

## Proposed New First Level Resolution by Telecommunication Service Operation Centre of Employing Robotic Process Automation

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### Abstract

*Service quality refers to the gap between the customer's expectations of the service and the perception of the service received. Customer's satisfaction with services in both technical and functional quality are considered the most important factor leading toward competitiveness and success of business world today. This is where the Service Operation Centre is the centralized contact point when the customers encounter any issues, or the contact centre after-sales-service issues. Therefore, the new first level resolution system is very crucial to ensure Restoration Cycle Time for each incident is within the target duration to restore the service. Hence, this paper came out with the objectives of identifying the system used by the telecommunication Service Operation Centre for first level resolution process, evaluating the inefficiency of the current first level resolution system and proposing new first level resolution system by employing robotic process automation. The research method will be based on the literature and document review. By identifying the mundane and repetitive process, the new first level resolution system will replace the traditional system and ensure the shorter restoration period, hence indirectly promotes excellent service quality assurance.*

**Keywords:** *Service Operation Centre, Service Quality, Telecommunication, Robotic Process Automation*

## 1. Introduction

With the extensive global connectivity, prominence network infrastructure and collective expertise, telecommunication Service Operation Centre (SOC) offers to provide an enhanced customer experience via continuous service quality improvements. New innovation towards seamless technology whilst focusing on the digitalisation development, operational efficiency and productivity by maximising the human resources. In this new era of technology, the dependency on the telecommunication service provider will continue to rise, hence this telecommunication service provider will look forward to maintain customer retention by delivering outstanding quality of service assurance.

Furthermore, an excellent service quality assurance would lead to subsequent buying behaviour. Ideally the loyal customer with high customer satisfaction level will think thoroughly before they decided to churn or turn away to another telecommunication service providers (Tas et al., 2019). The significant determinant for corporate profitability and, eventually, survival is achieving customer satisfaction. By employing the robotic process automation as the new first

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level resolution system will help in reducing the restoration cycle-time. (Tas et al., 2019) states that the concept of "customer service" becomes important to organisations and the ability to identify, select quality service-oriented employees becomes critical for an organisation's success. In this regard, in order to ensure continual support from its customer, it is crucial for SOC to know the perception of its customers on their service quality. Plus, providing the services that is beyond customer expectation is always be an ultimate goal of any service operation centre regardless of the sectors.

As it is all concerned, the technology is always evolving, currently we are talking about the first level resolution system by employing robotic process automation for an excellent service quality assurance by reducing the restoration cycle time. However, it is possible for the next five or ten years, there will be another new method of automation that is more reliable and efficient as the time goes by. Therefore, one of the limitations for this paper is; the findings are only valid upon the study period and may vary in the future.

This paper therefore sets out to identify system used by the telecommunication SOC for first level resolution process, evaluating the inefficiency of the existing system and propose new first level resolution system by employing robotic process automation. The existing system used by SOC requires manual trouble ticket issuance and first level checking by agent (human) whereby these activities are often considered as time consuming hence affecting the overall restoration duration. By identifying the tedious and repetitive process, the new first level resolution system by utilising the robotic process automation will replace the traditional system and ensure the shorter restoration period. Automation may reduce the possibility of human error, guaranteeing accuracy, compliance to procedures and improved protection by preventing unnecessary mistakes. On condition that the configurations are properly configured with the right data, they can perform the process more efficiently and precisely as compared to a human employee (Laudante et al., 2020).

