

IMPLEMENTING LEAN PRINCIPLES IN ADMINISTRATIVE PROCEDURES: REGISTRATION PROCESS FOR NEW STUDENT INTAKE IN UNIVERSITI SAINS ISLAM MALAYSIA (USIM)

1- 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 in 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).

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 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).

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.

2- Objective and the Research Questions

2.1- Identify areas of waste in the registration process for new student intake

In manufacturing, Womack & Jones (2003) stated that waste occurs in the form of mistakes which require rectification, the unwanted production of items, unneeded performing process steps, unnecessary or without any purpose movement of employees and goods from one place to another, as well as people in a downstream activity waiting due to un-timely delivered by upstream activity. A number of authors argue that lean principles can be applied to nearly any environment where a process can be defined as according to Arlbjørn, Freytag, & de Haas (2011), Bhatia & Drew (2006) and Radnor, Walley, Stephens, & Bucci (2006).

In addition, according to Grönroos (2007), Johnston et al.(2012) and Murdick (1990), to play a key role in rendering the service, customer should be able to see much of the service process and in most cases. This includes services in registering new student intake. New students, as customers of USIM, should be able to see and had the experience of the entire registration process, would be able to identify its weaknesses and redundancies. Thus, questionnaires and feedback from them is essential to identify areas of waste in the registration process.

2.2- Applying Lean Techniques and Principles in the administrative context, in reference to the registration process

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). Hence, organizations have a crucial dependency on administrative services through correct techniques and principles where people and resources must be corresponded, quality and customer satisfaction must be supervised, orders must be processed, and deliveries need to be scheduled.

After waste identification and determination of the inefficient flow in the current process, Lean tools and techniques are applied in the administrative context, specifically in the registration for new student intake. The techniques and principles offer frameworks for determining the degree of lean effectiveness across differing Lean programs, which might offer practical approaches for assessing the wide variability among the many different programmes, activities or processes in educational administration.

2.3- Introducing the tools / framework/ system implemented to reduce /eliminate waste with reference to the findings of the research

According to Christopher (2000), Toyota's conditions to develop the Lean philosophy are demand is predictable, the need for variety is low and the volumes are high in which it is especially effective. Same goes to administrative operation processes which these conditions exist for many service processes. In reality, with improper tools, a lot of administrative processes are repetitive and can occur in high volumes; in which it occurs a number of redundant processes, similar possession/ production of documents and inefficient costs.

Lean thinking changes the Management focus to optimizing products and services flow through entire value streams that runs horizontally across technologies, assets, and departments instead of optimizing separate technologies, assets, and vertical departments. After wastes are identified, proper techniques and principles are applied, and former processes are redesigned, it is crucial to introduce the right system or tools timely in order to obtain better results in an efficient manner.

2.4- Redesigning the process using the Lean Techniques & Principles that eliminate waste

The overall success of the university depends on how crucial the university can attract and retain students. Little attention was paid to the admissions and enrolment process can shake the foundation of the university's image on the initial stage. By identifying waste in terms of complaints for weaknesses, cost inefficiencies and time, an instrument in terms of tools or system can be designed to overcome the situation, Lean clarified what is desirable in terms of value creation, smooth flow of materials, and so on as well as what is undesirable, which is waste. Lean is also a problem-solving and action tool or instrument.

2.5- Continually improving the process using the tools introduced with the goal to achieve perfection for customer satisfaction and USIM's good reputation

A weakness in some implementation approaches is the emphasis on tools, which promote isolated improvement instead of optimizing the entire production system; as what Pearce & Pons (2013) mentioned with the reference to typical lean implementation. Thus, as mentioned by Heijunka, Pearce & Pons (2013), further improvements might involve managing supply and demand with just-in-time (JIT) pull systems and level scheduling.

Registration process for new student intake has been analysed across the university to achieve or derive modernization and efficiency. Lean was described in the context of one method of continuous improvement that has shown potential within university's administrators, primarily as a means to ensure quality in times through reduced budgets and increased efficiency. In short, in continuously and constantly reduced the operational cost and improve the quality of services to the students by optimizing the resources.

3- Organization Background

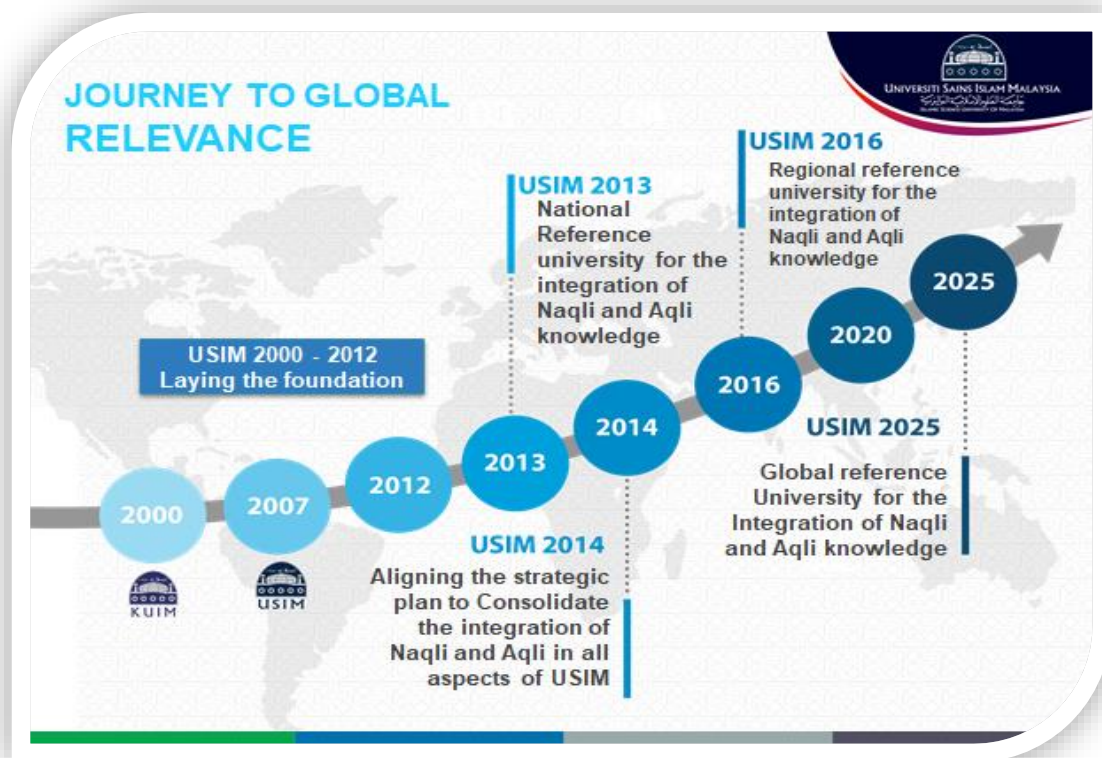
Universiti Sains Islam Malaysia (USIM)

Universiti Sains Islam Malaysia (USIM) is an emerging Islamic university which is fully owned and funded by the Malaysian Government. Being the 12th Public Institution of Higher learning, it aims to spearhead knowledge and be the global reference centre for Islamic Science.

USIM adopts a balanced approach between the physical and spiritual aspects, not only in the academic programmes offered, but are also widely practiced throughout the university including administration and management levels. Against this backdrop, USIM embraces a holistic approach towards the delivery of knowledge, which unites revelation sciences (*Naqli* knowledge) and the rational sciences (*Aqli* knowledge).

USIM thus offers a unique model to Islamic Higher Education setting it apart from other Islamic universities worldwide. The integration of religious sciences together with the social and physical sciences, in all its programs provides a comprehensive understanding of current global problems and offers a fresh alternative in solving them.

FIGURE 1: USIM JOURNEY TO GLOBAL RELEVANCE



(SOURCE: USIM'S STRATEGIC PLANNING FROM USIM'S WEBSITE)

USIM is committed to be excellent in three tracks in terms of its academic programmes and research. The tracks are;

- Islamic Studies, Quran and Sunnah
- Islamic Science, Technology and Engineering
- Islamic Arts, Social Science and Humanities

The three tracks are supported by the five (5) Centres of Excellence which are responsible for enhancing the research environment.

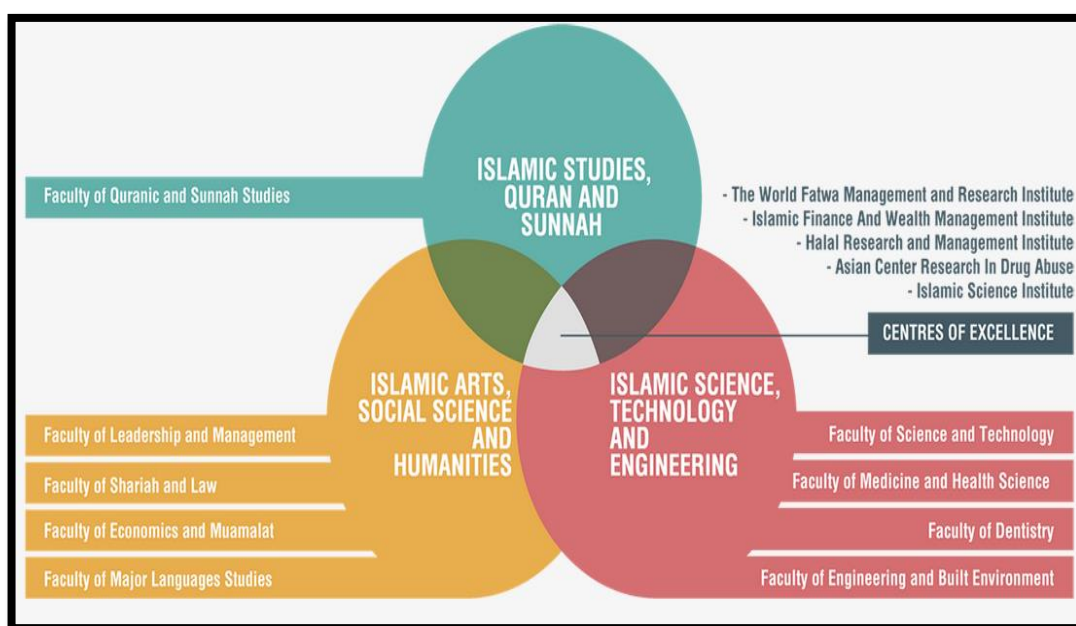


FIGURE 2: USIM academic tracks

The education paradigm at USIM is based on the basic principle, that integrating religious sciences with social and physical sciences, will not only provide a more comprehensive understanding of current global challenges, but also offer a fresh alternative in approaching and solving them. This is because of the universal nature of Islamic values and history has proven that these values can be shared by all humankind; living together harmoniously with mutual respect and tolerance. It is also an effort towards reviving the scientific and technological feats of Muslim scholars in the past and moving it forward. USIM graduates are moulded within this ethos, so that they are not only able to function as professionals in their respective disciplines effectively, but at the same time are ready to contribute and make a difference to the society in the Islamic tradition.

MOTTO

Knowledgeable, Disciplined and Devout

PHILOSOPHY

The integration of *Naqli* and *Aqli* knowledge combined with honourable qualities are the thrust in nurturing a noble generation and a knowledgeable society.

VISION

Integrating *Naqli* (revealed) and *Aqli* (human) knowledge to transform and create value for country, ummah and humanity.

MISSION

Committed to be an advanced knowledge institution based on Islamic Studies, and to spearhead new knowledge using cutting edge technologies to produce innovations, which can transform the country, the ummah and humanity.

OBJECTIVE

1. To advocate and channel Islamic Education into the mainstream of National Education.
2. To enculturate the cohesion between theory and practice within every graduate.
3. To produce Muslim scholars with integrated education, capable of leading a multicultural society and have high potential to spearhead national development.
4. To explore and revive outstanding Islamic scholarship tradition appropriate to the environment and current technologies.
5. To supply human resource who firmly embrace Islamic values and are capable to interact and communicate effectively in society.

Why should students come to USIM? What can they expect beyond USIM?

- To enculturate the cohesion between theory and practice within every graduate through the integration of *Naqli* and *Aqli*.
- To explore and revive outstanding Islamic scholarship tradition appropriate to the environment and current technologies
- Muslim scholars with integrated education, capable of leading a multicultural society and have high potential to spearhead national development.
- Human resource who firmly embrace Islamic values and are capable to interact and communicate effectively in society.

FIGURE 3: LIST OF UNDERGRADUATE PROGRAMMES OFFERED BY USIM

• **9 Faculties / 27 Undergraduate Programmes**

Faculty and Programmes		
1	Faculty of Syariah and Law	
	1	Bachelor of Law and Shariah with Honours
	2	Bachelor of Fiqh and Fatwa with Honours
2	Faculty of Quranic and Sunnah Studies	
	3	Bachelor of Quranic and Sunnah Studies with Honours
	4	Bachelor of Quranic Studies With Multimedia with Honours
3	Faculty of Leadership and Management	
	6	Bachelor of Da'wah and Islamic Management with Honours
	7	Bachelor of Counseling with Honours
	8	Bachelor of Communication with Honours
	9	Bachelor of Akidah and Religion Studies with Honours
	10	Bachelor of New Media Communication with Honours
4	Faculty of Economics and Muamalat	
	11	Bachelor of Muamalat Administration with Honours
	12	Bachelor of Marketing (Financial Services) with Honours
	13	Bachelor of Accounting with Honours
	14	Bachelor of Administration and Corporate Relations with Honours
5	Faculty of Science and Technology	
	16	Bachelor of Science with Honours (Food Biotechnology)
	17	Bachelor of Science with Honours (Actuarial Science and Risk Management)
	18	Bachelor of Computer Science with Honours (Information Security and Assurance)
	19	Bachelor of Science with Honours (Financial Mathematics)
	20	Bachelor of Science with Honours (Industrial Chemical Technology)
6	Faculty of Engineering & Built Environment	
	22	Bachelor of Architecture with Honours
	23	Bachelor of Engineering with Honours (Electronic Engineering)
7	Faculty of Medicine and Health Sciences	
	24	Bachelor of Medicine and Surgery (MBBS)
8	Faculty of Dentistry	
	25	Bachelor of Dental Surgery (BDS)
9	Faculty of Major Languages Studies	
	26	Bachelor of Arabic and Communication with Honours
	27	Bachelor of Education (Islamic Education) with Honours

4- Overview of Students' Enrolment in USIM

USIM will receive new students to pursue their studies at the undergraduate level every year. Currently, there are 9 Faculties in USIM and offers 27 courses in Social Sciences, Science, Engineering, Architecture, Medical and Dentistry.

