

Malaysian Journal of Applied Sciences 2019, **Vol 4(1)**: 60-72

©Universiti Sultan Zainal Abidin

eISSN 0127-9246 (Online)



Malaysian Journal of Applied Sciences

ORIGINAL ARTICLE

Implementing Lean Principles in Administrative Procedures: Registration Process for New Student Intake in Universiti Sains Islam Malaysia (USIM)

**Hammad Farhi Mohd Saudi and Jamal Abdul Nassir Shaari*

Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia, Bandar Baru Nilai,
71800 Nilai, Negeri Sembilan

*Corresponding author: farhi@usim.edu.my

Received: 05/04/2019, Accepted: 19/06/2019

Abstract

The purpose of this case study is to look at how “Lean Techniques and Principles” can be successfully introduce and implement in the higher education institution or university context. In the last two decades, Lean techniques and principle has been applied to improve production system in manufacturing processes. Lean was introduced in the 1950s by Womack and Jones known as the Toyota Production System (TPS) by the legendary car manufacturer Toyota, the world’s most profitable automaker and have spent decades perfecting lean practices in the production. The method used was to produce more productivity while using fewer resources and identifying activities which creates value for customers, activities which do not create value but are required and actions which do not create value and can be eliminated. This case study demonstrates how “Lean Principles” can be adopted to the administration services particularly in the registration process for new student intake in USIM. The objective of this case study includes : to identify the needs of improving the registration process by eliminating the waste (Muda) such as time wastage, human resource wastage, to introduce the apparatus required to reduce and eliminate waste, to redesign the process using the lean techniques and principles to eliminate waste and to continually improve the process with the goal to achieve perfection for customer satisfaction and university’s reputation. How Lean Principles can transform the work process in the registration procedure, process efficiency, the reasons for implementing Lean in the process, minimize the lead time, minimize the financial cost and the role of management. This paper contains a comprehensive discussion and findings of the development of Lean principles and management through one of the models, namely; Value Stream Mapping (VSM) process which can enhance the operational process in the university environment to improve the process, particularly in the new student registration process.

Keywords: Lean Principles; Higher education; University; Value Stream Mapping

Introduction

Over the last two decades Lean Techniques have been applied for improving production systems in manufacturing processes and have had a profound impact on productivity. More recently, the method is used other than the manufacturing sector such as hospitals, government agencies, institutional of higher learning and service industries.

The term “lean” was originated by Womack & Jones (1990) that used it to describe the previously-mentioned Toyota Production System. The method was able to produce more productivity while using fewer resources. Lean can be described as tools that comes in to help in identifying waste and provide guidelines on how it can be eliminated. Moreover, lean also focuses on cost effectiveness, time reduction, high quality of services and products. It is a customer-oriented principle as it provides high satisfaction to the customers, reduces bureaucracy and provides simplified processes. In addition, under lean principles, the customers can gain more benefits. There are reductions on human effort, time, space, machinery and materials but the customers’ needs are still fulfilled despite saving on all these resources. The Toyota company was the first to develop the lean system between 1950-1970.

In addition, according to Womack & Jones (2003) “all activities to design, order, and make a product can be sorted into three categories: (i) activities which create value for the customer, (ii) activities which do not create value but are required by the current product development, order filling, or production systems and therefore cannot be eliminated and (iii) actions which do not create value for the customer and can be eliminated accordingly”. These non-value-adding activities or operations are waste, and it is commonly referred to as muda. Womack and Jones (1996) added that Lean manufacturing has the aims of waste reduction and the assurance of step flow remains. Mintzberg (1979) stated that the administrative element of an organization coordinates the work of the operating core, but insufficient attention is given to this in Lean approach. Some previous studies have demonstrated that lean techniques can significantly improve the performance of services (Bortolotti et al., 2010; Middleton & Joyce, 2012; Piercy & Rich, 2009; Swank, 2003).

The emergence of “lean”, “lean production” and “lean thinking” has been one of the major developments in management practice during the last two decades (Alsmadi, Almani, & Jerisat, 2012). Hence, organizations have a crucial dependency on administrative services where people and resources must be corresponded, quality and customer satisfaction must be supervised and administered, orders must be processed, and deliveries need to be scheduled. Administration includes all the activities in order to plan, organize, and to drive an organization to specific goals. Even though lean was initiated and evolved in manufacturing, it has recently been applied in services with some degree of success (Alsmadi et al., 2012; Bortolotti, Romano, & Nicoletti, 2010; Swank, 2003). In short, the approach will also lead to significantly better-quality output if being executed well.

