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An Application of Lean Principle in a Call Center at Sarawak

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Abstract: Customer follow-ups or repeat calls are common in a call center primarily due to unresolved cases that turn into aging cases. Different case category presents different complexity with different outcome which this case study demonstrates. The present study thus proposes the Lean principle to be applied in the workflow to analyze each process activity in an attempt to find the root cause of the aging cases that do not conform to the established time function mapping. Five respondents were chosen amongst the call center personnel for a semi-structured interview enabling them to express themselves freely within the context of the dilemma they are facing. The respondents share the same desire to receive timely answers or information to maintain customer satisfaction levels. The Lean principle enables this case study to formulate a recommendation that ties in with Lean true nature for continuous improvement.

Keywords: *Lean principle; Call center; Process flow; Time function mapping; Continuous improvement, Fishbone diagram.*

1. Introduction

The service industry has evolved with customers becoming more affluent expecting quality services, especially since Covid-19 that has changed the consumer landscape thus shifting most services towards digital or online transactions. Customers expect front liners to express more care and attentiveness via online interaction or phone. Measuring customer level of satisfaction is becoming one of the most important metrics to ascertain service quality level. Even in the marketing world, 81% of marketers view customer satisfaction level as the main competition area in their industry (Szyndlar, 2022). In Sarawak, a renowned well-established service provider owns a call center and multiple service counters throughout Sarawak. The objective of the call center is to provide a window of communication for customers in Sarawak to make inquiries via phone calls and emails. The opening of the call center provides an additional platform apart from the existing customer service counter as a point of contact with the customer service team. It reduces unnecessary visits to the counters for the customers. The call center adds an additional platform that helps to distribute responsibilities and tasks so as not to overwhelm the service counter team.

This case study will be focusing on the call center's daily process flow. The call center's structure consists of staff who are the first point of contact with customers and shift supervisors who monitor the operation during shift. The 1st layer team i.e., the support team sends resolved cases back to the shift supervisor. Another team which is the 2nd layer team is the case experts that receive cases from the support team for cases that require further analysis. To identify categories with problems, two (2) case categories are selected for comparison which are 1) new account application and 2) billing. The process for both categories is expected to be completed within 60 days. Table 1 shows a high percentage of aging cases of more than 60 days of 11.46% (251/2,191) for the new account application category. This poses a question as to why this occurs. Its total, cases recorded for the year 2021 is 2,191 applications. However, for the bill category which comprising of bill adjustment, copy bill request, payment, penalties, etc., despite a high number of billing cases handled which is 11,660 in total for the year 2021, the cases aging more than 60 days are only 4.80% (560/11,660).