## **2. Literature Review**

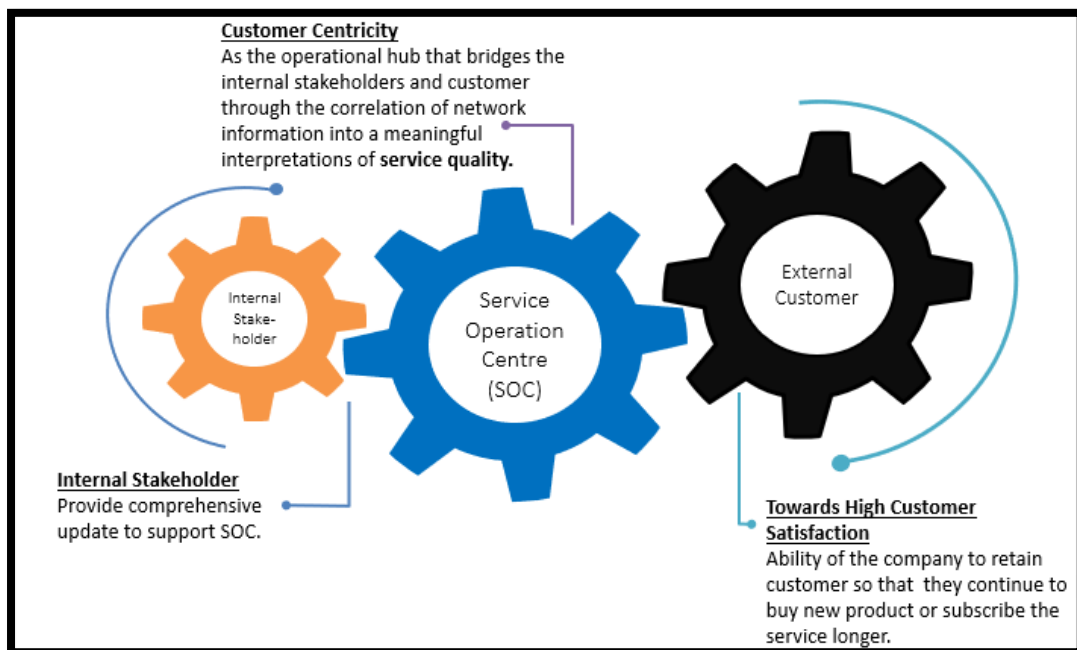
### **2.1 Service Operation Centre (SOC)**

Telecommunication SOC, which acts as the operational hub, is depicted as the middle gear as referred to Figure 1 below. Ideally, telecommunication SOC bridges organizational internal stakeholders and customer through the correlation of network information into a meaningful interpretation of service quality. In order to support the customer centricity aspiration, SOC collaborates with the internal stakeholders to provide comprehensive and regular update to customers especially during the fault restoration process. This will ensure the customers are satisfied with SOC's excellent support, have strong confidence with the telecommunication services and consequently will retain the service for a longer period as well as continue to subscribe new product with this telecommunication service provider.

The term SOC varies for each company. In this paper, the SOC considered as service desk or help desk. According to Cassandra et al., (2019), the service desk played a critical role in customer service as they are the representative of the whole company when interacting with customers. They need answer phone calls, receiving complaints, problems and questions. For these reasons alone, the service desk

should have a strong iron clad management. A knowledge based is very essential for a service desk where they might encounter repeated issues or enquiries. Many companies attempt to build a service desk system to support the quality service. There are reports showing that 70 % of the customer's satisfaction is not about the service itself but because of the customer's service efficiency when they were facing any incidents (Cassandra et al., 2019).

Incident in this context can be define as an event that is causing the service quality to decrease or an event that cause service interruption. Incident management is a process, that handle the situation in a unified way (Sarnovsky & Surma, 2018). The whole process describes the information or method handling to provide accurate representation of the necessary steps to be performed before the actual solution. The management of service desk requires, a part of the standard maintenance of the system or services, applying the definition and description of the services that the company offers to its customers, discovery of their shrouded value and reasons of why they use the provided services. Ultimately, these services will need a constant improvement and administration at all levels of management (Hamranová et al., 2020). This is precisely why SOC is playing a major role in companies strategizing in achieving company's objectives.