The focal point of this paper (case study) is to reduce waste in organizational administrative processes, particularly in the registration process of new student intake in USIM. This paper proposes a method for improving the efficiency of administrative services based on lean approach.

The main question addressed is: “How can lean principles be adapted to the administrative services particularly in the registration of new student intake?” The conceptualization of waste through its set of lean principles is developed for optimizing the processes. The method was field tested at a university where waste in the current processes was identified and classified. Recommendations for reducing waste were then made.

Data Collection Methodology

A mix method of both quantitative and qualitative was applied to this case study.

Quantitative method

In the quantitative approach, data were obtained from the Division of Academic Management, Bursar Department, IT Department (GOAL-ITQAN) and Student Affairs Division where document analysis was carried out and quantified.

As a collaborative approach to customers, which in this case are the students; it allows USIM to better understand and deliver what the customers' need as mentioned by Radnor & Johnston (2012), short 6-questions survey was distributed among the students. The students who participated in the survey were from the 1st Year 2nd semester, who has enrolled to USIM during the previous semester's intake (September 2017/2018). This survey is focused mainly on their satisfaction level on the previous registration process.

Qualitative method

In the qualitative approach, an in-depth interview with the relevant departments (Division of Academic Management, Bursar, Student Affairs Division, IT Department (GOAL- ITQAN) were involved in the registration process every year are conducted. Interviews were also carried out among the Student Representative Council (MPP) as well as Out Campus Student Secretariat (OCSS) to get a better insight from the relevant parties and obtain opinions on implementation of new process, system and exercise for the registration. This is relevant to what Prahalad & Ramaswamy (2006) mentioned that the customer which in this context are the students who become part of the value creation and that the institution, which is USIM, endeavours to discover opportunities for creating greater value for both parties. As in this case, all parties involved agreed with the implementation to facilitate and expedite the process of the registration.

Data analysis

After the primary quantitative and qualitative data were collected, it will be generated by relevant statistic information for further analysis. As for the secondary data, it will be collected and compiled via literature sources including but not limited to authentic journals, articles, newspapers and websites, in which authors and scholars are acknowledged and credited. From the interview and survey data, a closer examination was carried out on all the related lean principles and techniques. The effectiveness and efficiency of each of these principles is analysed.

From the findings of the analysis along with the support of literature review, propositions are made as earlier-mentioned Pearce & Pons (2013) stated; to illustrate the current state of processes and defines the path of improvement. To materialize this idea, a steering committee has been set for this purpose which lead by Deputy Vice Chancellor (Academic & International) as the advisor, Head of Academic Management of USIM as the Chairman and the rest of the committee will be from IT Department (Goal-ITQAN), Bursar Office, Student Affairs Department, Student Housing Centre and Division of Academic Management. A new system and concept for the registration process for the new student intake has been developed. We strongly believe and confident that it will reduce the waste in terms of the time, expenses and workforce. This concept and ideas have been presented to the Top Management and they had agreed to implement it during this coming student intake.

Results

Quantitative Approach

Online survey has been carried out by the Division of Academic Management by requesting to fill in the survey questions through the iStudent Portal to the students from 1st year/2nd Semester (Academic Session 2017/2018) who enrolled into USIM last year during their 1st Semester Academic Session 2017/2018 intake. The survey question as illustrated in **Figure 1**.

**KAJIAN KEPUASAN PELANGGAN PENDAFTARAN PELAJAR BAHARU SARJANA MUDA
SESI AKADEMIK 2017/2018**

**CUSTOMER SATISFACTION SURVEY ON NEW STUDENT INTAKE REGISTRATION
(UNDERGRADUATE) ACADEMIC SESSION 2017/2018**

Sila tandakan tick (✓) pada kotak yang berkenaan / Please tick (✓) in the box

1. Fakulti/ Faculty

FACULTY OF LEADERSHIP AND MANAGEMENT (PKP)	
FACULTY OF QURANIC AND SUNNAH STUDIES (PPQS)	
FACULTY OF MAJOR LANGUAGE STUDIES (PPSJ)	
FACULTY OF SCIENCE AND TECHNOLOGY (PST)	
FACULTY OF LEADERSHIP AND MANAGEMENT (PKP)	
FACULTY OF MEDICINE AND HEALTH SCIENCES (PPSK)	
FACULTY OF DENTISTRY (PPG)	
FACULTY OF SYARIAH AND LAW (PSL)	
FACULTY OF ENGINEERING AND BUILT ENVIRONMENT (PEAB)	

