]

No	Problem ID	Logged On	Owner
1	84	18 Apr 2017 13:53:55	Service Desk
2	62	20 Jan 2017 15:16:15	Service Desk
3	60	19 Jan 2017 14:22:50	Service Desk
4	50	21 Dec 2016 11:37:00	Service Desk
5	49	21 Dec 2016 11:36:17	Service Desk
6	46	19 Dec 2016 14:03:18	Service Desk
7	14	18 Dec 2016 13:51:57	Service Desk

Figure 10: Problem Management List Before Implementation

In order to explain further regarding the result of this process, we will discuss one incident case that successfully being manage or prevents to become numerous incidents by this process. On Figure 8, we will highlight the issues that occur on week 34 to week 35 that have significant gap between year of 2018 and 2019. In correlations on Figure 9, there was problem management activity being register on point 9 with Problem ID 275 that being logged on 24 August 2019 18:33:09. This case is being triggered by regular events: On that time the HR Department execute the data transfer to gather attendance information from all the time attendance machine from outlets. The issue happens and raises up since many failures occur when they are retrieving the data. Most of outlets have logged the incidents case to IT Service Desk team since their data not reach the central server. The high number of incidents that being logged are successfully trigger the Problem Management process, and by the agreed procedure, all IT related team have performed root cause analysis. They have found the mismatch of time and date on time

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attendances devices create the data transmission error. Therefore, IT related team deliver the problem resolution by implement the NTP (Network Time Protocol) Server to sync all time attendance device time and date settings. The problem management process in this case is successfully solved the issue once and for all. Therefore, it has been reflected on figure 8 week 34 and week 35, on 2019 there are not many incidents number compare with 2018.

To explain much details regarding the problem management process that being executed on PT XYZ IT Operations, we will highlight one problem from figure 9 as sample to be discussed in here. Point 45 with Problem ID 331 is the issue of "Data Replication". The process of this Problem management will be performed based on ITIL version 4 book [15]. Herewith the following steps of process: 1. Identify the incoming Incidents. On this steps, by trigger of the process that we have been implemented, IT Service Desk found many similar incidents (above 100 incidents). By this conditions, they have registered it as Problem (meet the criteria of Problem Management). 2. Performing the Root Cause Analysis and Risk factor. IT Service Desk Team Leader initiate technical discussion with all IT functions that might related with this case. This process usually can be performed by using common problem solving tools such as Ishikawa Fishbone Diagram [31].

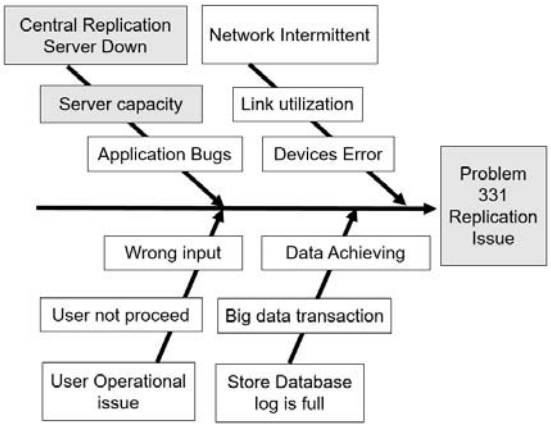

Figure 11: Fishbone Diagram of Problem ID 331

As we can see on figure 11, by using fishbone diagram, team has defined the candidates of root cause that create this issue based on trend analysis, system log, or previous experience. Each of team leaders on related fields (IT Infrastructures, IT Applications, IT Database Administrator) giving the recommendation based on their expertise to select the candidates of the root cause. Their recommendation will be escalating to details technical troubleshooting process (For example but not limited to: check the system log, simulate the issue, or referring to system documentation). The goal of this process is finding the valid root cause and giving the proper solution or workaround to solve the problem. On this case, it has been found that the root cause is because of Central replication server is down after reaching the system capacity limit. IT System Administrator is deliver the system upgrade (Memory and Storage) to solve this issues. 3. Performing monitoring. After the problem resolved, all related team is monitoring the incidents process on specific time fame to ensure this issue is completely solved, and this problem management process is complete.

The two main results that we have describes above, the decreasing of Incidents tickets and the increasing of problem management registration are the fact that validate the outcome of this study. This result has shown that we have achieve the research outcome. The process that create synergy between Incidents Managements and Problem managements is able to utilize problem management to work on how it should be. It is the main purposes of Problem Management that focusing for improvement. [15].

6.2 Result from Survey Feedback

We have also gather the feedback for all related IT team related on PT XYZ to ensure the process that been implemented has met the business requirement and create benefit on daily IT operation process. On table 2 below, we can see the key response from them.

Table 2: Survey Result

Facts After Implementations	Result
Number of Incidents is Decrease	68,2% agree, 31,8% not agree
Superior instruct to do Problem Management Analysis	59,1% yes, 31,8% no, 9,1% often
Awareness regarding	95,5% aware, 0,4% not

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Problem Management Process	aware
How is your user feels if they got repeatable IT issues	81,8% disturbed, 9,1% not disturbed, 9,1% not aware
The increasing number of outlets makes the number of incidents increase	50% agree, 50% not agree

As we can see on the result, 68,2% is agree by the statement: "The number of incidents is decrease after the new process implementation". This is the key result for achieve the research goals. This implementation is also make the 95,5% IT support resources having awareness regarding the Problem Management process. This result is show that the new process successful integrate within IT organization. In relevance with figure 8, the result of 59,1% responders has experience that "their superiors have asked instruct them to do problem management analysis". While 9,1% of them said it has been request often". This result has shown how the IT organization is adopting the new process correctly.