Potential students, or at this stage, candidates will apply via UPU Online; the system which is being administered by the Ministry of Education. In general, all 20 Public Universities will participate in this exercise and the candidates from all over Malaysia will have the option to choose courses that they are qualified based on their qualifications and fulfilled the course entry requirements. The applicants usually are candidates who possessed and achieved relevant qualifications whom they will be considered for the admission to the University. They are those who have completed their studies at the secondary school level with the certificates namely STPM, STAM, Diploma or Matriculation from respective and accredited institution.

Normally, the result for the admission to all public universities will be announced by the Ministry during the month of August, approximately three weeks before the registration day which will be held in September. For USIM, the number of student enrolments for the Undergraduate Level will be between 2,400-2,800 places (base on record) and depending on the courses offered by the Faculties.

The table shown below is the enrolment projection by the University based on yearly academic calendar.

ACADEMIC SESSION	ENROLMENT PROJECTION	PLACE OFFERED	REGISTERED
2017/2018	2583	2781 (107.7%)	2406 (86.5%)
2016/2017	2513	3013 (119.9%)	2492 (82.7%)
2015/2016	2541	2866 (112.8%)	2375 (82.9%)
2014/2015	2743	2907 (105.9%)	2502 (86.1%)

Notes: % Offered = offered / enrolment % registered = registered / offered

Meanwhile, for academic session 2018/2019 ,the student intake (enrolment) projection is **2,773** places.

Statistic on students' application to public universities for academic session 2017/2018 based on category(stream)

CATEGORY	APPLICATION	QUALIFIED	AVAILABILITY PLACE
STPM/ MATRICULATION	60,404	56, 739 (93.9%)	44,903 (79.1%)
DIPLOMA/ EQUIVALENT	31,387	20,734 (66.1%)	15,759 (76.0%)
STAM	3,662	3,127 (85.4%)	2,125 (68.0%)
TOTAL	95,453	80,600 (84.4%)	62,787 (77.9%)

Notes: % qualified = qualified / application
% enrolment = enrolment / qualified

Source:: BPKP, KPT

FIGURE 4: TOTAL NUMBERS OF STUDENTS REGISTERED FOR ACADEMIC SESSION 2017/2018(BY FACULTY)

FACULTY	ENROLMENT PROJECTION	OFFERED	REGISTERED		
			TOTAL	% registered/ offered	% registered/ enrolment
FPBU	274	309 (112.8%)	253	81.9	92.3
FSU	318	349 (109.8%)	306	87.7	96.2
FPQS	420	505 (120.2%)	413	81.8	98.3
FEM	433	458 (105.8%)	423	92.4	97.7
FKP	337	452 (134.1%)	365	80.8	108.3
FST	571	513 (89.8%)	462	90.1	81.0
FKAB	100	80 (80.0%)	69	86.3	69.0
FPSK	90	80 (88.9%)	80	100	88.9
FPg	40	35 (87.5%)	35	100	87.5
TOTAL	2583	2781 (107.7%)	2406	86.5	93.1

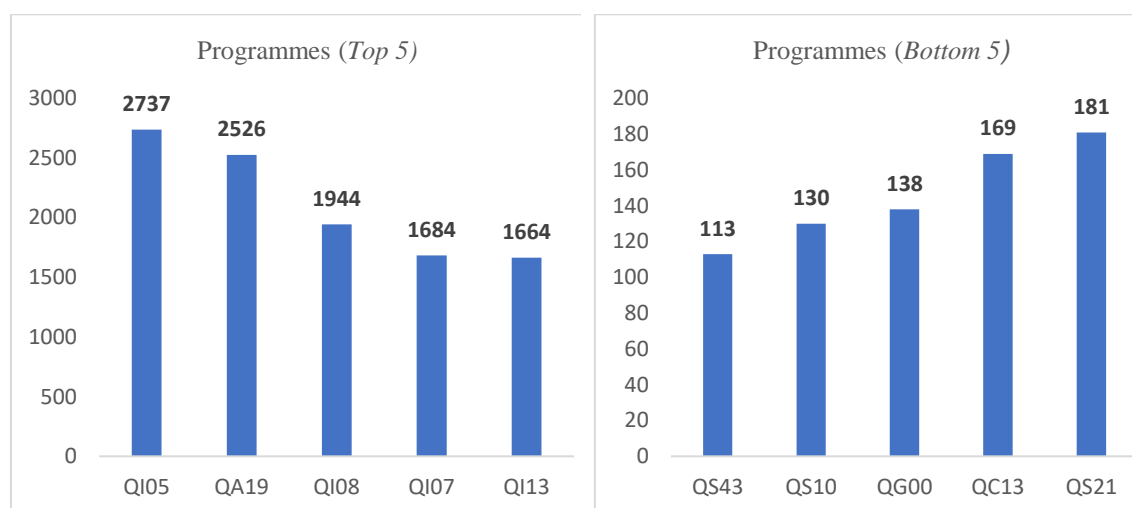
Notes: Total place offered and registered including Bottom 40 %category
% offered= place offered/ enrolment projection

Figure 5: Statistics on Programmes (Undergraduate) popularity chose by students for year 2017/2018

UNDERGRADUATE PROGRAMMES		1st choice	2nd choice	3rd choice	4th choice	5th-10th choice	11th-12th choice	TOTAL
QI05	Bachelor of Quranic and Sunnah with Honours	366	187	201	242	1479	262	2737
QA19	Bachelor of Counselling with Honours	62	66	129	144	1596	529	2526
QI08	Bachelor of Fiqh and Fatwa with Honours	131	126	153	167	1177	190	1944
QI07	Bachelor of Da'wah and Islamic Management with Honours	66	118	127	140	1048	185	1684
QI13	Bachelor of Akidah and Religion Studies with Honours	34	90	103	113	1107	217	1664
QB05	Bachelor of Arabic and Communication with Honours	114	93	145	157	925	178	1612
QE23	Bachelor of Islamic Banking and Finance with Honours	101	107	117	130	909	223	1587
QL04	Bachelor of Law and Shariah with Honours	99	90	107	105	831	179	1411
QE02	Bachelor of Accounting with Honours	47	78	90	130	909	134	1388
QI10	Bachelor of Quranic Studies With Multimedia with Honours	96	78	77	92	800	239	1382
QI11	Bachelor of Sunnah Studies With Information Management with Honours	30	80	69	65	734	194	1172
QP21	Bachelor of Muamalat Administration with Honours	43	55	57	68	528	152	903
QA02	Bachelor of Communication with Honours	21	24	41	50	472	140	748
QP57	Bachelor of New Media Communication with Honours	11	24	26	27	339	104	531
QG07	Bachelor of Science with Honours(Food Biotechnology)	16	12	19	22	209	91	369
QP49	Bachelor of Administration and Corporate Realtions with Honours	13	12	18	21	227	58	349
QE06	Bachelor of Marketing (Financial Services) with Honours	7	4	21	19	226	54	331
QS21	Bachelor of Science with Honours(Industrial Chemical Technology)	9	7	8	8	97	52	181
QC13	Bachelor of Science with Honours (Information Security and Assurance)	6	8	13	8	98	36	169
QG00	Bachelor of Science with Honours (Applied Physics)	6	3	5	14	84	26	138
QS10	Bachelor of Science with Honours (Acturial Science and Risk Management)	6	5	9	10	72	28	130
QS43	Bachelor of Science with Honours(Financial Mathematics)	7	3	3	4	72	24	113
TOTAL		1291	1270	1538	1736	13939	3295	23069

Source: BPKP, KPT

Top 5 and Bottom 5 based on students' application



Names of Programmes:

QI05-Bachelor of Quranic and Sunnah with Honours

QA19-Bachelor of Counselling with Honours

QI07-Bachelor of Fiqh and Fatwa with Honours

QI13-Bachelor of Da'wah and Islamic Management with Honours

QI13-Bachelor of Akidah and Religion Studies with Honours

QS43- Bachelor of Science with Honours(Financial Mathematics)

QS10-Bachelor of Science with Honours (Acturial Science and Risk Management)

QG00-Bachelor of Science with Honours(Applied Physics)

QC13-Bachelor of Science with Honours (Information Security and Assurance)

QS21-Bachelor of Science with Honours(Industrial Chemical Technology)

4.1 - From the charts above, it has shown that comparing with other public universities, the performance on all academic programmes for undergraduate level in USIM, there is none was listed in bottom 10 choices among potential students. However, there was also none of the academic programmes were listed as top 10 most popular programmes chosen by potential students. The statistics from *Figure 5* indicates that USIM needs to be more proactive in promoting the less popular programmes among the STPM and equivalent candidates to encourage them to apply for that programmes and will create a higher demand from the candidates in the future.

**FIGURE 6: ENROLMENT PROJECTION FOR NEW STUDENTS INTAKE FOR UNDERGRADUATE BY FACULTY / BY CATEGORY (STREAM)
(ACADEMIC SESSION 2017/2018)**

FACULTY	ENROLMENT					TOTAL
	STPM/ MATRICS	STAM	DIPLOMA/ EQUIVALENT	TAMHIDI	INTERNATIONAL	
FPBU	50	195	11	5	13	274
FSU	40	70	28	173	7	318
FPQS	98	213	99	3	7	420
FEM	93	87	25	207	21	433
FKP	75	197	39	5	21	337
FST	190			359	22	571
FKAB				100		100
FPSK				80	10	90
FPg				35	5	40
TOTAL	546	762	202	967	106	2583

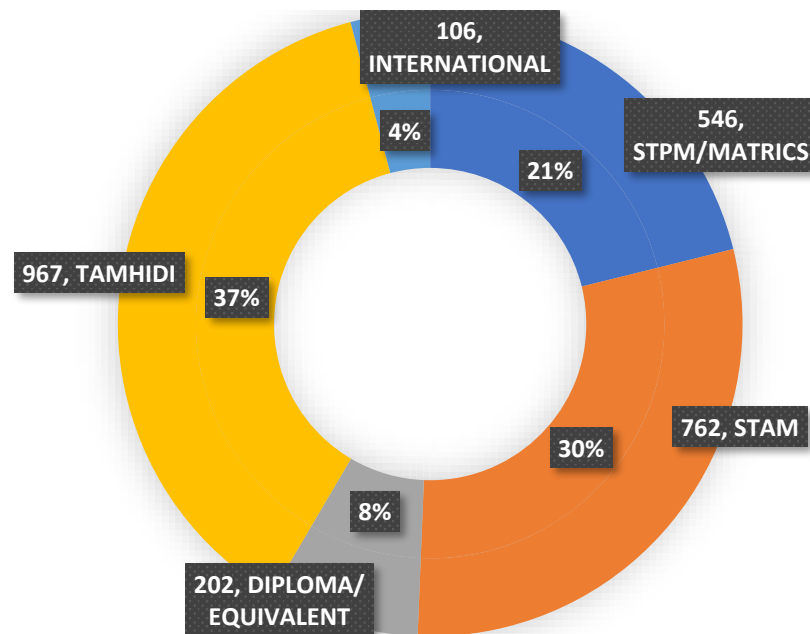


FIGURE 7: STUDENTS SELECTION PROCESS FROM VARIOUS CATEGORY

4.2 -From the chart as shown in *Figure 7* above, based on the academic session 2017/2018, the students selection process from various category namely; from STPM/ Matriculation, STAM and Diploma equivalent was managed by the Ministry. Meanwhile, for Tamhidi leavers and international students will be selected and directly applied to USIM.

4.3 -Besides that, another 200 places has been offered and reserved to those potential students with the income household is less than RM 3,800 monthly as part of University's corporate social responsibility(CSR) which is also known as bottom 40% students intake category.

FIGURE 8: ENROLMENT PROJECTION FOR NEW STUDENTS INTAKE FOR UNDERGRADUATE BY FACULTY/ BY CATEGORY (STREAM) ACADEMIC SESSION 2018/2019

FACULTY	PROJECTION ENROLMENT					TOTAL
	STPM/ MATRICES	STAM	DIPLOMA/ EQUIVALENT	TAMHIDI	INTERNATIONAL	
FPBU	35	230	22	3	5	300
FSU	50	70	30	165	15	330
FPQS	86	253	91	3	21	454
FEM	96	97	25	211	20	449
FKP	77	190	38	25	20	350
FST	180		95	360	30	665
FKAB	10			90		100
FPSK				80	5	85
FPg				35	5	40
TOTAL	534	840	306	972	121	2773

5- Project Brief

USIM receives new students to pursue their studies at the Undergraduate level every year. Currently, there are 9 Faculties in USIM and offers 27 courses in Social Sciences, Science, Engineering, Architecture, Medical and Dentistry.