2. Adakah anda berpuas hati dengan dengan proses pendaftaran pelajar ? / Are you satisfied with the student registration process?

Ya / Yes	
Tidak / No	

3. Adakah anda berpuas hati dengan masa yang diambil untuk mendaftar / Are you satisfied with the duration taken to complete the registration?

Ya / Yes	
Tidak / No	

4. Berapa lama masa yang diambil untuk mendaftar? How long does it takes to complete the registration?

0-20 minutes	
20-40 minutes	
40-60 minutes	
more than 60 minutes	

5. Adakah anda berpuas hati dengan layanan petugas? / Are you satisfied with the service from the staff ?

Ya / Yes	
Tidak / No	

6. Lain lain / Other comments

- Terima Kasih / Thank you -

Figure 1. Customer Satisfaction Survey

Data were collected to measure the level of satisfaction with the previous registration process. Out of the total number of 2,406 1st year/2nd semester 1,980 students have responded which equivalent to 82.2%.

Registration Process Satisfaction

1588 out of 1980 respondents are not satisfied with the registration process. It represents 80.2 % out of the total survey. On the other hand, 392 or 19.8% out of total respondents are satisfied with the registration process. This illustrates that the majority of the students show dissatisfaction of the previous registration process.

Duration Consumption Satisfaction

Out of 1980 respondents, 1,609 respondents are dissatisfied with the duration to complete the registration. This represents 81.3% percent of the total respondents participated in the survey. On the other hand, 371 respondents are satisfied with the duration to complete the registration, which represents 18.7% of the total respondents. This illustrates that, the overall satisfaction of the duration to complete the registration is extremely low.

Duration to Complete the Registration

Most of the registration took more than 20 minutes to complete as no respondent stated less than that. Only 1.4% spent 20-40 minutes to complete the registration process while 19.2% spent between 40-60 minutes. It is rather alarming that most of the students participated in the survey, which is 79.4 % spent more than 60 minutes to complete the registration process.

Staff Service Satisfaction

It shows that 55.7 % of the participants are satisfied with the service from the staff. Nevertheless, 44.3 % of the participants are dissatisfied with the service. It is believed that the dissatisfaction arouses mostly from the slow registration process that affected the service of the staff. In addition, it was also supported and agreed by the Students Representative Council (SRC) and Out Campus Student Secretariat (OCSS) during the interview session.

Students' Comments

As for students' comments, an open-ended question answered by the students has been summarized. The summary of respondents' comments towards news students' registration are illustrated in **Figure 2**. It shows that 55.7 % of the participants are satisfied with the service from the staff. Nevertheless, 44.3 % of the participants are dissatisfied with the service. It is believed that the dissatisfaction arouses mostly from the slow registration process that affected the service of the staff. In addition, it was also supported and agreed by the Students Representative Council (SRC) and Out Campus Student Secretariat (OCSS) during the interview session.

Complicated and very lengthy process
Should be more organized
Time consuming
Staff is rude and unhelpful
Waiting time is too long
Waiting area is too crowded

Figure 2. Students' Comments

Qualitative Approach

As mentioned earlier, USIM will receive its new student intake to pursue their studies at the undergraduate level every year. USIM receives an average of 2,400 new students' intake for undergraduates programmes each year. It is one of the most important modus operandi in every university including USIM.

The importance of this registration for new student intake brought attention from various departments and stakeholders. Thus, when this survey was launched, various related

departments like Division of Academic Management (BPA), Bursar Office, IT Department (GOAL- ITQAN), Student Affairs Division (STAD) voluntarily offered themselves ideas and feedbacks through open ended question interviews. The Interview has been conducted with the relevant departments who were involved in the registration process every year. Interviews were also carried out among the Student Representative Council (MPP) as well as Out Campus Student Secretariat (OCSS) to get a better insight from them and obtain opinions on implementation of new process, system and exercise for the registration.