**Figure 1. Service Operation Centre as the Middle Gear**

Knowledge based can also be considered as a database that stores past interactions between customers and companies. Many big companies that have high vision for their future growth is putting a lot of efforts in improving their customer support management. One of the main reasons for this is the increasing of purchase of services that support their business (Jäntti & Cater-Steel, 2017). Thus, it is becoming increasingly important on how service desk handles the first level resolution. Traditionally, the first level resolution is requiring human interaction to ask questions and take note the symptoms or the conditions of the issues. However,

for the established companies, they should have a solid knowledge based packed with the issues from the previous customer interactions. This can be a good starting point for a service desk in managing the effective and strategic planning for the new first level resolution system.

## 2.2 Service Quality Assurance

In 1985, Parasuraman has developed a service quality measurement model, which was later refined in 1988 and again in 1991 as a result of evaluations by other researchers. The model, called SERVQUAL, tests whether or not the service is of high quality, based on five dimensions; reliability, tangibility, assurance, responsiveness and empathy. According to Parasuraman et al., (1988) the service quality is the customer's opinion on the overall excellence and effectiveness of an organisation. Managing perceived service quality indicates that the business or the organisation must meet the projected service in order to achieve customer satisfaction (Izogo, 2017). From a customer point of view, the service quality is usually interpreted as a reflection of how well the customer's needs are fulfilled by their real experiences. In this era of technology, knowledge and understanding of the service quality allows companies to succeed in this competitive market. Service quality expectation and perception, however are considered as distinct terms and cannot be considered synonymous (Chumpitaz & Paparoidamis, 2020). However, all these relationships heading towards a multidimensional concept of service quality.

According to Parasuraman et al., (1988), service quality is an abstract and elusive construct due to the unique feature's intangibility, heterogeneity and inseparability of production and consumption. Over the decades, researchers and scholars have established different definitions of service quality. Nevertheless, they unanimously agreed that service quality should be assessed from the customer perspective (Tiglao et al., 2020). From the research of Ruiz-Barbadillo & Martínez-Ferrero (2020), they concur that sustainability assurance is one of the most important mechanisms, which the relevance, reliability and completeness of the sustainability data submitted by the companies can be verified externally for example customer satisfaction of the service quality. Hence, it is a vital piece of elements that affecting the confidence of stakeholders in the sustainability information as a result of immense difficulties in substantiate information about this service performance (Ruiz-Barbadillo & Martínez-Ferrero, 2020).

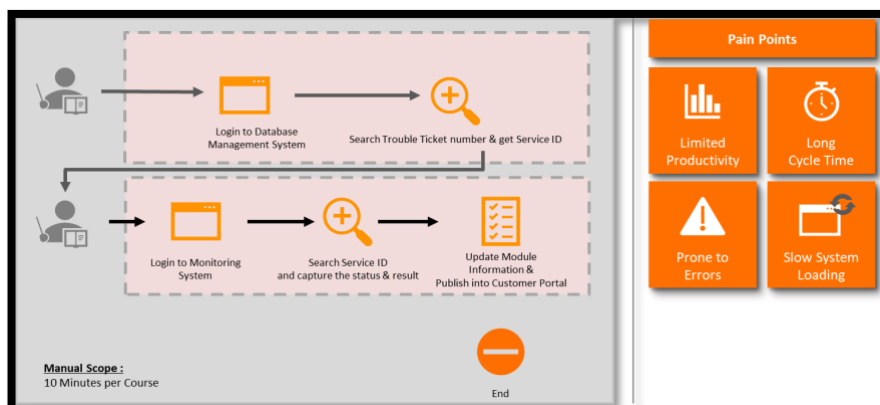
In this era where technology reigns as a big part of daily life, hardly any company that offers services are without service desk. SOC is considered as Service Desk as it has become one of the most basic and critical parts in any industry that offers service as the main trade. Even the companies that have products with extended warranties will also typically have service desk. Service desk or help desk is an essential component that cannot be neglected. The definition of service desk can be considered as a single meeting point of contacts between customers and the providers interact with each other (Suryotrisongko & Mucharomah, 2017). The service desk basic requirements are to handle service request and communications with customers. Help desk may have different names from service desk but the core is still the same which is to help the customers. Help desk is also used for more specific function which to help customers by providing answers and solution to the issued that they face. According to Suryotrisongko & Mucharomah, (2017), help

desk can be defined as a specific type of service, a focused group of support helping the callers or customers by doing first level troubleshooting and escalate the issue to the second level where more in depth solution was needed.