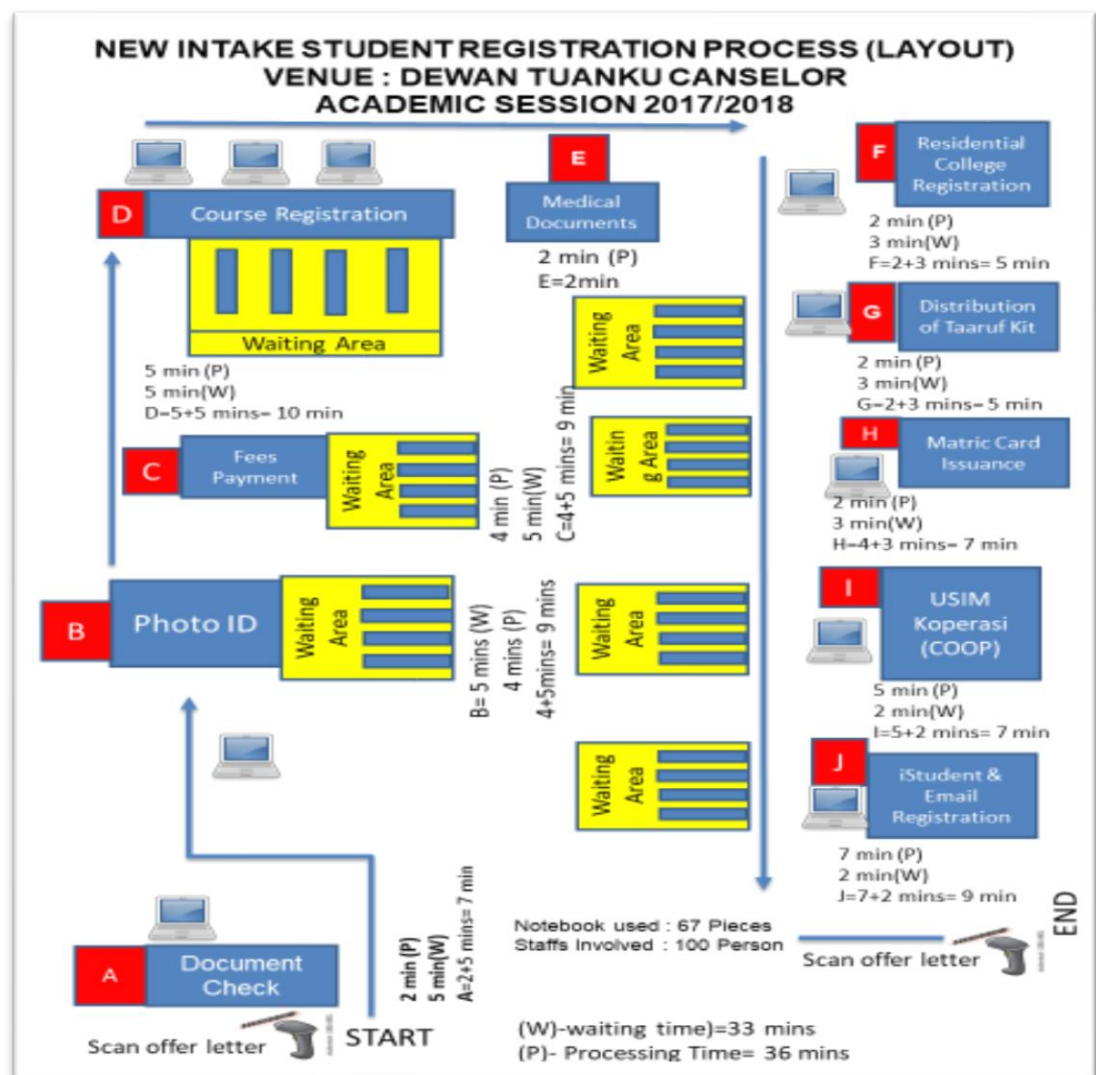
Potential students, or at this stage, candidates will apply via UPU Online; the system which administered by the Ministry of Education. In general, all 20 Public Universities will participate in this exercise and the candidates from all over Malaysia will have the option to choose courses that they are qualified based on their qualifications; in condition that they fulfilled the course entry requirements. The applicants usually are candidates who possessed and achieved relevant qualifications that will be considered for the admission to the University. They are those who have finished their studies at the secondary school level with the certificates namely STPM, STAM, Diploma or Matriculation from respective and accredited institution.

Normally, the result for admission to all public universities will be announced by the Ministry of Education during the month of August, approximately three weeks before the registration day which will be held in September every year. For USIM, the number of enrolments for the Undergraduate Level will be between 2,400-2,800 places depending on the course offered by the Faculties. The registration process for all new students at most of the local public universities are being conducted in a very short period of time.

The new student admission or the new academic session for Undergraduate level begins in early September each year. The goal of registering new students is to determine who will register for a particular course within the university. From the new students' point of view, their registration is only to let them know that they have been accepted to study at the university. Another reason, for the registration process is to enable the administrator to keep the record up-to-date. This will help the university administrator to keep track of their new student activities and give them access to all the necessary facilities provided by the university. In this paper, our case study looks upon the registration process of new student intake at Universiti Sains Islam Malaysia (USIM).

Usually, USIM will send the offer letter via post to selected qualified candidates (student) to continue his/her study. The administrator will receive and update the total number of students enrolled on the day of the registration at USIM. The initial flow of current registration process is demonstrated at Figure 9 below;

FIGURE 9: LAY OUT (FLOOR PLAN) AND FLOW OF CURRENT REGISTRATION PROCESS FOR NEW STUDENT INTAKE



In the current registration process, the new students need to undergo all the processes as indicated in the diagram above. As illustrated in Figure 9, there are 10 counters that needs to be undergo by the students to complete the registration process which involved a total number of 100 staffs on duties for the registration process. The staffs have been divided and located accordingly by the counters; there will be 5 staffs at Counter A, 5 staffs will be at Counter B, 10 staffs at Counter C, 25 staffs at Counter D, another 5 staffs at Counter E, 10 staffs at Counter F, 10 staffs at Counter G, 10 staffs at Counter H, 10 staffs at Counter I and 10 staffs at Counter J. The counter starts with Counter A and end up at Counter J.

At Counter A, the barcode on the offer letter will be scanned to record the registration start time (*sample of offer letter in Appendix*). This barcode will be rescanned at Counter J to record the completed registration time for the particular student. At this point(Counter A), relevant documents will be checked by the staff to verify the details of the students based on the offer letter posted to them. The students need to queue accordingly and take turns to start the process. It is the process to ensure and verify that the student received the correct offer letter sent to them based on their faculty and course. The students will then move to the next phase, which is Counter B, place for the photo shoot for the ID card (student card). Next, they will move to Counter C (Bursar Counter), where the students need to show and submit the proof of payment (bank slip presentment) to verify that payment has been made to the university's account for the university's registration and tuition fees via online as instructed in the offer letter posted to them. If they have not done so, they need to pay the fees before they can proceed to the next counter for course registration. After that, the students need to go to Counter D for the course registration and class timetabling. At this point, the students need to show their offer letter again to the staffs on duty for the issuance of timetable according to their respective programmes(courses) and Faculty. The students need also to submit their details, academic transcript, certificates to the staff to be inserted in the personal student file individually in a hard bind file.

Subsequently, the students will proceed to Counter E, whereby the students submit their medical report to the university's medical centre. Next is to Counter F for the registration of residential college. At this counter, the students need to wait for a while at the waiting area as the staffs need to sort out the student's name from the list of registered students to get their room key from the Student Housing Centre followed by Counter G for the distribution of orientation (*Taaruf*) kit by Student Affairs Department (HEP). The students will receive a bag pack which contains the schedule for the orientation days, tentative programmes and other leaflets related to the students' rules and regulation. Next, is to Counter H for the issuance of the student ID card. Then, the students will proceed to Counter I (USIM's COOP) to purchase USIM's corporate shirt and tie. Finally, they will proceed to Counter J for registering official university's email and student's portal.

In order to identify the issues faced by the students in the registration process, a set of questionnaires and interviews were developed for the quantitative and qualitative data collection. As Radnor & Johnston (2012) stated that customer focus is "a collaborative approach to customers allows organizations to better understand and deliver what the customer needs". For the quantitative approach, data were collected through document analysis obtained from various departments which involved in the registration process and short questions survey will be distributed among the students to identify their satisfaction level on the registration process.

A system for the new admission of online student registration should be developed to manage registry administration due to the ineffectiveness of the current registration system. This new system is hoped to help simplify new students registration with a little effort to replace the USIM manual registration process. The main focus of the Online Registration for new student intake should be focused to produce an easy platform for the new intake students and USIM administrators in the registration process. The new system should also be able to retrieve actual numbers of students that will register in USIM. This enables USIM administrators to monitor the number of each new student who did the register online, did not register and reject the offer day by day. USIM administrators would be able to instruct student who get the offer to register into database. In short, this system will reduce a lot of workforce and cost of the process.

6- Issues Identified and Problem Analysis

New student intake registration process is one of the most important *modus operandi* in every university including USIM. Every year, USIM receives an average of 2,400-2,800 new students' enrolments for Undergraduate programmes. Nevertheless, there have been complaints from the students and the Management with regards to the current procedure of registration for the new students. Issues identified are as follows;

- 6.1 - Based on the current student registration procedure, the process itself is time consuming and has utilized excessive resources and unnecessary wastes including but not limited to manpower, overtime expenses, logistics utilization, uses of papers, overutilization of university's assets and utilities. Therefore, a new mechanism or model which is academically proven and practically friendly is recommended for the efficiency of the registration process.
- 6.2 - On the actual day, the registration process is time consuming since the university did not have the initial information of how many candidates will register on that day, administrators would not have any information on how many new students registered that day before hand. It is because the current process cannot determine how many students will register as student in USIM.
- 6.3 - In terms of time wasting, there are a number of counters that leads to congestion. It leads to longer waiting time for students. As in Lean principles, it is obviously does not meet the takt time. In manufacturing, '*Takt time*' is defined as the rate at which a finished product needs to be completed in order to meet customer demand.
- 6.4 - In terms of costs, it is inefficient to spend more for the usage of rented laptops and the overtime costs for staffs involved. Furthermore, there is also a significant cost for using the Hall; *Dewan Tuanku Canselor(DTC)*, unnecessary transportation(busses)to bring students from the Hall(DTC) to their residential colleges as well as postal costs for delivering offer letter to their home address.
- 6.5 - Human error may occur when staffs keyed in student information wrongly by mistake. This will definitely create waste in terms of rework, additional time consuming and perhaps additional cost due to overtime.

There are numerous feedbacks from senior students stating that the registration process that they had experienced for the past year were too complex, time consuming and lacks transparency. In order to documented this, as mentioned earlier, a set of questionnaires and interviews were developed for the quantitative and qualitative data collection in order to identify the issues faced by the students in registering as new students of the university. Furthermore, the waste in terms of time, cost, the process itself as well as the possible human error presented an opportunity for applying suitable and relevant lean techniques in an administrative context. Pearce & Pons (2013) stated that by defining a desirable future state, it illustrates the current state of processes and defines the path of improvement.

7- Methodology

Data Collection Methodology: Quantitative and Qualitative

A mix method of both quantitative and qualitative was applied to this case study. 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. The questionnaires of the survey distributed is illustrated in *Figure 10*.

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.

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.

Data analysis

7.1 - 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 10 below.

FIGURE 10: CUSTOMER SATISFACTION SURVEY

Kajian Kepuasan Pelanggan Pendaftaran Pelajar Baru Sesi Akademik Semester I 2017/2018
Customer Satisfaction Survey on New Student Registration Semester I Academic Session 2017/2018

Required

1. Fakulti / Faculty *

Select your answer

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

**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 (FKP)	
FACULTY OF QURANIC AND SUNNAH STUDIES (FPQS)	
FACULTY OF MAJOR LANGUAGE STUDIES (FPMJ)	
FACULTY OF SCIENCE AND TECHNOLOGY (FST)	
FACULTY OF LEADERSHIP AND MANAGEMENT (FKP)	
FACULTY OF MEDICINE AND HEALTH SCIENCES (FPMK)	
FACULTY OF DENTISTRY (FPG)	
FACULTY OF SYARIAH AND LAW (FSL)	
FACULTY OF ENGINEERING AND BUILT ENVIRONMENT (FKAB)	