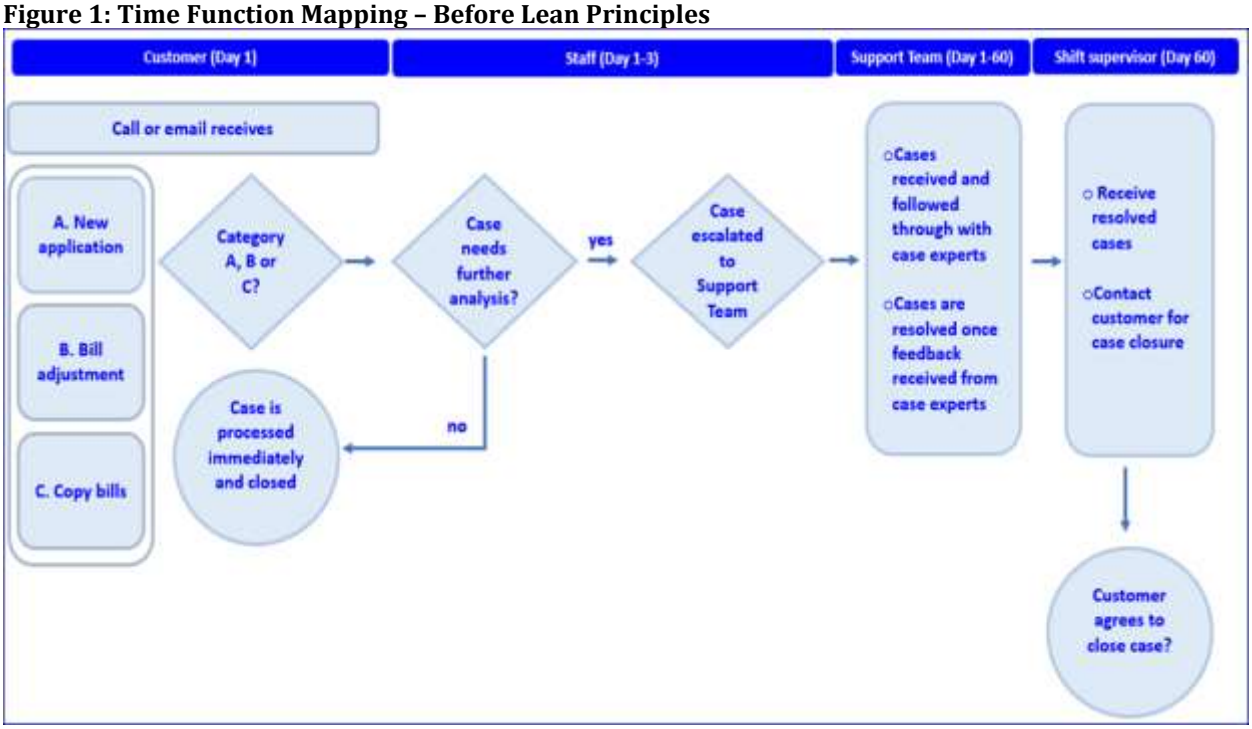
Table 1: Aging Cases More Than 60 Days for Year 2021

Item	Category	Total Cases	Aging More Than 60 Days	%
1	New account application	2,191	251	11.46%
2	Billing	11,660	560	4.80%

Time function mapping for new account application time is presented in Figure 1. The time function mapping serves as a step-by-step guide in ensuring process activities are completed within a specified duration until

the information obtained is conveyed to the customer on time. When the staff is able to provide customer information at the first point of contact, the call or email is completed or termed as first call resolution (FCR). Queries from customers are varies ranging from account balance, and billing adjustment to new application matters. Non-complex cases such as helping customers to unlock their mobile app account password, copy bills request or make appointments with the customer service counter can be done by a call center staff, hence is categorized as FCR. Another example of non-complex cases are bill adjustment and credit card autopay requests. With the completed supporting documents provided by the customer, the staff at the call center can complete the request within three days with the assistance of the supporting team.

Figure 1: Time Function Mapping – Before Lean Principles



However, there are instances when information is not available among the call center team. The support team then emails the case inquiry to the 2nd layer case expert i.e., the application team which is located in a different department. The support team then needs to wait for the reply from the case expert. Follow-up emails are also made every other week in case of no reply. Until such time, the respective department responds with the information that the customer needs. The case then is escalated back to the shift supervisor to provide feedback to the customer and the case is then closed. The process flow is expected to be completed within 60 days for the new account application category. Nevertheless, as shown in Table 2, the year-end data for 2021 shows a bill category that had approximately 5 times more cases than the new account application category and yet the application category has a higher percentage of aging cases of more than 60 days. Longer aging cases hint lack of timely responses to resolve and complete the cases to feedback to the customers. By realizing the above scenario, the present study thus aims to assess waiting time for the aging cases of the call centers that are related to the new account application complete cycle. Moreover, the study intends to identify underlying critical issues which caused aging cases, particularly for the new account application at the call center. Consequently, the study will propose some recommendations to address the delay within the aging cases process of the new account application.