Moreover, the term service is applicable to the means of delivering value to the end users by facilitating the results that the end users desire without the ownership of costs and risks. According to Sarnovsky & Surma (2018), the service part in Information Technology (IT) are the parts that enables the business process of the organisation to be delivered to the users. Since telecommunication is also depending heavily on the usage and technology application, it can also consider as an IT Service, providing the service needed in the issues that customers of telecommunication industry are having. The start-up of the service desk is only one step that the service provider has taken. The next issue that should be tackled is the service desk management. The main objective of any service desk management is satisfying the customers' needs by delivering high quality solution that support the business objectives of the company with cost effective resources (Sarnovsky & Surma, 2018).

Service desk management also bears the responsibility in incident handling, change request management and knowledge management. These responsibilities are better portrayed in the term service desk compared to help desk (Medlin, 2020). An established, modern and versatile service desk is formed with the ability to efficiently managing and resolving incidents quicker. This is because technology in any fields is not that perfect, where there are no single errors yet. It will eventually lead to plummeting customers good feelings when facing any issues or the unfamiliar process in a system or service. As keeping the high level of customer experience and customer satisfaction, the service desk has become an ultimate point of contact where the customers can rely to and be the first thing that they think of when any issue or enquiry arise. This statement was supported by Sarnovsky & Surma (2018), where they emphasized that the processes that service desk should include the incidents and service requests, problem management and operations management.

### 2.3 2.3 Inefficiency of the existing system used by telecommunication Service Operation Centre



**Figure 2 . Before Automation**

Bhatnagar (2016) concurred that innovation is a core competency for a service industry. In his opinion, service innovation is steered by the organization's capacity to creatively use the advantages of technological advances, relationship networks and new knowledge. This goal has required the service providers to improve innovation competence, which is an important role in shaping and developing the service innovations (Bhatnagar, 2016).

Subsequently, there has been a rising attentiveness in specific area of automation that is, robotic process automation. This robotics technology is referring to software agents acting as human agents in system interaction. Robotic process automation is a system that process-aware (Syed et al., 2019). They also agreed that robotic process automation is a new technology consisting software agents called 'bots' that imitate the path taken by a human agent through a selection of computer systems when performing a range of tasks in a business process. It is important to note that the tasks that it executes are generally rule-based, well-structured and repetitive. The paper that has supported by Zhang and Liu (2018) who stated that robotic process automation is a software robotic tool that helps automate the routine tasks. It has been agreed by researchers to be an effective and innovative way to cut cost and perform tasks efficiently.

Robotic process automation did not change the foundation of the IT system itself and improvise the existing manual process with the automated plan (Huang & Vasarhelyi, 2019). It is widely used in almost every industry in the market. According to Santos et al. (2019) most of the tasks performed by robot are filling forms, monitoring events, performing checks, logging into specific programs, sending emails and extracting data. The study of robotic process automation system is capable of working in a complex environment that focuses on recurring topics especially for human. The robot interaction field represents the starting point for advanced research and technological transfer taking account of interface and human (Laudante et al., 2020).

#### **2.4 New First Level Resolution System by employing Robotic Process Automation**

In this highly competitive era, telecommunication companies strive to improve and enhance the efficiency of their business process through redesign of their operation business process. Robotic process automation plays a key part in supporting this objective (Syed et al., 2019). In the last decades, the service industry has taken the main stage in developing the economies all around the world. This has roused a lot of research interest among academicians. Bhatnagar (2016) concurred that innovation is a core competency for a service industry. In his opinion, service innovation is steered by the organization's capacity to creatively use the advantages of technological advances, relationship networks and new knowledge. This goal has required the service providers to improve innovation competence, which is an important role in shaping and developing the service innovations (Bhatnagar, 2016).