Offer Letter Distribution

The current practise of USIM is to send offer letters to the successful candidates to their home address via the post, using Poslaju. This practise will definitely increase the university's expenditure in terms of postage expenses which is considered as waste from the financial aspect.

Course Registration

The course registration was carried out during the registration day. The administrator of the relevant Division did not set up the timetable and subjects that will be taken by the students during their first year of studies even though it is much easier to be scheduled and arranged earlier by the administrator. This has not been the case where the course registration will only take place during the registration day. This create waste during the registration process in terms of time consuming especially when students need to queue up and wait for their turn to register for the course subject according to their programmes and respective faculty.

Registration Day

The registration day is held during the weekends. This incurred waste in terms of the involvement of the workforce during weekends where there are about 100 personnel involved during the registration day. Financial expenses were incurred during the day since overtime is paid to eligible employees. The University had to pay for an extra overtime allowances to the workforce. The University also need to spend on the refreshment including breakfast and lunch to the staffs involved during the registration day.

Registration Venue

The registration day was held in USIM's Dewan Tuanku Canselor (DTC) Hall where the cost of rental is RM 30,000 per day; in which it is more useful if the Hall is rented to other parties that can generate income to the University. The use of DTC Hall was also not helping in terms of expediting the registration process and reducing the movement of the students moving from one place to another. Throughout these years, they need to travel or move from DTC to the residential college which was time consuming and cost inefficiency to the University. This is because the University needs to bring the students from DTC to the residential college where the buses usage incurred cost and time consuming.

Registration Preparation/Requirement

All the while, the University possesses the student's file where the cost for preparing the hardcopy files incurred quite an amount of money spent. According to the officer of Division of Academic Management 'every year USIM has to spend RM 5.50 for a hard bind file per student

which amounted to RM 14,300 per year'. Next is the usage of the laptops during the registration day to compile student's data before converting to hardcopy files is also an issue to be taken care of. 'The need to rent 100 pieces of laptops for the registration process costs USIM to spend approximately RM 15,000 every year' based on the feedback from USIM's IT officer. The emergence of saving virtual data in IT, in the interviewee's opinion needs to be considered as the new era of technology should be applied by the University.

Registration Process Flow

The flow of the registration process itself is much left to be desired. Previously, ten counters were needed to carry out the registration exercise for new students as illustrated on Figure 9 above. The registration process is lengthy where students are not informed by the University the precise time to come for the registration. It was only stated in the offer letter that the registration time is from 9.00 am to 4.00 pm. It is a waste in terms of time in which they had to come as early as possible, thinking of avoiding queues.

Discussion

From the analysis, this paper is able to identify inefficiencies which lead to unnecessary wastes which requires improvement through certain principal application theories.

Weakness in terms of Process Flow

The results shown that the students are dissatisfied with the recent registration process for new student intake. It shows that there need to be an improvement in terms of process in the administration. Furthermore, the administrator of the relevant Division did not set up the timetable and subjects that will be taken by the students during their first year of studies which do not help to improve the process flow of the registration. It would be much easier if the timetables and course subjects were arranged in advance prior to the registration day.

In addition, as mentioned earlier, the usage of the DTC Hall does not accelerate the registration process in fact, it exerts restricted mobility on the students. This creates waste in terms of process when students need to travel or move from DTC Hall to the residential college. The flow of the registration process itself needs to be improved as students had to go through lengthy process to complete the registration.

Waste in terms of Time

The result shown the low level of satisfaction on the duration to complete the registration. Hence, an approach or technique to eliminate wasted time is needed in this administrative operation service. This is supported by the survey result which portrayed that the majority of students spent more than 60 minutes to complete the registration process. The transportation time (movement from one counter to another) queue and waiting time was a bottleneck and resulting in time wasting. Furthermore, the evidence of time waste was also supported by their additional comments of "Complicated and very lengthy process", "Time consuming" and "Waiting time is too long".

Discrepancies in Managing Workforce

The result shows that, the satisfaction level is just above the average for the satisfaction level of the services from the administration staff during the registration for the new student intake.

Thus, the Management needs to identify the factors affecting the service of the staff. This is the room for improvement that the University should take care of to avoid further mistakes that may lead to the churn of human resource wastes.