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	

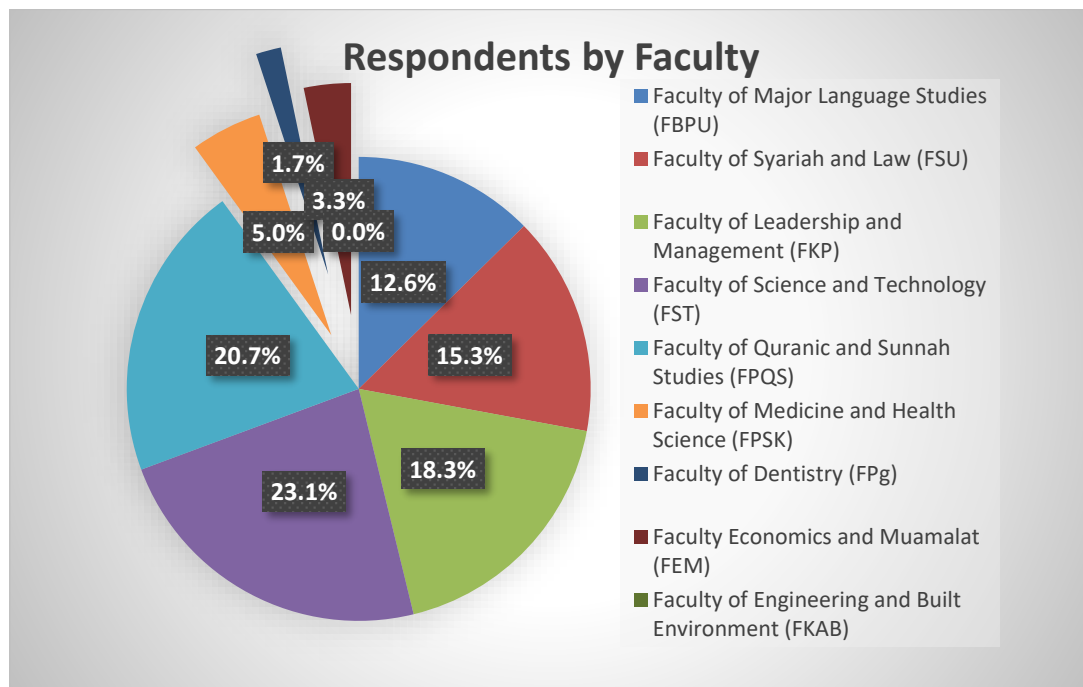
6. Lain lain / Other comments

* Terima Kasih / Thank you *

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%

7.1.1- Survey participants according to students who participated in the survey are from different faculties as illustrated in *Figure 11* below;

FIGURE 11: PARTICIPANTS(RESPONDENTS) BY FACULTY



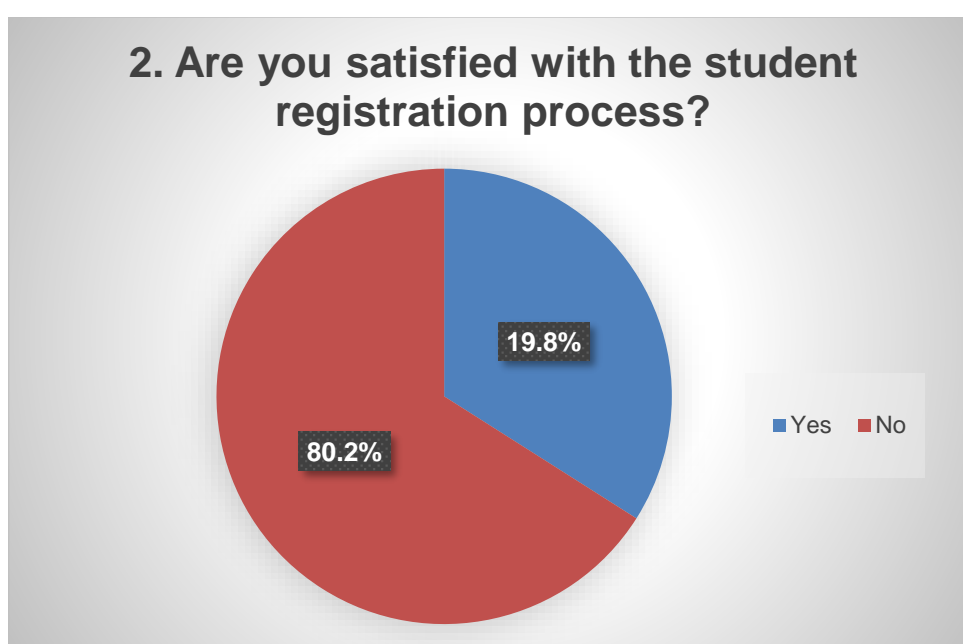
The result of the survey from Question 1 shows that 12.7% of the total respondents are from Faculty of Major Language Studies (FPBU), 15.4% from Faculty of Syariah And Law (FSU), 18.4% from Faculty of Leadership and Management (FKP), 23.3% from Faculty of Science and Technology (FST), 20.8% from Faculty of Quranic and Sunnah Studies (FPQS). 5.0% from Faculty of Medicine and Health Sciences (FPSK), 1.76% from Faculty of Dentistry (FPg), 3.3% from Faculty of Economics and Muamalat (FEM). This means that students from Faculty of Science and Technology(FST) are the biggest participants of the survey. There is no respondent from Faculty of Engineering and Build environment (FKAB). Even though, the result does not represent the entire faculties and all students from the 1st year/ 2nd semester students in USIM, it represents and reflects the majority which is 82.2% out of the whole students' population of the previous registration process for new intake.

7.1.2- Registration Process Satisfaction

To determine whether students participated in the survey are satisfied with the registration process are demonstrated in *Figure 12* below;

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.

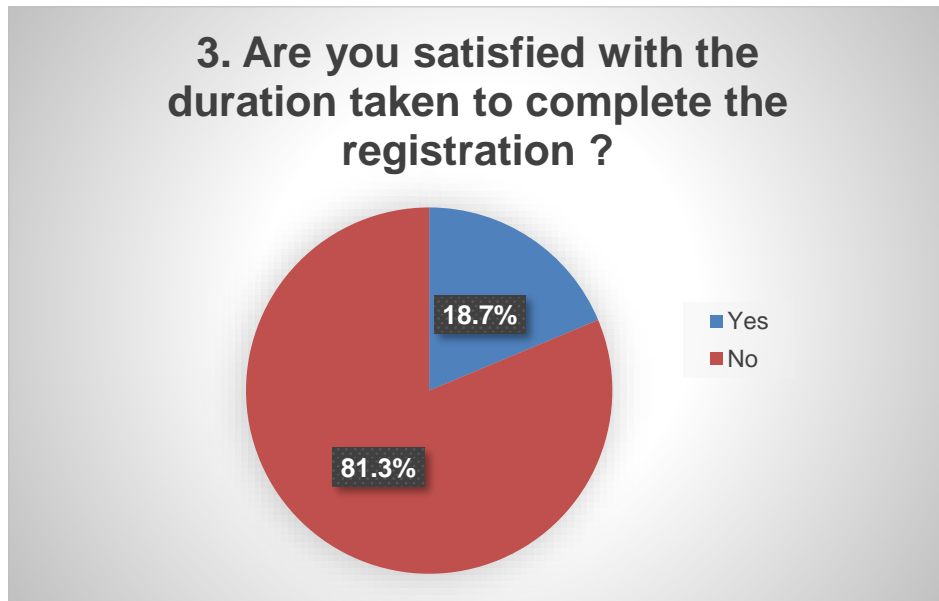
FIGURE 12: PARTICIPANTS(RESPONDENTS) SATISFACTION WITH THE STUDENT REGISTRATION PROCESS



7.1.3- Duration Consumption Satisfaction

To determine whether students participated in the survey are satisfied with the duration taken to complete the registration is demonstrated in *Figure 13* below;

FIGURE 13: PARTICIPANTS (RESPONDENTS) SATISFACTION WITH THE DURATION TAKEN DURING REGISTRATION

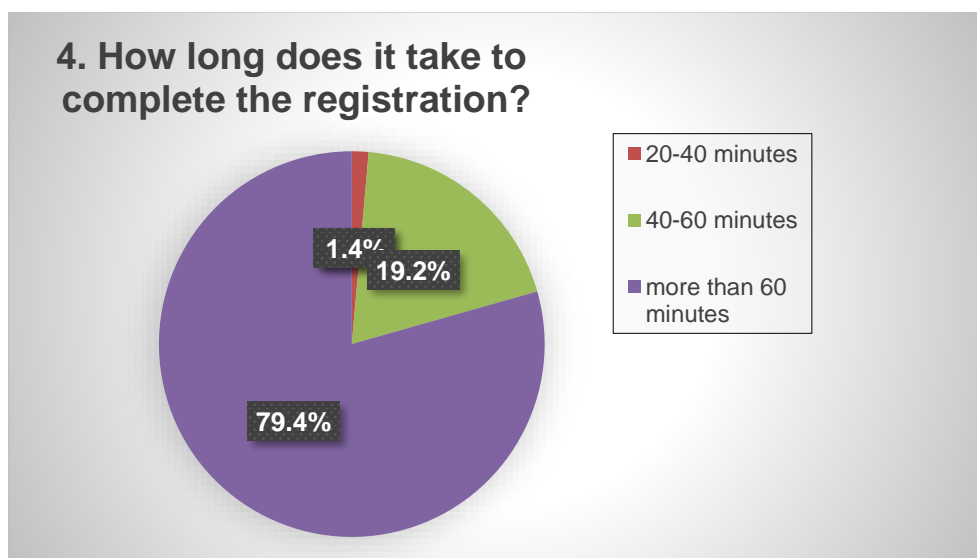


Out of 1980 respondents, 1,609 respondents are dissatisfied with the duration to complete the registration. This represents 81.3% percent of the total respondents participated in the survey. On the other hand, 371 respondents are satisfied with the duration to complete the registration, which represents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

7.1.4- Duration to Complete the Registration

Duration of time taken according to participant to complete the registration is illustrated at *Figure 14* below

FIGURE 14: DURATION TO COMPLETE THE REGISTRATION PROCESS



The chart illustrated in *Figure 14* above shows that 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.

7.1.5- Staff Service Satisfaction

To determine whether students during the registration process are satisfied with the service of the staff is demonstrated in *Figure15* below;

FIGURE 15: STUDENTS' SATISFACTION WITH THE SERVICE FROM THE STAFF



The chart demonstrated above 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.

7.1.6- Students' Comments

As for Question no.6, an open-ended question answered by the students has been summarized. The summary of respondents' comments towards new students' registration are illustrated in *Figure 16* below;

FIGURE 16: STUDENTS' COMMENTS ON SURVEY

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

Generally, it is concluded that students are not satisfied with the overall process of the registration. From the consolidated comments of Question 6, 5 were in the category of "complaints" and only 1 is under "feedback".

"Complicated and very lengthy process", "Time consuming", "Staff is rude and unhelpful", "Waiting time too long" and waiting area is too crowded" are categorized under complaints made by the participants in the survey. "Should be more organized" is under the category of feedback. This demonstrated dissatisfaction among the participants where not even a single feedback or comments are positive.

7.2 Qualitative Approach

As mentioned earlier, USIM will receive its new students 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.

The interview discovers opportunities and further improvements in creating greater value for both USIM and new student intake as follows;

- 7.2.1- 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.
- 7.2.2- 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.
- 7.2.3- 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.
- 7.2.4- 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.

7.2.5- 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.

7.2.6- 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.

Analysis of the Issue

From the analysis, this paper is able to identify inefficiencies which lead to unnecessary wastes which requires improvement through certain principal application theories. The inefficiencies identified are as follows;

7.3- Weakness in terms of Process Flow

Figure 12 above demonstrated the satisfaction level of the registration process by the students. The results illustrated 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.

7.4- Waste in terms of Time

Figure 13 above demonstrated the students' satisfaction level towards the duration taken to complete the registration. The result illustrates 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 shows the time duration taken to complete the registration as illustrated at *Figure 14* above; in which it 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".

As illustrated in *Figure 9*, at Counter A, the barcode on the offer letter will be scanned to record the registration start time (*offer letter as in Appendix*). This barcode will be rescanned at Counter J to record the completed registration time for the particular student starts with the documents checking by the staff to verify the details of the students based on the offer letter posted to them. The students need to queue accordingly and take turns to start the process. Based on the time observed, this process takes about 2 minutes to be completed for each student. It is the process to ensure and verify that the student received the correct offer letter sent to them based on their faculty and course. The queue time or waiting time from a student to another is about 3 to 5 minutes depending on the smoothness of the process. The *takt* time or complete process at Counter A is roughly about 7 minutes per student. The students will then move to the next phase, which known as *transportation time* as mentioned in value stream mapping concept, which is Counter B place for the photo shoot for the ID card (student card). Before the photo is taken by the staff, they need to queue and wait at the waiting area for about 3 to 5 minutes before undergoing the process. The duration taken to complete the process is about 4 minutes for each student, which indicates that the *takt* time for the process is about 7-9 minutes per student.

Next, they will move to Counter C (Bursar Counter), where the students need to show and submit the proof of payment (bank slip presentment) to verify that payment has been made to the university's account for the university's registration and tuition fees via online as instructed in the offer letter posted to them. If they have not done so, they need to pay the fees before they can proceed to the next counter for course registration. This process should be completed in about 4 minutes for each student without taking into account the waiting time for their turn to come. It is believed that the waiting time is between 3 to 5 minutes per student. After that, the students need to go to Counter D for the course registration and class timetabling. At this point, the students need to show their offer letter again to the staffs on duty for the issuance of timetable according to their respective programmes(courses) and Faculty. The students need also to submit their details, academic transcript, certificates to the staff to be inserted in the personal student file individually in a hard bind file. Normally, the process will take an average of 5 minutes for each student to be completed. Waiting time is approximately in the range of 3 to 5 minutes at the waiting area before the process begins.

Subsequently, the students will proceed to Counter E, whereby the students submit their medical report to the university's medical centre. This process should take only a couple of minutes for each student. Next is to Counter F for the registration of residential college. At this counter, the students need to wait for a while at the waiting area as the staffs need to sort out the student's name from the list of registered students. Normally, this process will take about 3 minutes for each student to get their room key from the Student Housing Centre followed by Counter G for the distribution of orientation (*Taaruf*) kit by Student Affairs Department (HEP)

that took about 2 minutes. The students will receive a bag pack which contains the schedule for the orientation days, tentative programmes and other leaflets related to the students' rules and regulation. Next, is to Counter H for the issuance of the student ID card. It will take about 2 to 4 minutes per student to collect their matric card. The bottleneck for this process might be due to the printing of the ID card, which sometimes happen when the printer prints out faulty ID student card and reprints are required.