2. Literature Review

Year after year, the service industry has been finding methods to improve its customer service delivery. For instance, concepts that had been promoted such as Total Quality Management (TQM), Six Sigma, Lean application, Business Process Re-engineering, Just-in-Time (JIT), Kaizen and Business Excellence (Roy Andersson, 2006). In general, Lean application relies on three very simple ideas namely, 1) deliver value from

the customer's perspective, 2) eliminate waste (things that don't bring value to the end product) and 3) continuous improvement (https://www.routledge.com, 2021). Lean in manufacturing for instance, is a production method which primarily aimed at reducing times within the production system as well as response times from suppliers and to customers which are called "The Toyota Way" or "Toyota Production System" (TPS) (https://en.wikipedia.org, n.d.). Toyota Production System is centered on the philosophy of continuously improving performance by systematically eliminating waste on the manufacturing floor (Thangarajoo & Smith, 2015). The Toyota Motor Corporation's vehicle production system established the "Lean manufacturing system" which has come to be well-known and studied worldwide (Toyota, n.d.). The main objective of Lean is to deliver quality and improved service to customers by detecting undesirable gaps in work processes, eliminating waste, and re-establish *Leaner* processes whilst seeking continuous improvement moving forward.

Service companies have been implementing Lean only in recent years. A paper investigated a different context of the application of the Lean methodology in the tertiary, to understand the differences in implementing Lean in services compared with the manufacturing industry, and what are the typical ways of adopting it (Portioli-Staudacher, 2014). In that research, a total of 600 service companies were contacted to find if the Lean approach was presented and less than 2% claimed to be adopting a Lean technique. This low percentage indicates how the Lean concept is still an insignificant concept in the services industry. The banking, insurance and healthcare industry only however be known to implement Lean. They further came to realize that comparing service industries is not the way to analyze Lean effectiveness. Instead, they should focus on differences among processes (value streams in the Lean terminology) with different structures within the same industry. Another aspect of difference in manufacturing and service under Lean implementation is the presence of customers in the service delivery system (Portioli-Staudacher, 2014). This view is agreed by another research on the potential of the Lean approach for improvement in service activity. Stating the presence of customers in the service delivery system brings an element that is new compared to manufacturing operations. Customers transform their role in the value application department, being a value stream creation partner (Sanz-Lobera, 2015).

It is also reported that very few studies were conducted on the Lean application effectiveness in a call center. Oneknown academic research was conducted, between January 2002 and June 2004 on the three (3) UK call service centers in financial service to assess the suitability of Lean application in a pure service context, the paper presented its results in the form of observations and numbers on the operational performance before and after Lean implementation (Piercy & Rick, 2009). The positive results which arise from its Lean implementation validate the effectiveness and usefulness of Lean in services and call centers. The apparent reduction in the number of calls per day after Lean implementation implies satisfied customers who no longer need to make repeat calls or the term they called 'failure demand'. The paper reported the implementation exercise further skipped two (2) departments involved in a total cycle of process flow which means unnecessary steps were removed. Greater research is still needed to verify real Lean applications in the pure service section (Piercy & Rick, 2009). From this perspective, this paper will be focusing on the call center's process flow in investigating its process activities. Using the Lean principle as guidance, the study will identify critical areas in its process activity(s) with waste potential that will affect customer satisfaction levels.

3. Research Methodology

This case study analyses the underlying critical issues of the new account application category within its process activities. With limited knowledge about the Lean concept in call center process activities (Piercy & Rick, 2009), the present study has a limited capacity to describe or assess using quantitative investigation methods. Instead, the qualitative method is used to fully understand the complexity of the issues within the process flow and time function mapping. The qualitative method will also give a better understanding of respondents' viewpoints on how they maneuver the handling and explaining to customers unresolved cases. Data is collected by conducting a semi-structured interview to offer respondents flexibility to express their views on the subject during the phone conversation. Respondents are selected by using a purposive sampling technique by considering the respondents' job responsibilities who are most impacted by the circumstances i.e., as the most relevant respondent for the study. The group of respondents consists of three (3) shift

supervisors and two (2) staff in the call center. The group represents front-liners who have direct contact with customers and the shift supervisors as the last point of contact with customers. The phone interview was a one-time session.