The lack of human resource skill is also supported by additional comments of "Should be more organized" and "Staff is rude and unhelpful" from the Questionnaires distributed. Interviews in various related department also reflected the unnecessary waste in terms of the involvement of the workforce during weekends. The waste is also related to expenditure that this paper will be discussing later in this topic.

Waste in terms of Space /Area

Waiting area is too crowded since the students need to register at the same time as well as too many equipment, tools and stationeries were positioned at the same location at Dewan Tuanku Canselor (DTC) Hall. This also creates waste in terms of space provided. Then, waste of space also proven by the usage of the laptops during the registration day to compile student's data as well as converting them to hardcopy files; which then consuming space to store the files.

The flow of the registration process itself creates space waste, as ten counters were needed to carry out the registration exercise. In addition, from one angle, the use of Dewan Tuanku Canselor (DTC) Hall itself can be characterized as space waste due to its location. It is more useful if it is being used by other parties for other purposes or activities that can generate income to the university.

Expenditure Waste

The interview also mentioned in terms of expenditure waste that the current registration process incurs several wastes in expenditures. One of it is, in terms of staff payroll. By conducting over the weekends, USIM needs to spend more on the overtime rate. Prior to the registration process high expenditure was already spent on Poslaju, when individual offer letters were being sent to successful candidates. The usage of the DTC Hall is underutilized and due to its location, extra transportation cost to commute registered students to their respective residential colleges. Cost incurred for preparing the hardcopy files. All of these wastes could be avoided.

Solution through the system (eTasjil)

Students are dissatisfied with the overall registration process required for the new student intake and there are needs for improvement in the various aspects of the registration process. The dissatisfaction is proven in the survey results illustrated on the data analysis which later transpired in the issue analysis. Dissatisfaction occurs in respect to the time taken to complete the registration process, where majority of the students spent more than 60 minutes to complete the registration process. Complaints are further extended by feedback of "Complicated and very lengthy process" and "Time consuming"

A recommended solution for the above issues is the introduction and development of the Online Registration System for the new student intake, namely eTasjil. In eTasjil, students need to register their names using the web browser and needs to insert their username and password. They then need to click on the confirmation of acceptance, to agree to come for registration and proceed with the course registration. They also need to confirm the course registration where they can choose and view the courses that they have registered; after which they have to click the confirmation button. If the registration failed, they can either start over the registration or logout from the system. If successful, they can view and print the timetable and end the registration process by logging out from the system. eTasjil users will go through

the personal information form where they can view and change necessary information. They also will go through terms and conditions to accept the offer form by ticking checkbox to register as USIM's student and will attend the registration day.

The main focus of the Online Registration System for New Student Intake (eTasjil) is to produce an easier platform for both the new students and USIM administrators for the registration process. The system also enables USIM's administrators to retrieve actual number of accepters that register as USIM students. It also enables USIM's administrator to timely monitor who did or did not register online or reject the offer. The administrators need to instruct students being offered to register into the database. The barcode in the offer letter for each student is stored in the database. In short, this system will reduce manpower, cost of the registration process, simplifies and shorten the period of the registration process. eTasjil is expected to help improve the current registration process and will be able to help new students to register easily as compared to the manual system. Among the expected outcomes from this system are:

- The ability of administrators to log in into the system.
- The ability of administrators to access to database to add new students' information without using the conventional way by preparing individual file in hardcopy material.
- The ability of administrators to get the actual number of students' acceptance of the admission offer to USIM.
- The ability of administrators to upload the time table for the students.
- The ability of students to access to the system and print out the offer letter.
- The ability of students to update their information(biodata), upload documents, certificates, medical report, academic transcripts, photos.
- The ability of students to pay the university's registration and tuition fees earlier and just upload the bank transaction slip via the system.
- The ability of students to view and get their course and subject registered for their current semester and get the class timetable.