Then, the students will proceed to Counter I (USIM's COOP) to purchase USIM's corporate shirt and tie. This process takes about 5 minutes for each student as the cash transaction will occurs here where the students need to purchase those items by cash only. Finally, they will proceed to Counter J for registering official university's email and student's portal. Normally this process will take about 7 minutes per student to complete the process.

The actual or ideal duration taken is approximately 36 minutes per student. But, due to the *transportation time* (movement from one counter to another), waiting time and queue at each counter, the total time taken by the student can reach up to 60-80 minutes to be completed per student. It can be faster if the flow is smoother which mostly affected by the queue of the students and the waiting time to go from one counter to another. The waiting time to complete the process from one counter to another as recorded by the staffs was approximately 3 to 5 minutes per student. Finally, the students will go to their residential colleges by bus provided by the University.

The total time taken by a student to complete the registration process was obtained by deducting the time of barcode scanning at counter J with the initial scan time at counter A. These data are tabulated as below.

Time frame	Number of Students
<i>30-40 minutes</i>	<i>28</i>
<i>41- 50 minutes</i>	<i>150</i>
<i>51-60 minutes</i>	<i>230</i>
<i>61-70 minutes</i>	<i>524</i>
<i>71- 80 minutes</i>	<i>102</i>
<i>81-90 minutes</i>	<i>383</i>
<i>91-100 minutes</i>	<i>454</i>
<i>101-110 minutes</i>	<i>535</i>
<i>Total</i>	<i>2,406 students</i>

Source: IT, GOAL- ITQAN & BPA

From the table stated above, we noticed that the time required by each student to complete the registration process and the time required answered by the students in the survey questions has a resemblance.

7.5- Discrepancies in Managing Workforce

Figure 15 above shows the satisfaction level of the services from the administration staff during the registration for the new student intake. The result shows that, the satisfaction level is just above the average. 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.

7.6- Waste in terms of Space /Area

Another comment stated in *Figure 16* above is “Waiting area is too crowded” since they called 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.

7.7- Expenditure Waste

Last but not least, the interview also mentioned in terms of expenditure waste. In relation to 7.6 above, 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.

8- Model and Theories Used Based on the Issue

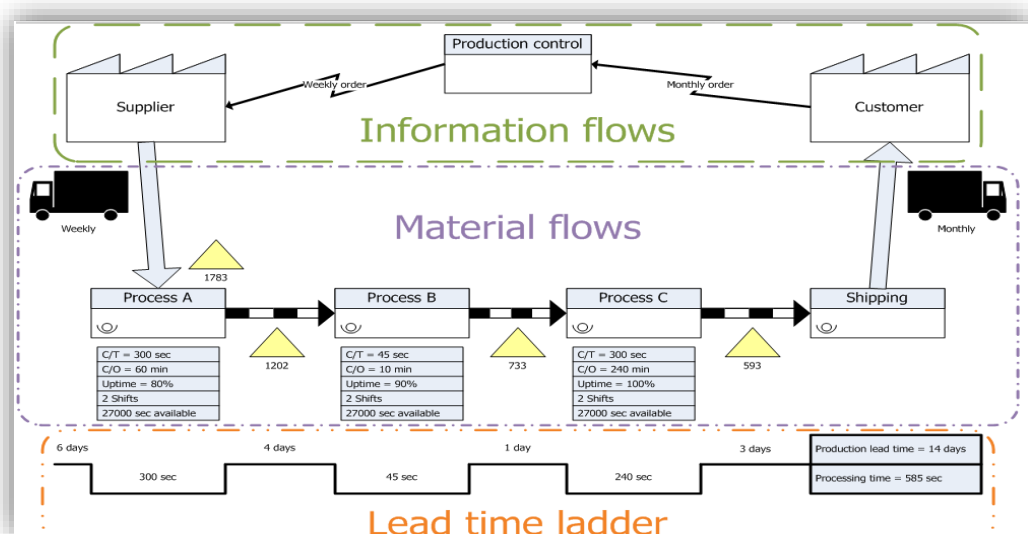
Information gathered from qualitative and quantitative data can be concluded as an issue of inefficiency and waste in terms of process, workforce, time and cost. The focal point of this case study is to reduce waste in organizational administrative processes. A lean approach, which is originally to eliminate waste and inefficiency in its manufacturing operation is adopted to the administrative processes. 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).

Lean method is also designed to identify waste or redundancies to save cost and develop an efficient process for new students' registration. Existing applications of lean in service contexts are presented where its approach and techniques meant to reduce waste, focus on customer value, standardize work, make steps flow, reduce inventory, increase employee involvement and taking a holistic perspectives.

According to Prahalad & Ramaswamy (2006) stated that “the customer becomes part of the value creation of the firm, and that the organization tries to find opportunities for creating greater value for both the customer and the organization”.

One of the most effective Lean Method to apply in this context is Value Stream Mapping (VSM). Pearce & Pons (2013) stated that VSM defines a desirable future state, illustrates the current state of processes and clarifies the path of improvement. It is a method for analysing the current situation and designing a future state for the series of events that take a product or service from its beginning with reduces lean wastes as compared to current map. Value Stream Maps are usually drawn using a set of standard symbols; which sample is illustrated in *Figure 17* below;

FIGURE 17: SAMPLE ILLUSTRATION OF VALUE STREAM MAPPING (VSM)



Source: <https://www.cnccookbook.com/value-stream-mapping-lean-manufacturing-principles-part-4/>

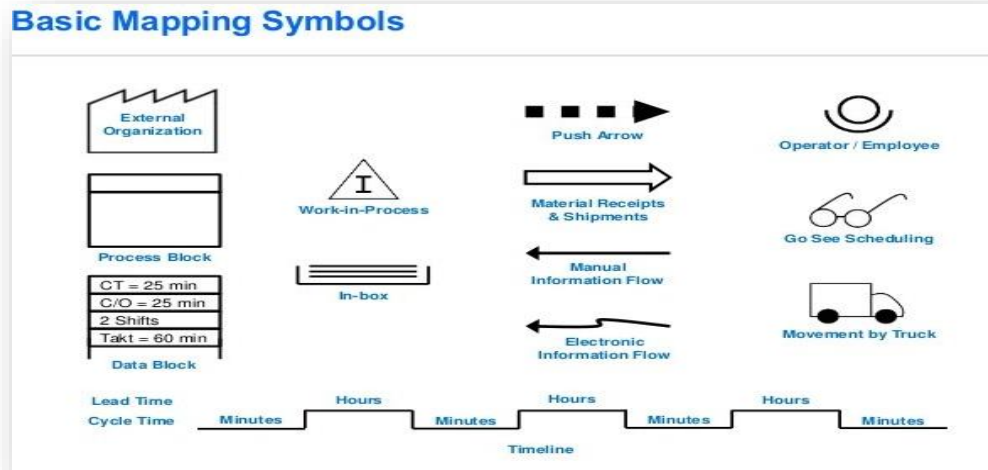


FIGURE 18: BASIC MAPPING SYMBOLS FOR VALUE STREAM MAPPING (VSM)

Source: <https://i2.wp.com/image.slidesharecdn.com/previewoec-vsmprojecttemplate01-2015-150117111716-conversion-gate>

The purpose of value stream mapping is to identify and remove or reduce "waste" in value streams which increase the efficiency of a given value stream. Waste removal increase productivity by creating leaner operations which in turn make waste and quality problems easier to identify. Value Stream Mapping has supporting methods that are often used in lean environment to analyse and design flows across multiple processes.

Value Stream Mapping usually utilizes standard symbols to represent items and processes, therefore knowledge of these symbols is essential to correctly interpret the production system problems. No mapping technique fits every situation and purpose. In the case of USIM's new student intake registration process, we can use the current symbols to represent items and processes as *Figure 17* above.

8.1- Types of Wastes According to Lean

To initiate the application of Value Stream Mapping towards new student intake registration process, we have to identify types of wastes according to Lean even though we have initially identified waste according to Process, Time, Workforce, Space and Expenditure. Types of Waste identified in new student intake registration process according to Lean are as follows:

8.1.1- Expenditure of Resources that Does Not Add Value for the Customer

According to Gopinath & Freiheit (2012), Liker & Morgan (2006) and Womack et al., (1990), waste is any expenditure of resources which does not add value from the perspective of the customer.

In the context of USIM's registration for new student intake are as follows;

- 8.1.1.1- USIM has to pay overtime to staff who are eligible to claim when working during weekends.
- 8.1.1.2- USIM's *Dewan Tuanku Canselor* (DTC) Hall as the venue for the registration day.
- 8.1.1.3- Sending offer letters to the successful candidates to their respective home address via the post.

In the context of information management, Hicks (2007) included waste into the additional actions and inactivity as a result of not providing the information customer with an adequate amount of appropriate, accurate, and up-to-date information. This is proven when;

- 8.1.1.4- The administrator of the relevant Division did not schedule the timetable and subjects in advance that will be taken by the students during their first year of studies before the registration day.
- 8.1.1.5- Students came to register at the same time as they are not being provided with specific or segregated time based on faculty to attend the registration.

8.1.2- Information Overflow

Overproduction is much less visible in services since there is less material flow. Generating more information than needed is a waste of effort and can lead to other forms of waste, including excess inventory and extra processing. Overproduction does not occur in the same way in administrative processes. This type of waste is therefore named "information overflow" since the major type of "overproduction" that can occur in administration is when too much information is generated. Overproduction is less visible in services since there is less material generated.

In the context of USIM's registration for new student intake are as follows;

- 8.1.2.1- Converting students' data to hardcopy files where unnecessary storage of information is generated.
- 8.1.2.2- Dissatisfaction in terms of the duration taken to complete the registration process shows that unnecessary process flow exists.

8.1.3- Waiting

According to Bortolotti et al (2010), waiting occurs when an upstream activity does not deliver on time; a common occurrence in services and influencing customer satisfaction. Di Pietro et al (2013), Hines et al (2008) and Lodge & Bamford (2008) added that waiting is the result of other problems such as wrong office layouts, data entry errors, lack of standardization, or poorly designed IT systems. In USIM's context, it has been identified as the main waste and the major problem of registration process;

8.1.3.1- The flow of the registration process itself needs to be improved as students had to go through lengthy process to complete the registration.

8.1.3.2- Majority of students spent more than 60 minutes to complete the registration process as they need to move from one counter to another (*transportation time*), queues and waiting for their turns.

8.1.4- Extra Processing

In administration, extra processing has to be performed as a result of mistakes or missing information. Correcting and verifying information is time-consuming and can be prevented and may include generating new information and/or acquiring additional information.

8.1.4.1- During the course registration and timetabling issuance whereby the students need to show again their offer letter to the staff for the confirmation of subjects' registration and to print out the class timetable.

8.1.5- Excess Inventory

Inventory is less visible in services but has certain impact, occurring as unfinished work or customers waiting for service. Alternatively, excessive inventory could mean storing too much information as Hicks (2007) termed this "flow excess" which he specified as storing excessive amounts of information partly due to a poor understanding of its current and potential value.

In the context of USIM's registration for new student intake are as follows;

8.1.5.1- Too many equipment, tools and stationeries were positioned at the same location at *Dewan Tuanku Canselor* (DTC) Hall.

8.1.5.2- The usage of the laptops during the registration day to compile student's data and converting them to hardcopy files.

8.1.5.3- Preparing the hardcopy files of students' data and details.

8.1.6- Motion

Hicks (2007) described “motion” in information management as the time and resources spent trying to identify the information elements that need to flow named as “flow demand.” In services, Bortolotti et al (2010) and Bushell & Shelest (2002) stated that the layout of buildings can cause unnecessary movement by employees to reach certain equipment. Di Pietro et al (2013) added that customers may need to move around unnecessarily due to the layout of facilities. The close examples in USIM’s registration for new students’ intake context are as follows;

8.1.6.1- The flow of the registration process itself creates waste, as ten counters were needed to carry out the registration procedures. The process which requires longer *transportation time* (movement from one counter to another).

8.1.6.2- Waste incurred for the transportation required to transport students from DTC Hall to residential colleges.

8.1.7- Defective Information

According to Bortolotti et al (2010), and Middleton & Joyce (2012), defects in administrative processes are wrong or missing information including but not limited to data entry errors, inadequate processing of information, or poor-quality inputs from customers. Hicks (2007) termed defective information as “flawed flow” and describes it as the resources and activities that are necessary to correct or verify information to ensure information completeness and accuracy.

This type of waste may not be related much in the context of USIM’s registration for new student intake.

8.1.8- Lack of Standardization

According to Murdick (1990), services are characterized by a higher degree of variability in customer demand. Nevertheless, many processes in services are routine and can be carried out more efficiently through standardization. As according to Bhatia & Drew (2006) and Bortolotti et al (2010) and Hines et al (2008) stated, a lack of standardization in routine processes creates variability in lead times and waiting times, which is inconvenient for customers.

In the case of USIM’s new student intake registration process, there is a standardization in terms of flow, but the time taken for the processes need to be improved and more customer friendly.

8.1.9- Underutilization of People's Talents and Systems Capabilities

Unused human potential leads to lost motivation and creativity in employees. This also results in lost opportunities for carrying out activities more efficiently.

In case of USIM, the issue in registration for new students' intake is as follows;

8.1.9.1- Comments on staff where "Staff is rude and unhelpful"

8.1.9.2- The satisfaction level towards staff is not satisfactory.