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The paper that has supported by Zhang and Liu (2018) who stated that robotic process automation is a software robotic tool that helps automate the routine tasks. It has been proven by researchers to be an effective and innovative way to cut cost and perform tasks efficiently. Some studies have begun to explore the possibility to deploy robotic process automation based in real world experiences. They use robotic process automation as the human worker replacement and it has used in many industries including telecommunication industry. From these studies, empirical data derived and be the key factors that aligns business with robotic process automation (Zhang & Liu, 2018). However, there are some researchers believes that significant changes in automation and artificial intelligence outperforming humans in many tasks will have significant effects in our daily lives. The tasks, such as driverless cars, could be posing a serious threat for the taxi and bus drivers. Robots also can replace human in cashiers as well as human agents in telecommunication industry (Stahler, 2021). Nevertheless, human expertise in making decision is irreplaceable. Thus, this will only lead to the generation of capable making high-end decision with increasing intellectual quotient in overall society (Malik & Brem, 2021).

Focusing on robotic process automation, unlike many traditional IT implementation and reengineering of business, robotic process automation did not change the foundation of the IT system itself and improvise the existing manual process with the automated plan (Huang & Vasahelyi, 2019). It is widely used in almost every industry in the market. According to Santos et al. (2019) most of the tasks performed by robot are filling forms, monitoring events, performing checks, logging into specific programs, sending emails and extracting data. The study of robotic process automation system is capable of working in a complex environment that focuses on recurring topics especially for human. The robot interaction field represents the starting point for advanced research and technological transfer taking account of interface and human (Laudante et al., 2020). In the interview of Pransky (2017), he thought the application of robotics should go in the direction of bottom up and not vice versa as many small robots are connected to each other and each performing simpler functions in cooperation with the others. It is directly opposed to have one big, heavy and costly system that tried to do everything. The engineers that provide the solution in robotic process automation field should start thinking from the end user perspective and provide the solution in the most efficient way (Pransky, 2017).

#### **4. Discussion**

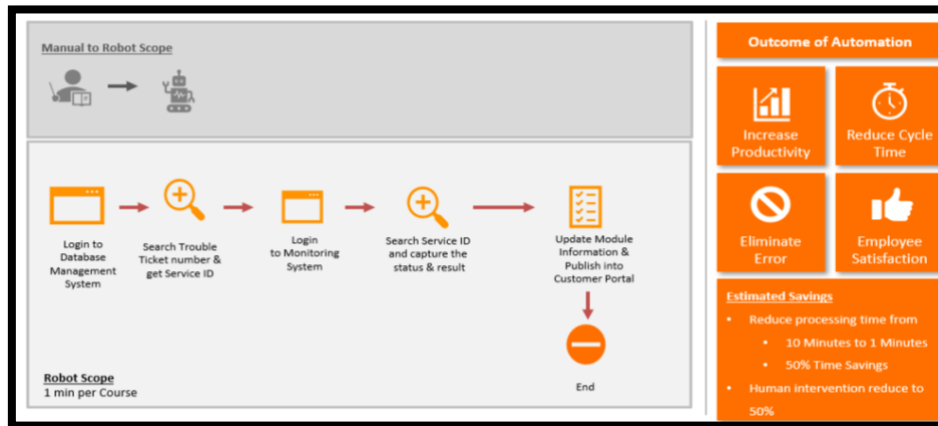
It is obvious that service desk is an essential component in handling customer. From the service desk itself, the management of the system varied greatly depending on the situation that arise. This is precisely the reason why a knowledge base is very important in the service desk. Knowledge base in the service desk will act as a library that stores the issues or enquiry that have arisen previously. According to Cassandra et al. (2019), many companies have started to develop an intelligence help desk to cater the first level resolution before proceeding to pass the issue to the

second level. The system will be based on a knowledge based, automatically tries to locate solution patterns, previous issues from past customers. This has been a great help in the first level resolution for the service desk. The statement from Leal et al. (2017) also supported this point as they pointed out that as the intelligent management is among one of the fastest growing areas of research, whereas the new systems are developed according to decision-support systems. There are challenges on the systems that was caused by the dependence of the intelligent system integration in the existing conventional system. A lot of researchers are focusing on this point, but no one has normalized the management of knowledge fluently yet (Leal et al., 2017).