Solution for Waiting Time

The results of the survey indicated that the students are dissatisfied with the previous registration process for new student intake. In addition, there are complaints stating that the "Waiting time is too long". Initially, before the registration date, the administrator of the relevant department did not set up the timetable and subjects that will be taken by the students during their first year of studies. Another comment stated "Waiting area is too crowded" since they are allowed to register at the same time. Thus, too many equipment, tools and stationeries were positioned at the same location at Dewan Tuanku Canselor (DTC) Hall. Students also had to go through lengthy process to complete the registration. The flow of the registration process itself creates space waste, as (10) ten counters were needed carry out the registration exercise. In addition, the use of DTC hall does not expedite the registration process as this creates waste in terms of processes when students need to travel from DTC Hall to the residential colleges.

In order to avoid waiting and slow registration process, eTasjil allows students to pre-register via the system. It is designed to allow students to play a more active role in the registration process. Students will be able to put in all their details in the system prior to the registration day. This will reduce the process flow thus reducing the waiting time. The data uploaded by the students may include photos, original academic transcripts, particulars of guardians or parents, medical report and other relevant details. With regards to the University sending offer letters to students' home address using Poslaju, it will no longer be practised. USIM will upload offer letters via eTasjil and hardcopy offer letter will be issued during the registration day. The postage cost is RM 6.00 for each student. There are 2,600 prospective students and the total cost saving is approximately RM 15,600.

With the development of Information Communication Technology (ICT), especially with the emergence of the system (eTasjil), University may put in all the data of each student in the database using the cloud technology without possessing hard copy files anymore. This is due to the high cost of preparing hardcopy files. The Bursar Office and Division of Academic Management of USIM estimated that USIM spends about RM5.50 for each student which totalled to RM14,300 for hard-bind files. On the other hand, it will also reduce the number of laptops used during the registration day as well as the storage area for the files to be stored. Students have already uploaded their information via the system before the registration day, thus fewer laptops will be used during the registration day. Hence, the cost of rental laptops will be reduced as approximately RM15,000 was previously spent during the registration process.

As mentioned earlier before the registration day, the administrator of the Division of Academic Management and IT Division (GOAL -ITQAN) will set up in advance the new students' timetable and subjects during their first year of study. It is much easier to be pre-scheduled and pre-arranged by the administrator since the course structure in USIM is using the modular concept. Thus, it will reduce the time taken and expedite the registration process.

The Solution through the Improvement of Resource Utilization: Manpower & Logistics

The survey has showed that the satisfaction level of the service from the staff during the registration for the new intake students to be unsatisfactory. Interviews from various related department also reflected the unnecessary waste in terms of the involvement of the workforce during weekend and the use of Dewan Tuanku Canselor (DTC) Hall itself can be characterized as a waste, since the hall venue would be more useful if it is being used for other purposes by other parties that could generates income for the university. In fact, extra transportation cost has incurred to transport the students from the DTC Hall to respective residential colleges as well as time consuming.

Another direct solution using the lean method is the issue of workforce working during weekends where USIM has to pay unnecessary overtime allowances for eligible staff. It is suggested that the registration day should be held during weekdays. In short, a total sum of RM 21,000 could be saved and avoid should the registration were held during weekdays. In terms of the numbers of staffs' involvement in the registration process, it will be reduced from 100 staffs to 20 staffs per venue which equals to 40 staffs altogether with only with five counters will be operated at two different venues at respected residential colleges.

As previously mentioned, the registration was held at Dewan Tuanku Canselor (DTC) Hall where the cost of rental is RM 30,000 per day. This should be changed because it is more useful if the Hall is rented to other parties which will generate income to the University. Furthermore, during the previous registration day, the University needs to transport students from DTC Hall to the residential colleges by bus. The usage of buses cost approximately RM 400 per day x 20 buses which total up to RM8000.00 which is not only costly to the University but also time consuming in terms of the movement from one place to another.

By changing the venue, the registration day for new student intake will be held at the respective residential colleges. There will be only two residential colleges as the venues for the registration process with no cost incurred. This will expedite the registration process, reduce the university's financial expenditure and minimize the students' logistics from one place to another. In addition, this will prevent students from feeling uncomfortable moving from one place to another and increase their satisfactory level towards the registration process. To pre-conclude, the recommendations forwarded by this case study are from the findings derived through some basic technique from Lean principles adopted from Value Stream Mapping. In short, Value Stream Mapping (VSM) technique derive this paper to suggests three types of solution which is the Invention and introductory of the system; eTasjil, Improvement of Registration Process and Improvement of Resource Utilization. **Table 1** will demonstrate the Issue, Action(s) to be taken and Recommended Solutions.