8.2- Waste Removal Operations

After identifying types waste according to Lean, we will then remove wastes according to categories set by Value Stream Mapping (VSM tools). Monden (1994) identifies three types of operations for waste removal, namely;

Non -Value Adding (NVA), Necessary but Non-Value Adding (NNVA) and Value Adding (VA).

8.2.1- Non-Value Adding Operations (NVA)

Actions that should be eliminated. In this case, any practice, procedure and material that is considered waste and should be eliminated in order to improve the practice;

8.2.1.1- USIM has to pay overtime to staff who are eligible to claim when working during weekends

8.2.1.2- Unsuitable location for registration. Instead of having it at *Dewan Tuanku Canselor* (DTC) Hall. It is much more better to have it at the residential colleges which not only reduce the time travel from DTC Hall to residential colleges but also reduce the university's cost. The Hall can be utilized by other parties and generate income to the university.

8.2.1.3- Sending offer letters to the successful candidates to their respective home address via the post

8.2.1.4- Converting students' data to hardcopy files where unnecessary storage of information is generated

8.2.1.5- Majority of students spent more than 60 minutes to complete the registration process.

8.2.1.6- Preparing the hardcopy files of students' data

8.2.1.7- Waste incurred for the movement of the students moving from DTC Hall to residential college

8.2.1.8- Comments on staff where "Staff is rude and unhelpful".

8.2.2- Necessary but Non-Value Adding (NNVA)

Actions which are wasteful but necessary under current operating procedures and in this case, for USIM's registration of new student intake.

- 8.2.2.1- Students are allowed to register at the same time as they are not being provided with specific or segregated time to attend the registration. Segregation of time for registration will create convenience in waiting time, space in waiting area, reduce time to complete the registration thus increase students' satisfactory level of service.
- 8.2.2.2- Too many equipment, tools and stationeries were positioned at the same location at *Dewan Tuanku Canselor* (DTC) Hall. Equipment are necessary even though it may not add value but reducing the number of equipment, tools and stationeries will minimize unnecessary waste and losses.
- 8.2.2.3- The usage of the laptops during the registration day to compile student's data and converting them to hardcopy files. The usage of laptop should be minimized to registration of the courses only, not converting data to hardcopy files.
- 8.2.2.4- The flow of the registration process itself creates waste, as ten counters were needed carry out the registration exercise. The usage of counters should be minimized, as it brings cost implication even though it is essential in registration process.
- 8.2.2.5- The satisfaction level towards staff is not satisfactory. As we know that the end product under administrative services is customer satisfaction, the performance level of satisfaction should be increased as USIM has invested a lot in staffing and training.

8.2.3- Value Adding (VA)

In production terms, Heins and Rich (1997) stated that it is a conversion of processing of raw materials via manual labour. In services terms, by generating these items, it will produce service profit in terms of customer satisfaction.

- 8.2.3.1- There is a standardization in terms of flow, but the processes need to be improved and more customer friendly. This will result in more customer satisfaction as the end result. Customer in this context are the students.

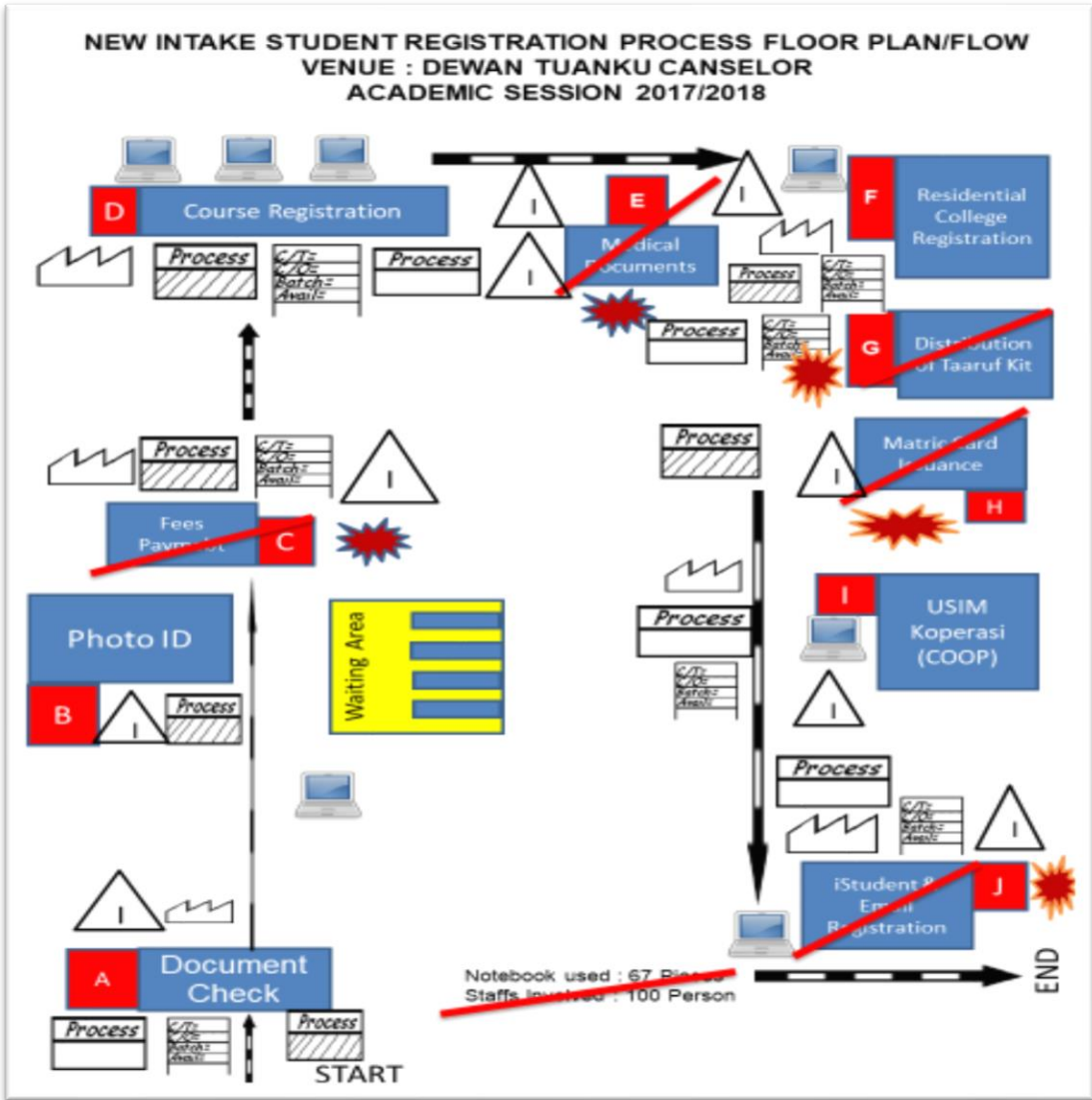
- 8.2.3.2- Apart from standardization of flow as per figure 13, the satisfaction on the duration to complete the registration is extremely low showing that unnecessary process flow exists. In this case, process flow is a must to ensure customer satisfaction, but unnecessary flow must be cut off or eliminate totally to cut short of the process
- 8.2.3.3- The administrator of the relevant Division did not set up in advance the timetable and subjects that will be taken by the students during their first year of studies. In fact, it is much easier for administrator to set up the time table and subjects earlier before the registration day which is based on courses and subjects to be taken during first semester. This small change will add value to USIM since it creates a user-friendly environment and higher students' satisfaction.

9- Findings derived

Value Stream Mapping has supporting methods that are often used in lean environment to analyse and design flows at the system level across multiple processes. It is also used in logistics, supply chain, service related industries, healthcare including administrative and office processes. Shigeo (1985) suggested a map drawing of value stream, locating Non-Value Adding Operations (NVA), Necessary but Non-Value Adding (NNVA) and Value Adding (VA) steps to be located in certain position on the map. The activities become easily separated into the value stream where he calls the value stream “the process” and the non-value streams “the operations”.

In the context of new student intake registration process, this can be applied by identifying all types of wastes in the process flow; eliminating all Non-Value Added Wastes, improving the conditions or minimizing Necessity but Non-Value Added Wastes as well as maintaining Value Added but improving performance and minimizing productions. Suggested value stream mapping is illustrated in *Figure 19 & 20* below;

FIGURE 19: VALUE STREAM MAPPING THROUGH REGISTRATION PROCESS FLOW

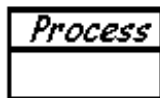


Value Stream Mapping (VSM) symbols vary in different places, but they fall into the categories of process, material, information and general. Some of the symbols can be complicated, although some simply imply their meaning in a layman's sense, depending on the industries related.

- *Value Stream Mapping Process Symbols meanings and interpretation based on the registration flow diagram as Figure 19 above:*



represents wastes that will be eliminated in the registration process. It will reduce time, eliminate excessive inventories, human resources, costs and will not be replaced by any other process or counter.



is called Dedicated Process Flow. It is a fixed activity flow according to VSM Symbols and with reference to the registration process, it is a fixed flow to smoothen the registration process.



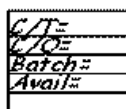
represents customer or supplier in which they are located at. In terms of registration process, customer will be located at all places in accordance to the flow of the registration.



Inventory icons represents inventory between processes. In this context, it represents computers, printers, cameras and others relevant important assets for registration. Inventory are reduced into 5 different location after elimination of wastes instead of ten locations as per current registration process.



Shared process icon represents process, operations shared by other departments/ parts that other value stream families share. In the context of registration process, other related departments including which involved in the registration process share the process flow; reaching to each of departments by turns through the process.



In general, the Data Box is about the process step, such as cycle time, change over time and uptime. In the registration context, the location of the data box is a suggestion for administration to record the process step of the new flow to identify whether this new registration flow is improved or worsen compared to the current. Data box may also be at the start and end process which enable the administrator to record the time taken for the registration.



Push Arrow Icon: represents the “pushing” of material from one process to the next process.



Kaizen burst sign: represent dramatic improvement can be done in the process flow

FIGURE 20: VALUE STREAM MAPPING: WASTE REMOVAL OPERATIONS & ACTION

TYPES OF OPERATION	ITEMS	ACTIONS TO BE TAKEN
1. NON-VALUE ADDING OPERATION	<p>1.1- USIM pays overtime to staff working during weekends.</p> <p>1.2- Venue for registration day; <i>Dewan Tuanku Canselor</i> (DTC) Hall.</p> <p>1.3- Sending offer letters to successful candidate's respective home address via the post .</p> <p>1.4- Converting students' data to hardcopy files</p> <p>1.5- Majority of students spent more than 60 minutes to complete the registration process.</p> <p>1.6- Preparing the hardcopy files of students' data</p> <p>1.7- Movement of the students moving from DTC Hall to residential colleges.</p> <p>1.8- "Staff is rude and unhelpful" comments.</p>	<p>1.1.1 Organize the registration day during weekdays.</p> <p>1.2.1 Relocate venue to residential colleges.</p> <p>Eliminate items 1.3 to 1.7</p> <p>Training should be organized by the University.</p>
2. NECESSARY BUT NON-VALUE ADDING	<p>2.1- They are allowed to register at the same time as they are not provided with specific or segregated times to attend the registration.</p> <p>2.2- Too many equipment, tools and stationeries were positioned at the same location at <i>Dewan Tuanku Canselor</i> (DTC) Hall.</p> <p>2.3- The usage of the laptops during the registration day to compile student's data and converting them to hardcopy files.</p> <p>2.4- The flow of the registration process itself creates waste, as ten counters were needed to carry out the registration procedures and transportation time (movement from one counter to another) took longer time.</p> <p>2.5- The satisfaction level of survey towards staff is just above the average.</p>	<p>2.1.1- Segregation of time for registration.</p> <p>2.2.1- Reducing the number of equipments, tools and stationeries.</p> <p>2.3.1- The usage of laptop should be minimized to registration purposes.</p> <p>2.4.1- The usage of counters should be minimized as well as the movement from one counter to another should be also minimized</p> <p>2.5.1- Level of satisfaction of the customers (students) to be increased</p>

<p>3. VALUE ADDING</p>	<p>3.1- There is a standardization in terms of flow.</p> <p>3.2- The satisfaction survey on the duration to complete the registration</p> <p>3.3- 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</p>	<p>3.1.1- The processes need to be improved and more customer friendly</p> <p>3.2.1- Unnecessary flow must be cut off or totally will be eliminated</p> <p>3.3.1- Administrator to set up the time table and subjects according to the courses taken earlier before the registration day</p>
------------------------	---	--

10-Recommendations

10.1- 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”

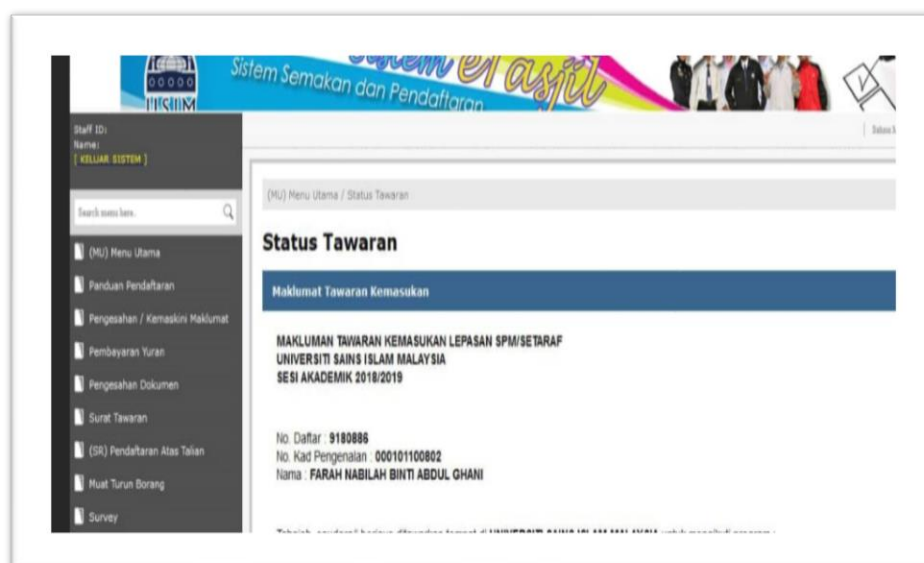
Furthermore, feedbacks from other relevant departments stated that sending offer letters to successful candidate’s home address via the post is unnecessary and this incurred extra cost. There is also requirement to prepare the hardcopy files as it can be stored in the database. The usage of too many laptops during the registration day to compile student’s data as well as converting them to hardcopy files is a waste of money, space and time consuming. Moreover, these current registration process is being carried out which done totally during the day leads to complaint of “Waiting area is too crowded” since too many equipment, tools and stationeries were positioned at the same location at *Dewan Tuanku Canselor* (DTC) Hall.