The new process also shows the importance of business goal. There are 81,8% responder said that "their users are being disturbed by repeatable IT issues". While 50% responders also said "the increasing number of outlet makes the number of incidents increase". This condition is quite normal on any retail organization mindset, however the implementation of this process has turn down that symptom. This condition creates benefit of efficiency (cost and resources) for retail organization.

As we have already defined the success factor that will lead to this success criteria for or process implementations, on previous study, there are 7 critical success factor (CSF) on ITIL implementation [18]. However, since this study is focusing to Incident Management and Problem Management to solve current issues that we have, we will only use 3 CSF to validate this research outcome. Those 3 CSF are: 1. Top Management Support, 2. Change Management and Organization Culture, 3. Monitoring and Evaluation. In correlation with the questionnaire feedback that we have, we will have the result on table 3.

Table 3: Correlation with Success factor

CSF	Survey Result
Monitoring and Evaluation	68,2% agree that Number of Incidents is Decrease
Top Management Support	59,1% Superior instruct to do Problem Management Analysis
Change Management and Organization Culture	95,5% aware regarding Problem Management Process

Until this points, by using the 2 results that we have (Result from IT service desk tools and result from Survey feedback), we can assure that the new process that we have created and implemented on this research is able to answer the research problems, and also IT Operation issues on specific industries as retail.

This process is able to be implemented on similar organization – which is not limited to – retail industry only. It can be implemented to any IT organization that having the issues on Incidents managements process such as the trends of increasing number of incidents but lack of problem management process activity. By utilize this new process, we will have the synergy between 2 main ITIL service management process (Incident Management and Problem Management). The process that being created also based on current organization practices. It has been implemented to answer the organization's IT operation issues. At the end, it will create benefit to organization by having the efficient and effective IT operations in order to support the business goals.

7. LIMITATIONS AND ASSUMPTIONS

This study is focusing in Incident Management and Problem Management process on ITIL version 4. These are the two main process to answer the problem statement in this research. Full scale of ITIL service management process is not being describes in this research.

For the purpose of evaluation, the result is being taken on 3-month timeframe on 2019 which been compare with the same month on 2018 to review the result of this process. However, in reality, this process is run continuously in PT XYZ IT operation support.

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All data and system log have ben get from PT XYZ IT Service Desk tools which been only validated by Internal company IT Management team.

PT XYZ goal is to become the Omni selling retailing that will have ability of combine the brick and mortar stores and digital channel. Some digital channel that already being utilize is E-Commerce (Direct selling or through the marketplace) and online to offline. All these features and technology related to IT already included in IT Services Catalog. In near future, the utilize for these features will be increase by follow the customer behavior and Information Technology adoption.

8. CONCLUSIONS

The purposes for this paper is to show the implementation of new process that create synergy between incident managements and Problem managements on ITSM framework (ITIL version 4). It is required to be done for answering the specific business requirements. This method should be able to be applied on any organization that face the repeatable issues, increasing number of incidents managements, growing size of business or combination of all that. Based on the result relevancy, the implementation of this synergy process is able to support the organization goal.

By this research, we also found that even ITIL is the collection of best practices of IT service managements, and it is ready to be applied – however it is required specific process that need to be develop.

9. FUTURE WORKS

To help for make this synergy process perform much better, it can be considering by implemented this process into the IT Service Management tools or IT Service Desk tool. By having this configured on tools, the synergy process can be automated. The outcome of ITSM process also will robust dramatically and the organization is capable to handle the wide area or much more IT support size from the current condition. It is required for PT XYZ to modernize their ITSM tools, since the current tools do not have much analytic functions. This function is requiring since current and modern issue has a lot of complexity and contains the multiple source of error. The new process also will much easier to implemented if running on more suitable tools. Otherwise as current situations, there is a lot of time consuming activity in IT Operations to deliver the common IT Support review. By having the better tools and integrated the process, it will be empowering IT Organization to deliver its organization outcome that will require by business to achieve the business goals.

The open issue for Future research that can be consider in this study is to expand this ITIL process to other ITIL version 4 process for retail organization specific. There is other important process on services management practices that will improve the IT Operation support performance such as Availability management, Business analysis, Capacity and performance management, Change control, IT asset management, Monitoring and event management, Release management, Service catalogue management, Service configuration management, Service continuity management, Service design, Service desk, Service level management, Service request management, Service validation and testing.

Retail industry also in massive shifting to digital due of Covid-19 Pandemic. The usage of digital technology such as E-commerce, Social Media Selling, online to offline, or Instants Messaging will become the main channel for selling the products. All of those require modern ITSM framework such as ITIL version 4 to support the latest IT technology features such as Cloud computing, DevOps and Chatbot. It is requiring more research to make the successfully adoption and implementation to make the organization succeed to utilize this technology.

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