Table 1. Recommended Solutions.

Types of Operation	Items	Actions to be Taken	Recommended Solutions	
Necessary but Non-Value Adding	1.1 They are allowed to register at the same time as they are not provided with specific or segregated time to attend the registration day.	1.1.1 Segregation of time for registration by faculty and courses.	1.1.1.1 Reduce the waiting time and improvement of registration process.	
		1.2.1. Reducing the number of equipment, tools and stationeries.	1.2.1.1 eTasjil. 1.2.1.2 Improvement of Registration Process.	
	1.2 Too many equipment, tools and stationeries were positioned at the same location at Dewan Tuanku Canselor (DTC) Hall.	1.3.1 The usage of laptop should be minimized for registration purposes only.	1.3.1.1 eTasjil.	
		1.4.1 The usage of counters should be minimized to five counters only.	1.3.1. Improvement of Registration Process.	
	1.3 The usage of the laptops during the registration day to compile student's data and converting them to hardcopy files	1.4.1.1 Improvement of Registration Process (Flow).		
		1.5.1 Level of satisfaction of survey to be increased.	1.4.1.1 Improvement of Registration Process (Flow).	
	1.4 The flow of the registration process itself creates waste, as ten counters were needed carry out the registration exercise.	1.5.1.1 eTasjil.		
		1.5.1.2 Improvement of Registration Process.		
		1.5.1.3 Improvement of resource utilization		
	1.5 The satisfaction level of students towards staff is just above the average.			
	Value Adding	2.1 There is a standardization in terms of flow.	2.1.1 The processes need to be improved and more customer friendly	2.1.1.1 eTasjil. 2.1.1.2 Improvement of registration process.
			2.2.1 Unnecessary flow must be cut off or totally eliminate	2.2.1.1 eTasjil. 2.2.1.2 Improvement of registration process.
		2.2 The satisfaction survey on the duration to complete the registration.	2.3.1- Administrator to set up the time table and subjects according to the courses taken earlier before the registration day	3.3.1.1- Improvement of registration process.
		2.3 The timetable and subjects that will be taken by the students during their first year of studies has to be done during the registration day		

Conclusion

Over the last two decades Lean Techniques have been applied for improving production systems in manufacturing processes and have had a profound impact on productivity. Recently, the method is used by other sectors such as hospitals, government agencies, including educational sectors. The focal point of this paper is to reduce waste in the organizational administrative processes where we are able to apply the Lean principles. The concept is designed to identify waste or redundancies in order to save cost and develop an

efficient process for new students' intake registration exercise. After identifying waste, and all inefficient flow in the current process, Lean tools and techniques are applied from the administrative context. Students who participated in the survey are from different faculties and it means that the result of the survey represents the overall students. The results illustrated that the students are dissatisfied with the overall registration process for new student intake and there are needs for improvements in the various aspects of new student intake registration process. The improved process will give more value to the customers, in this context are the students. The implementation of the new registration system that has been developed: *eTasjil* during the registration process of *Tamhidi* students on June 27, 2018 has proven that this new framework is effective, and it will be applied during the undergraduate level student registration process which involve in a large number of students and departments in the process. It is believed that with this new framework and practises, it will eliminate unnecessary process, reduce the time and resources and creates an effective way of implementing lean principles and applying the Value Stream Mapping in the registration process of new student intake in USIM.