A recommended solution for the above issues is the introduction and development of the Online Registration System for the new student intake, namely *eTasjil* (*Figure 21*). 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 as illustrated at *Figure 22*.

FIGURE 21: ONLINE REGISTRATION SYSTEM INTERFACE(eTASJIL)



FIGURE 22: eTASJIL SYSTEM: CONFIRMATION OF ACCEPTANCE OF OFFER TO STUDIES IN USIM, ATTEND THE REGISTRATION DAY & DOCUMENTS UPLOAD BY THE STUDENTS



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;

- a. The ability of administrators to log in into the system.
- b. 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.
- c. The ability of administrators to get the actual number of students' acceptance of the admission offer to USIM.
- d. The ability of administrators to upload the time table for the students.
- e. The ability of students to access to the system and print out the offer letter.
- f. The ability of students to update their information(biodata), upload documents, certificates, medical report, academic transcripts, photos.
- g. The ability of students to pay the university's registration and tuition fees earlier and just upload the bank transaction slip via the system.
- h. The ability of students to view and get their course and subject registered for their current semester and get the class timetable.

10.2- The results of the survey illustrated 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.

10.2.1- Pre-Registration Process

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 amount of reduced cost achieved by implementing the system(*eTasjil*) is shown in the table below:

Expenditure (cost) and expenses incurred	Expenditure (cost) saving to the University
<i>Postage cost RM 6.00 per student. 2,600 prospective students x Rm6.00</i>	<i>RM 15,600</i>
<i>Preparing hardcopy files: RM5.50 pc x 2,600 students</i>	<i>RM 14,300</i>
<i>Rental of laptops (100 pieces) 100 pcs x RM 150.00</i>	<i>RM 15,000</i>
<i>Staffs overtime during weekends (100 staffs involved x RM 12.80 per hour x 8 hours</i>	<i>RM 11,520</i>
<i>Refreshments for staffs on duties</i>	<i>RM 21,000</i>
<i>Transportation rental (buses) RM 400 x 20 buses</i>	<i>RM 8,000</i>

For every new student intake registration process, the total administrative expenditure cost is approximately RM85,420 yearly. This cost could rise higher if no cost saving actions are being taken. In fact, it could even jeopardise the University's budget.

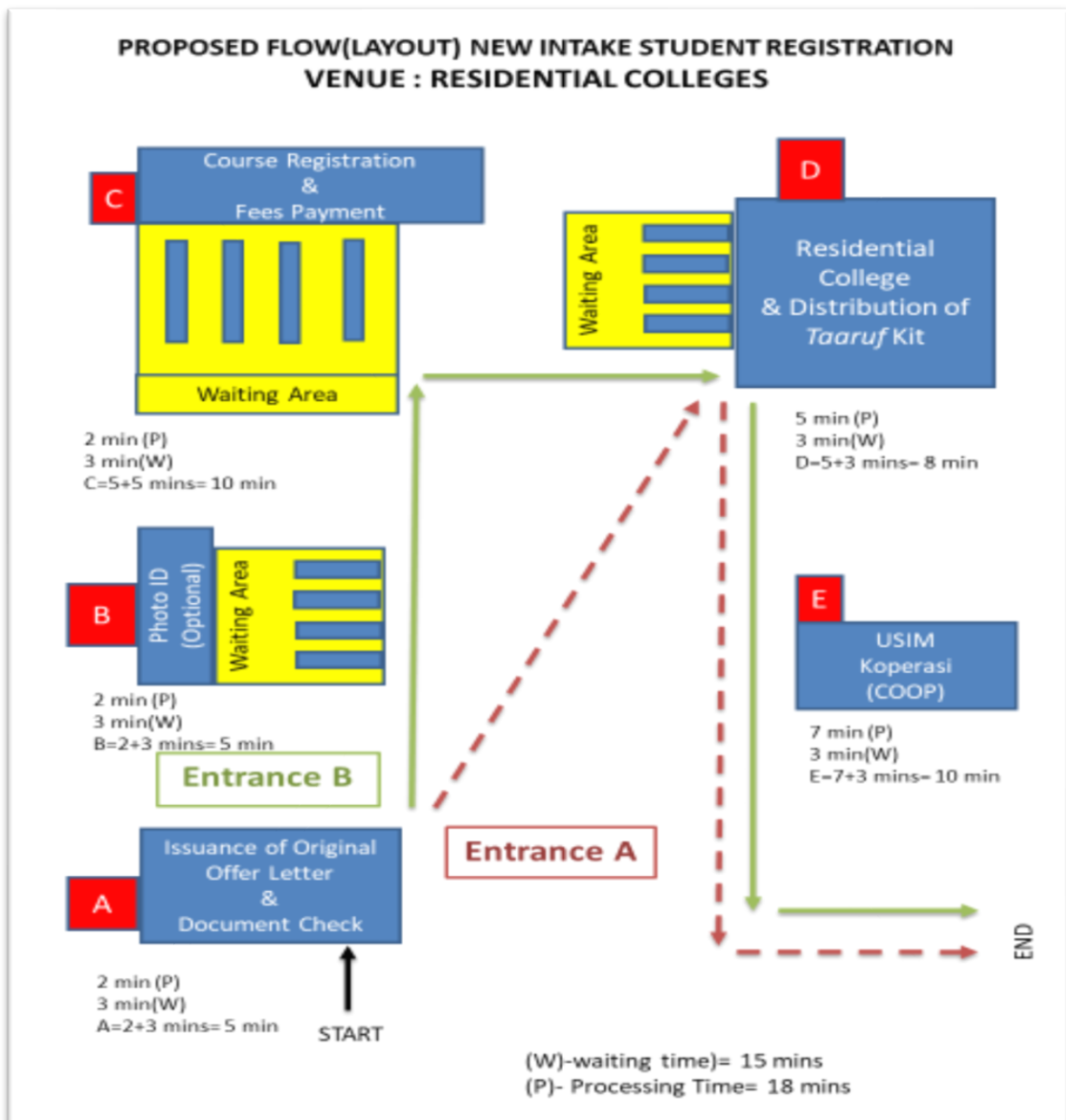
10.2.2- Registration Process Flow

Prior to the registration day, students will be informed by the University on the date and time for the actual registration. It will be divided according to faculties thus eliminating time waste and queues, ensuring a smoother process during the registration day. In short, most of the registration process had been carried out in advance via the online method instead of during the registration day. In addition, USIM will be able to estimate the number of expected students to arrive on the registration day.

The most vital part is the flow of the layout or the flow of the registration process that will be revised and redesigned (See *Figure 23* below). Due to the amendment and improvements during the registration day, only 5 counters are needed comparing

to 10 previously. Indeed, with the new registration flow, the process will definitely take less time than it did before. The new efficient and effective proposed method will create a harmony environment thus increase students' satisfaction towards the registration process. With only five counters existing, students are expected to take approximately 10-20 minutes per student to complete the whole registration process depending on the documents upload in the registration system compared to the current time consumed which mostly was above 60 minutes per student to complete the registration process.

FIGURE 23: PROPOSED FLOOR PLAN (LAYOUT) OF NEW STUDENT INTAKE REGISTRATION



There will be two entrances (**Entrance A**) and (**Entrance B**)

There will be only 5 counters for the registration process and will only involves around 20 staffs on duties. 5 staffs will be located at Counter A, another 3 staffs at Counter B, 3 staffs at Counter C, 5 staffs at Counter D and 4 staffs at Counter E.

All students will start the registration process by going to Counter A. At this point, the issuance of original offer letter to the students will take place and documents will be checked by the staff. After it has been verified by the staff, those who have completed the online registration via the system(*eTasjil*), they will go and follow the Entrance A, and proceed to Counter D for the registration of their residential college and getting the *Taaruf* Kit. They will end up at Counter E to purchase USIM's corporate shirt and tie.

It is believed that the *transportation time* (movement from one counter to another) will be less time taken compared to before. Meanwhile, for those who have not completed or partially completed the online registration via the system, they still have the option to do it by following the Entrance B to complete their registration.

This exercise will be implemented during this coming registration day for the new student intake for undergraduates and feedback for this new process flow will be compiled during the registration day which will be held in September 2018.

10.3- 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. Additional comments in the Questionnaires distributed includes “Should be more organized” and “Staff is rude and unhelpful” highlights their disappointment in the way the staff handles the registration process. Interviews from various related department also reflected the unnecessary waste in terms of the involvement of the workforce during weekends. Workforce during weekends created not only waste in terms of workforce but also in terms of expenditure where USIM has to pay overtime to staff who are eligible to claim.

From the logistics point of view, 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.

10.3.1-Manpower

According to the Lean principles, the satisfaction level of service is the actual output in the administration. Thus, the management needs to identify factors affected the service of the staff. In terms of “Staff is rude and unhelpful”, it is directly a “non-value adding operation” which should be eliminated under Value Stream Mapping. To materialize this, the management should take necessary step(s) in order to improve staff’s performance; for instance, conducting training or take relevant disciplinary actions. Related surveys and interviews should be continued every semester in order to constantly improve and the staff’s quality as well as service performance. This is one of the suggested solution for improvement of manpower resource utilization.

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. Normally, 100 personnel are involved during the registration day during the weekends. Thus, USIM had to pay extra overtime allowances approximately RM 12.80 per hour for 100 staffs which totalled to RM 11,520 per day. The University also needs to spend on refreshment, including breakfast and lunch to the involved staffs which cost about RM 10,000. 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.

With regards to the comment of "Should be more organized" as well as just above average on satisfaction level towards staff, it is also a proof of disappointment in handling registration process. Nevertheless, the solution suggested is not as direct like waste of workforce during weekends or comments of "staff is rude and unhelpful". The solution for the above-mentioned issues should be the combination of *eTasjil*, improvement of registration process as well as improvement of resource utilization. Reason being is that the disappointment might initially come from the previous registration system, lengthy completion of registration process or even lack of manpower skills itself. Thus, we need to apply all those 3 solutions towards these two issues. To get a clearer and updated answer from the customers, which in this context are the students themselves, surveys and interviews should be continued every semester as what have been mentioned earlier.

10.3.2- Logistics

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. *Figure 24* below will demonstrate the Issue, Action(s) to be taken and Recommended Solutions.

FIGURE 24: VALUE STREAM MAPPING: ACTION & RECOMMENDED SOLUTION

TYPES OF OPERATION	ITEMS	ACTIONS TO BE TAKEN	RECOMMENDED SOLUTIONS
1. NECESSARY BUT NON-VALUE ADDING	2.1- They are allowed to register at the same time as they are not provided with specific or segregated time to attend the registration day.	2.1.2- Segregation of time for registration by faculty and courses	2.1.1.1- Reduce the waiting time and improvement of registration process
	2.2- Too many equipment, tools and stationeries were positioned at the same location at <i>Dewan Tuanku Canselor</i> (DTC) Hall.	2.2.1- Reducing the number of equipment, tools and stationeries	2.2.1.1 <i>eTasjil</i> 2.2.1.2 Improvement of Registration Process
	2.3- The usage of the laptops during the registration day to compile student's data and converting them to hardcopy files.	2.3.1- The usage of laptop should be minimized for registration purposes only.	2.3.1.1- <i>eTasjil</i> 2.3.1.2- Improvement of Registration Process
	2.4- The flow of the registration process itself creates waste,	2.4.1- The usage of counters should be	2.4.1.1- Improvement of Registration

	<p>as ten counters were needed carry out the registration exercise.</p> <p>2.5- The satisfaction level of students towards staff is just above the average.</p>	<p>minimized to five counters only.</p> <p>2.5.1- Level of satisfaction of survey to be increased</p>	<p>Process (Flow)</p> <p>2.5.1.1- <i>eTasjil</i></p> <p>2.5.1.2- Improvement of Registration Process</p> <p>2.5.1.3- Improvement of resource utilization</p>
3. VALUE ADDING	<p>3.1- There is a standardization in terms of flow</p> <p>3.2- The satisfaction survey on the duration to complete the registration</p> <p>3.3- 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</p>	<p>3.1.1- The processes need to be improved and more customer friendly</p> <p>3.2.1- Unnecessary flow must be cut off or totally eliminate</p> <p>3.3.1- Administrator to set up the time table and subjects according to the courses taken earlier before the registration day</p>	<p>3.1.1.1- <i>eTasjil</i></p> <p>3.1.1.2- Improvement of registration process</p> <p>3.2.1.1 <i>eTasjil</i></p> <p>3.2.1.2 Improvement of registration process</p> <p>3.3.1.1- Improvement of registration process</p>

ASSESSMENT OF NEW FRAMEWORK, DESIGN AND SYSTEM

For evaluation purposes, the newly developed framework and system has been put to test and used during the recent *Tamhidi*(Foundation) programme student registration process. There are (5) five programmes under *Tamhidi*:

- *Tamhidi of Accounting and Muamalat,*
- *Tamhidi of Dentistry*
- *Tamhidi of Medicine*
- *Tamhidi of Science and Technology*
- *Tamhidi of Shari'ah and Law*

The registration day was held on June 27, 2018. The proposed new format and layout has been utilized. The online registration system(*eTasjil*) was used and tested. It serves as a smaller trial scale based on the lower numbers of students that will be registering at the *Tamhidi* programme as compared to serves the larger scale numbers of students during the Undergraduates students' registration day in September 2018.