Table 2: Respondents' Profiles

Item	Respondent	Position	Years of Experience	Job Description
1	Shift Supervisor 1	Executive	8 years	i. Oversee the service level performance. ii. Monitor the team call queries.
2	Shift Supervisor 2	Senior Executive	10 years	ii. Manage communication with internal and external departments.
3	Shift Supervisor 3	Senior Executive	10 years	iv. Feedback to customers on resolved cases.
4	Staff 1	Executive	3 years	i. Attend to incoming inquiries from customers.
5	Staff 2	Executive	8 years	ii. Escalate cases to the support team for cases that require analysis.

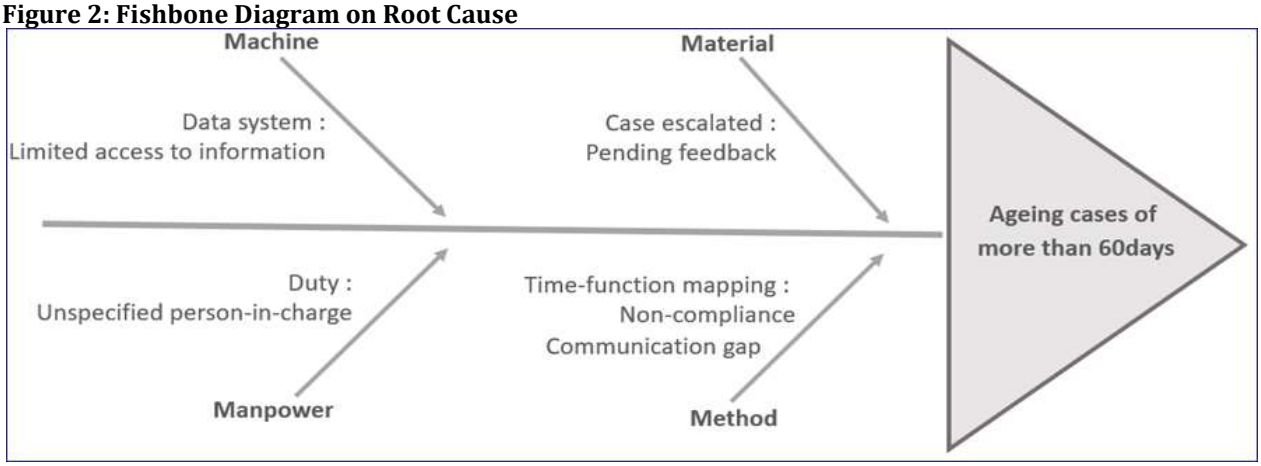
Three (3) questions were prepared before the scheduled interview to ensure the researcher's readiness in observing respondents' dynamics in answering the questions. The interviews lasted between 10 - 15 minutes each. The questions prepared are as follows:

- *From the data given to me, shows some critical problems in your department for new account applications. Can you elaborate?*
- *From your experience and the information that you have, can you share the challenges your department faces in the delay in resolving the cases?*
- *How do you think this issue can be resolved?*

4. Results

One glance at the case data in Table 2 might have given the impression that the callcenter team is inefficient in handling cases for timely completion. The call center would be perceived as slow in analyzing problem cases or probably lack of manpower to manage unresolved cases. It is believed such an issue could only be better understood through interviews in giving respondents the space and flexibility to express their opinions along the lines of the questions asked to determine the actual root cause. A fishbone diagram in Figure 2 is used to relate the issues that trigger the problem. Multiple variables are stated in the fishbone to explore the possibilities of how extreme each variable contributes as the potential cause(s). From the fishbone overview, one can understand why the waiting time occurs. Better still, to have an in-depth knowledge of which variable affects the waiting time the most is consequently identified as a critical area that needs attention and improvement.