Leal et al. (2017) points out that the system is able to use a semantic technique to extract the troubleshooting knowledge in their research which focusing on how semantic web and artificial intelligent technologies to be utilized in first level resolution from the point of view of the context indexer. This proves that by using a solid knowledge based, the first level troubleshooting or resolution can be handled by the artificial intelligent system. It is also one of the strategies in the service desk field in the assurance of following the standard procedures. The cognitive automation was acknowledged to be able to assist the company in figuring out the future demand for the service based on the past and current usage pattern and establishing a plan for the service portfolio accordingly (Krishnan & Ravindran, 2017).

According to Jäntti & Cater-Steel (2017), there have been an increasing volumes of service desk request that propels the service providers to be more proactive instead of wrestling to solve the issue that was reported to them. Service operation should be able to anticipate the needs of the end users and respond efficiently and effectively to them directly. These proactive methods such as preventive actions, trend analysis, and major issues reviews is very important in improvising the first level resolution. It is considered as an effective way to decrease the number of support requests. Even with the advancement of technology, it is still challenging to provide efficient and effective customer service that meets all the requirements. Thus, it has been proven in many researches that the artificial intelligent can be used to streamline the first level resolution. Instead of requesting help of a customer support, the intelligent service desk will offer a wide range of strategic possible solution or alternatives for customer's problem (Leal et al., 2017). The outcome of these automatic searching and filtering also tends to be more consistent and able to handle the uncertainty situation better.





**Figure 3. After Automation**

Retrieved from (Telecommunication Company Internal Document, 2019), Figure 3 shows the sample of the implementation of the robotic process automation as the proposed first level resolution system in a telecommunication SOC takes over the process, the process only took 1 minute to be completed. The robot scope will be doing the same process as the normal user would do to publish the data in the Customer Portal but with 50% reduced in the time needed usually. This new system will increase the productivity of the workers as they no longer needed to spend more time in getting and publishing the data manually. Subsequently, the workload of the users can be directed to more productive tasks rather than spending time in the systems looking for data. As the process was automated, the chances of errors happening due to manual data handling also will be eliminated. The robot will not likely to return with wrong data if all the parameters passed correctly from the beginning. However, the internal data before and after RPA took place is considered as confidential by this telecommunication company and cannot be published to the public. Thus, the paper only explains in general statement based on the outcome.

The robotic process automation is proven effective as the system will only need 50% less of human intervention compared to the previous process. It is very good as the user will spend less time and will get the results more quickly and more efficiently. In addition of improving the whole process technically, the mood of the employees also will be significantly rise. This is because they no longer need to spend more time in doing repetitive tasks where they need to be careful not to make any mistakes as all the process are manual. The employee's satisfaction is equally important to the company. In the business world, where all the transactions should be considered as win - win situation, both parties must equally be satisfied with the business transaction. Thus, taking care of the employees' welfare are one of the most basic strategies for any company.

## 5. Conclusion

By proposing the new first level resolution system by employing robotic process automation, it is clearly a very good strategic system planning for SOC for this telecommunication company in Malaysia. This paper able to identify the system used by the telecommunication SOC for first level resolution process, then evaluating the inefficiency of the current first level resolution system and new first

level resolution system by employing robotic process automation. Other than robotic process automation in first level resolution by telecommunication SOC, there are also many other possible factors that may have improve the service quality assurance in telecommunication service provider in Malaysia. The question of whether service quality should be measured as the difference between customers' perceptions and expectations, or whether some alternative approach is more appropriate remains part of an extensive debate in service quality literature.

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