References

- Alsmadi, M., Almani, A., & Jerisat, R. (2012). A comparative analysis of Lean practices and performance in the UK manufacturing and service sector firms. *Total Quality Management & Business Excellence*, 23(3-4), 381–396.
- Arbjørn, J. S., Freytag, P., & de Haas, H. (2011). Service supply chain management A survey of lean application in the municipal sector. *International Journal of Physical Distribution and Logistics Management*, 41(3), 277–295.
- Bhatia, N., & Drew, J. (2006). Applying lean production to the public sector. *The McKinsey Quarterly*, 3(1), 97–98.
- Bortolotti, T., Romano, P., & Nicoletti, B. (2010). Lean First, Then Automate: An Integrated Model for Process Improvement in Pure Service-Providing Companies. In B. Vallespir & T. Alix (Eds.), *Advances in Production Management Systems. New Challenges, New Approaches SE - 72* (Vol. 338, pp. 579–586). Springer Berlin Heidelberg.
- Bushell, S., & Shelest, B. (2002). Discovering lean thinking at progressive healthcare. *The Journal for Quality and Participation*, 25(2), 20–25.
- Christopher, M. (2000). The Agile Supply Chain: Competing in Volatile Markets. *Industrial Marketing Management*, 29(1), 37–44.
- Di Pietro, L., Mugion, R. G., & Renzi, M. F. (2013). An integrated approach between Lean and customer feedback tools: An empirical study in the public sector. *Total Quality Management & Business Excellence*, 24(7-8), 899–917.
- Gopinath, S., & Freiheit, T. (2012). A waste relationship model and center point tracking metric for lean manufacturing systems. *IIE Transactions*, 44(2), 136–154.
- Grönroos, C. (2007). *Service Management and Marketing* (Third.). Chichester, West Sussex PO19 85Q, England: John Wiley & Sons, Ltd.
- Hicks, B. J. (2007). Lean information management: Understanding and eliminating waste. *International Journal of Information Management*, 7(4), 33–49.
- Hines, P., Martins, A. L., & Beale, J. (2008). Testing the boundaries of Lean thinking: Observations from the legal public sector. *Public Money & Management*, 28(1), 35–40.
- Johnston, R., Clark, G., & Shulver, M. (2012). *Service Operations Management* (4th ed) Harlow: Pearson Education.

- Liker, J. K., & Morgan, J. M. (2006). The Toyota way in services: the case of lean product development. *The Academy of Management Perspectives*, 20(2), 5–20.
- Lodge, A., & Bamford, D. (2008). New Development: Using Lean Techniques to Reduce Radiology Waiting Times. *Public Money & Management*, 28(1), 49–52.
- Middleton, P., & Joyce, D. (2012). Lean Software Management: BBC Worldwide Case Study. *IEEE Transactions on Engineering Management*, 59(1)
- Mintzberg, H. (1979). *The structuring of organizations*. London: Prentice-Hall International.
- Monden Y (1994), *Toyota Production System, An Integrated Approach to Just-In-Time*, Springer
- Murdick, R. G. (1990). *Service operations management*. (B. Render joint author & R. S. Russell joint author, Eds.). Boston, MA [etc.]: Boston, MA etc.: Allyn and Bacon.
- Pearce, A., & Pons, D. (2013). Implementing lean practices: managing the transformation risks. *Journal of Industrial Engineering*, 2013, 1–19.
- Piercy, N., & Rich, N. (2009). Lean transformation in the pure service environment: the case of the call service centre. *International Journal of Operations & Production Management*, 29(1), 54– 76.
- Prahalad, C. K., & Ramaswamy, V. (2006). *The future of competition: Co-creating unique value with customers*. Boston: Harvard Business Press.
- Radnor, Z., & Johnston, R. (2012). Lean in UK Government: internal efficiency or customer service? *Production Planning & Control*, 24(10-11), 903–915.
- Radnor, Z., Walley, P., Stephens, A., & Bucci, G. (2006). Evaluation of the lean approach to business management and its use in the public sector. Scottish Executive Edinburgh.
- Shingo, Shigeo (1985). *A Revolution in Manufacturing: The SMED System*. Stamford, Connecticut: Productivity Press. p. 5
- Swank, C. K. (2003). The lean service machines. *Harvard Business Review*, 81(10), 123.
- Womack, J. P., & Jones, D. T. (1996). Beyond Toyota: how to root out waste and pursue perfection. *Harvard Business Review*, 74(5), 140–158.
- Womack, J. P., & Jones, D. T. (2003). *Lean Thinking* (2003 Editi.). London: Simon & Schuster UK Ltd.
- Womack, J. P., Jones, D. T., & Roos, D. (1990). *The machine that changed the world*. (D. T. Jones joint author, D. Roos joint author, & M. I. of Technology, Eds.). New York [etc.]: New York etc.: Rawson Associates etc.

How to cite this paper:

Mohd Saudi, H.F. & Shaari, J.A.N (2019). Implementing Lean Principles in Administrative Procedures: Registration Process for New Student Intake in Universiti Sains Islam Malaysia (USIM). *Malaysian Journal of Applied Sciences*, 4(1), 60-72.