Figure 2: Fishbone Diagram on Root Cause



As shown in Table 5 below, from the questions posed in the first column, answers from the interview resulted in diverse opinions, but respondents share the same goal; they wish to give timely feedback. The respondents expressed their dilemma about customers making repeat calls (follow-up calls) whereby cases have no information update after a stretched period of time. They share a common sentiment articulating issues concerning information availability. Two (2) shift supervisors remarked the same frustration of having no control over cases and information. In other words, they are not able to obtain the latest information even though it is readily available, because the application department personnel do not provide updates.

The other shift supervisor further remarked that they do not know what goes on within the applicable department or at which stage the case has progressed. To a point, the shift supervisors call customers to obtain updates if any colleagues from the application department had been in touch with the customers as a means of progress. The two (2) staff when interviewed used the same phrase *"If I were to put myself in the customer's shoes." this* clearly came from their empathy towards their customers' requests but have nothing to update customers. The call center staffs also commonly use the term *'pending application'* when conveying updates to customers, as there is no information available at the time of the call while awaiting a shift supervisor and support team to send another follow-up email to the application department. In the fishbone diagram in Figure 4, this issue or problem can be viewed in the material section whereby 'Material' in this diagram is the case escalated that has yet to receive feedback from this respective team.

Limited access to system information under 'Machine' in the fishbone diagram also plays a significant role in information update that was expressed by respondents wishing that management would grant the call center access to the application department system to view information, instead of waiting for email replies from the application department. The majority of the respondents expect the managers in the application department to be more cooperative with the call center for information updates. This is classified under 'Manpower' in the fishbone diagram regarding personnel that should be assigned as a person in charge or a focal point to obtain information. The issues gathered from the respondents are closely related to the time-function mapping requirement which is to be within 60 days which clearly shows a high percentage of cases under new account applications that have exceeded the time frame. This issue is classified in the fishbone diagram under 'Method'. The research can conclude that the new account application category poses a high percentage of aging cases of more than 60 days for the year 2021 influenced by the factors gathered from the respondents.

Table 3: Feedback from Respondents

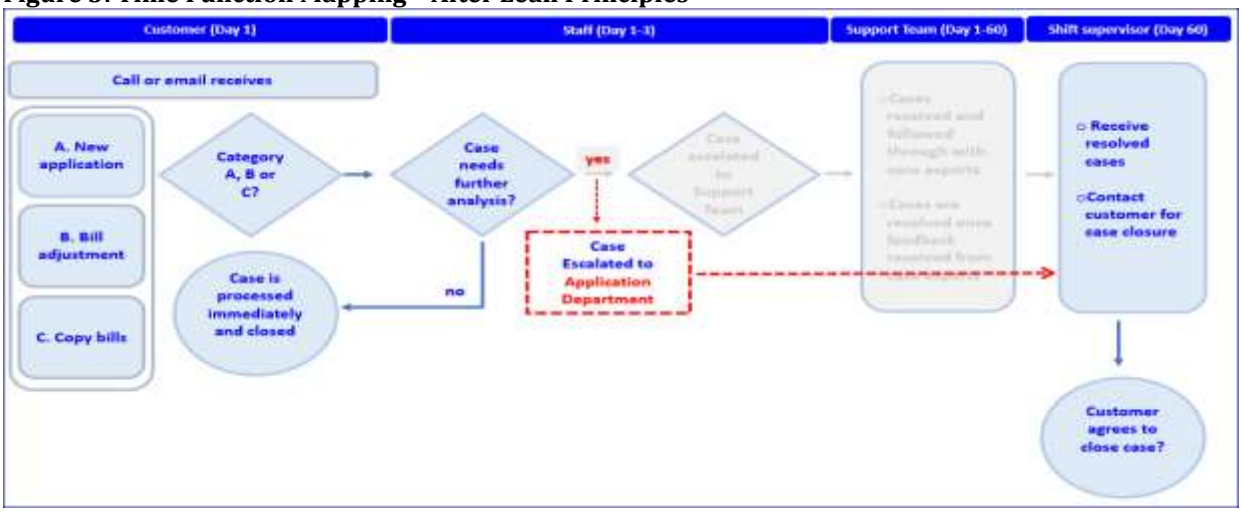
Item	Question	Shift Supervisor 1	Shift Supervisor 2	Shift Supervisor 3	Staff 1	Staff 2
1	*From the data given to me, it shows a critical problem in application department for Application category. Can you elaborate*	>Materials no stock. >Unfavorable answer from application department.	>Slow progress on update. >This has been a longtime issue.	>No step-by-step progress. >Obtain information from customers instead, to find out progress at the site.	>Materials no stock. >Delays from external vendors engaged by application dept. >Pending application department.	>Pending application department.

2	*From your experience and information you have, can you share the challenges your department faces in the delay in resolving the cases?*	>Bottlenecks. >Call center has no control over information. >How to please customer repeat calls.	>Call center has no control over information. >What to tell customer. >No information. >Repeat calls.	>No exact information.	>No exact answer. >Repeat calls.	>No access to system information. >What to tell the repeat call customers.
3	*How do you think this issue canbe resolved?*	>The application department be more stringent with their team information management and cooperative in providing information to call center.	>Increase in number of applications should prompt application department to increase manpower. >Appoint personnel as focal point of feedback call center. >Request for system access for information update.	>Application department and call center should be in one direction in their mission.	>Appoint personnel as focal point to feedback call center. >The application department personnel to give a timeframe of work progress.	>Be transparent on step-by-step progress. >Request for system access for information update. >Online meet with personnel for updates.

The findings elaborate on the complexity of a call center complaint environment with respondents hoping that the case expert team from the next level of process to give better cooperation. It is not particularly easy to apply the Lean concept when 'people matter' is involved in an attempt to improve the waiting time (aging cases). For Lean manufacturing, wastes such as machinery inefficiency in untimely delivery performance or an over-production can be adjusted by tweaking the machine control setting. However, in the service context environment, the process flow involving the human element such as in a call center whereby staffs have to maneuver their way in handling complex cases and convince customers without information at hand is not similar to machines tweaking in Lean for manufacturing. Customer satisfaction level within the call center can be measured by observing the repeat calls received because of unresolved cases. Study of Lean applicability in a call center affecting repeat calls which the study termed as 'failure demand' was conducted in the UK with three (3) financial institutions mentioned earlier in this paper.

Resulting in decreased numbers of repeat calls after Lean implementation (Piercy & Rick, 2009) signifying the importance of this research in obtaining repeat calls as a variable for analysis. The difference in Lean manufacturing, the factory does not receive repeat calls from the customers about their cars that are not yet fully assembled. This is why the human element must be fully considered in every aspect of their motivation, morale, skills and capability when recommending the Lean principle in a service context. From the respondents' remarks, though they have not realized or are familiar with the full benefits of Lean principles, their responses are an indicator they desire Lean principles along the process flow implying that Lean principles are in existence only if every person involved in the process activities cooperate and conform to the timeline. Lean concept is not just looking at personnel effort, it also filters through the process flow and elements involved within the process activities that can be improved to eliminate the waiting time. If combined personnel collaboration and improvement in the process flow waiting time, the Lean principle is therefore easily applied.

Figure 3: Time Function Mapping – After Lean Principles



As seen earlier in Figure 1 – before the Lean principle, for comparison and suggestion, the following is a recommended process flow associating changes in the process flow and management by intervening with the Lean principle. See also Figure 3 above for time function mapping - after Lean principles:

- Management to recommend the customer relationship management (CRM) system that is currently used in the call center to be extended and rolled out to the application department. A rollout to one of the technical departments was successfully done in stages to ensure information and instruction seamlessly flow from the beginning of the call received until the customer's issue is resolved. The same approach can be applied to the application department. In the Lean principle, a smooth flow of information from start to finish will ensure efficiency and improve customers' satisfaction whereby information is conveyed to customers on time. Recording and reporting of case escalations timeframe delivery by the CRM system can thus be analyzed for continuous improvement.
- Steps within the process flow are reduced whereby the case is escalated by staff via CRM directly to the application department. Instead of into the support team case pool which currently still needs the support team to collect the cases and distribute them to the respective department via emails. The time used to perform this escalation could be used bythe support team to analyze more complicated billing issues. Reduce waiting time or eliminating waste in time consumed, gives the personnel involved in the process activities to focus more on valuable cases such as bill disputes that require more attention to enable responding to customers promptly.
- Different timeframes set for each pending application department job can be categorized and justified according to most complex to least complex. The categorization reflects the critical areas within the application department which they can continue to work on within their department for continuous improvement in the future.
- Align with the KPI for the call center and application department for cases received related to the department's task to give the sense of ownership and responsibility to respond to the call center according to the time function mapping set. KPI is a systematic approach to monitoring staff performance for continuous improvement. The Lean concept emphasizes finding loopholes in the system for correction and re-training of staff to sharpen their skills.
- Grant the call center system access to enable the team to view updated information which can be translated into first call resolution for staff without the need to escalateto another level and await the support team to distribute the queries via email which has no value in the process flow.

Managerial Implications and Recommendations for Future Research: A call center department can use findings from this study to understand the dynamic of the process flow and process activities in gauging the underlying issues in the attempt to improve customer satisfaction level. This study provides constructive guidelines for firms to mitigate the consequences of complacency within the work culture by making full use of the system and manpower readily available to maximize efficiency. Lean principles are used as a form of 'box-ticking' in ensuring every element in Lean principles is fulfilled without being too rigid as there is a

human element that matters as far as the service context. Because of the limited research at the call center within the service industry concerning Lean principles, as suppose to the popularity of study about Lean in the manufacturing sector i.e., composed mainly of machineries, firms must have care and consideration towards employee's involvement within the process activities. Employee's motivation, ability and capacity to cope with the changes when introducing Lean principles is an utmost concern. Coupled with the day-to-day demand from customers could affect their enthusiasm and spirit. It is also recommended for future studies to be conducted in other service organizations that involved many respondents. It is also advisable for the present study to extend the application of the Lean principle in a quantitative approach so that the generalization of the results can be obtained and reported.

5. Conclusion

The majority of respondents' feedback expressed plight for more control in the process activities especially in obtaining information for customers. The core of call center activity is information escalation as the main product, yet it is a pressing issue with the application department. When a department sets a target and priorities in its key performance index (KPI), they are set in accordance with their departmental goal. The call center KPI mostly revolves around customer service in managing cases within the specified timeframe which may not be aligned with other department's KPI. Customer focus and centricity level therefore vary. Being one of the largest service organizations has its challenges in promoting competitive culture. Complacency culture slows down the work process. Urgency is deemed unnecessary by some departments since there is no pressing need to stay competitive in the market, unlike other service industries that fight for market share.

Customers will notice this, thus labeling the organization as a whole for being uncaring and non-attentive towards customers' requests. Lean principles concept looks into saving time within the process activities to improve efficiency. All it takes is re-engineering the process flow to simplify and cut the current time required or steps that do not add value. The lean principle in a service environment such as in a call center can be applied but it must be applied with due consideration of the personnel affected in the process activities. One must view it as beneficial to both the organization and its employees in terms of skillset training and development. The lean principle does not view critical areas that need correction as faults, instead, as a learning platform for continuous improvement. Changes are required to meet customers' expectations. Customers' satisfaction and positive testimonials are necessary to sustain the organization's reputation in the market as caring and efficient. Some of the best talents will be attracted to an organization that has been maintaining its service quality thus becoming the most sought-after employer in the market.

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