The total number of registered students that turn up during the registration day at USIM for the *Tamhidi* programmes was 925 students out of 1170 places offered for the new admission for academic year 2018/2019. This is 79% of the enrolment projection.

In order to get the feedback from the new students of *Tamhidi* in regard to the registration process, a short survey has been conducted during the registration day, which comprises of 5 questions.

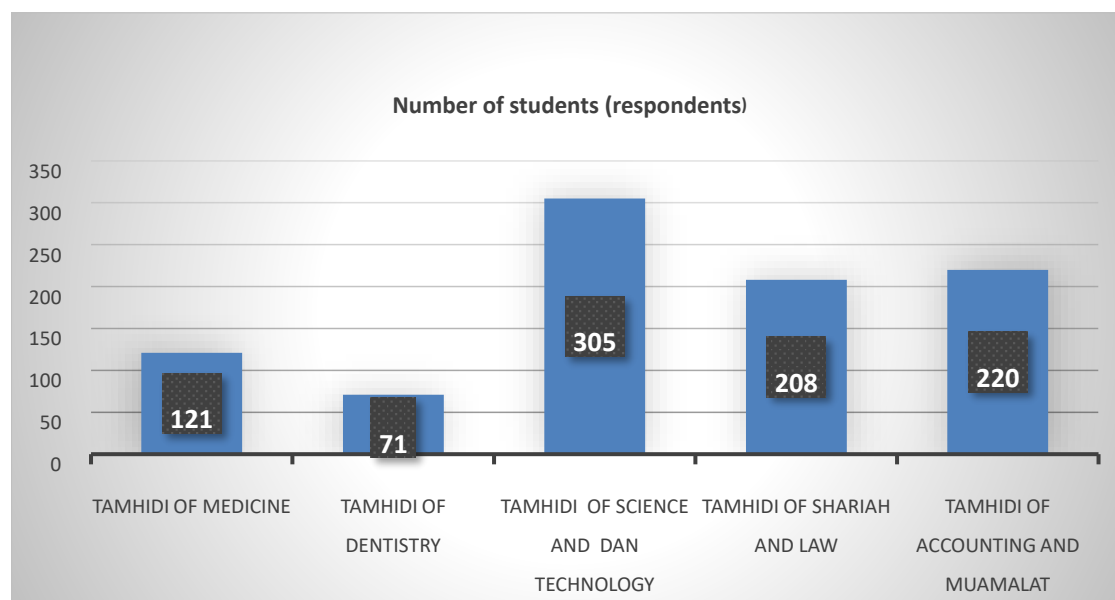
It is a simple and short survey as the main objectives of the survey is particularly focusing on the usage of the online registration system (*eTasjil*); to measure the efficiency and effectiveness of the system. Secondly, the purpose of the survey is to evaluate on the satisfaction level of the students during the registration process. Finally, to find out whether the implementation of the redesign floor plan and flow of the registration process is significant or not.

The survey was carried out on the same day during the registration day after the students have completed their registration. The survey has been answered from the students from all *Tamhidi* programmes; *Tamhidi of Accounting and Muamalat*, *Tamhidi of Dentistry*, *Tamhidi of Medicine*, *Tamhidi of Science and Technology* and *Tamhidi of Shariah and Law*.

For **Question No.1: Participants of the survey**

All 925 students(respondents) that have completed the registration process participated in the survey which equivalent to 100% respondents. The numbers of the respondents according to the programmes are stated in the Figure 25 below;

FIGURE 25: RESPONDENTS BY PROGRAMME



The respondents were from 5 different *Tamhidi* programmes; *Tamhidi of Medicine*: 121 students (respondents) equivalent to 13.8%, *Tamhidi of Dentistry*: 71 students (respondents) equivalent to 7.7%, *Tamhidi of Science and Technology*: 305 students (respondents) equivalent to 33% *Tamhidi of Shari'ah and Law*: 208 students (respondents) equivalent to 22.4%, (*Tamhidi of Accounting and Muamalat*:220 students (respondents) equivalent to 24%.

For **Question No.2: Are you satisfied with the registration process?**

In terms of the satisfaction of the registration process among the new students, the survey answers obtained from all the students (925) participated in the survey, none of them were dissatisfied with the registration process as illustrated in *Figure 26*. It means all of them which equivalent to 100% who had participated in the survey, answered that they are satisfied and happy with the registration process.

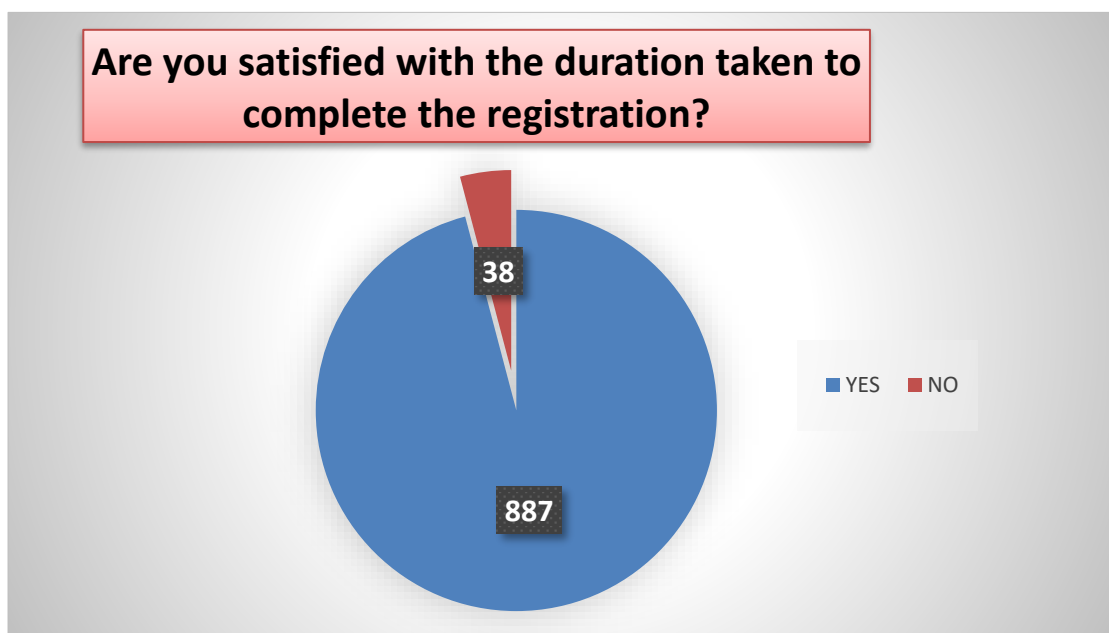
FIGURE 26: PARTICIPANTS' SATISFACTION ON REGISTRATION PROCESS



For **Question No.3:** *Are you satisfied with the duration taken to complete the registration?*

In regard to the duration taken to complete the registration, from the survey result, 887 students which equivalent to 95.9% have answered that they were satisfied with the time taken to complete the registration process. Meanwhile 38 students equivalent to 4.1% were not satisfied with the time consumption. It is reported this is due to certain issues related to financial aspects of the registration fees and sponsorship.

FIGURE 27: SATISFACTION WITH THE DURATION TAKEN DURING THE REGISTRATION

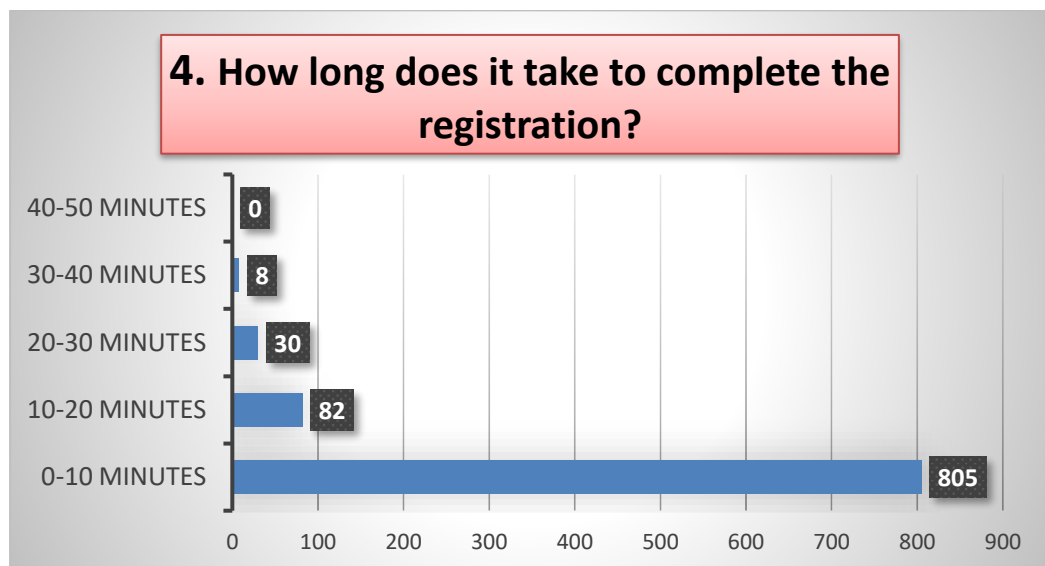


For **Question No. 4:** *How long does it take to complete the registration process?*

From the survey result as shown in *Figure 27*, out of 925 students registered, 805 students finished their registration process within the time range between 0 to 10 minutes which equivalent to 87%, 82 students responded they completed their registration process between 10 to 20 minutes equivalent to 8.9%, 30 students or 3.2% completed their registration process in the range time of 20 to 30 minutes and 8 students finished their registration in 30 to 40 minutes, equivalent to 0.9%. None of the students completed the registration process more than 40 minutes, which is significantly better compared to the previous registration process where most students completed more than 60 minutes.

It really shows an improvement in terms of the duration of time taken to complete the registration process compared to the previous year as illustrated in *Figure 28* below.

FIGURE 28: DURATION TO COMPLETE THE REGISTRATION PROCESS



For **Question No. 5:** *Are you satisfied with the service from the staff?*

Out of 925 respondents, 900 of them were satisfied with the treatment or service given by the staff during handling their registration process. This equivalent to 99.5% out of the numbers of the respondents. Meanwhile 5 students, equivalent to 5% of them were not satisfied. It indicates that majority of the students, which nearly to 100 percent do not encounter any problem with the service given by the staff during the registration process as shown in *Figure 29* below.

FIGURE 29: STUDENTS' SATISFACTION WITH THE SERVICE FROM THE STAFF

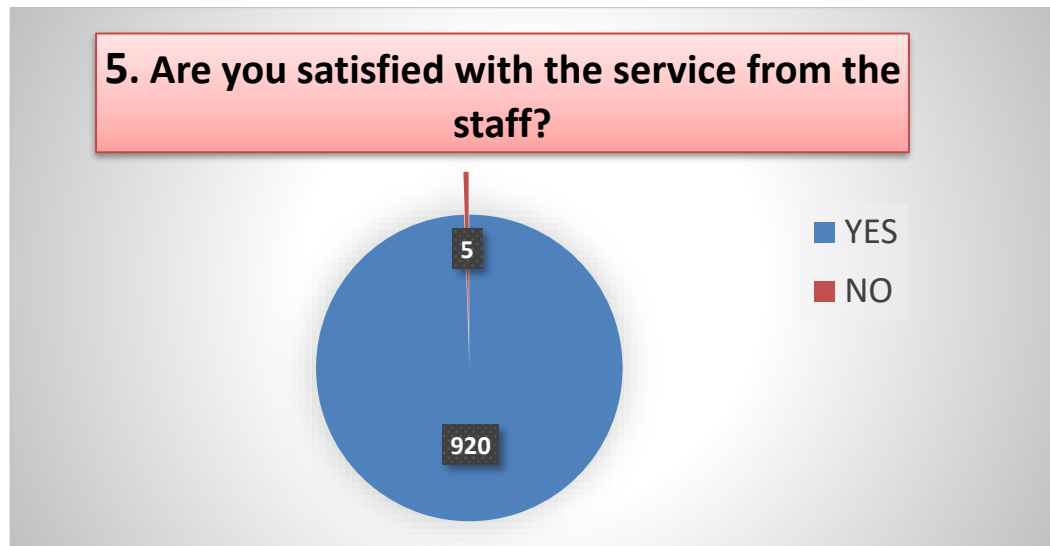



FIGURE 30: SURVEY QUESTIONS FOR TAMHIDI STUDENTS



Kajian Kepuasan Pelanggan Pendaftaran Pelajar Baru Tamhidi 2018

Customer Satisfaction survey on New Tamhidi Student Registration 2018

* Required

1. Program *

☐ Tamhidi Perubatan
☐ Tamhidi Pengajian
☐ Tamhidi Sains dan Teknologi
☐ Tamhidi Syariah dan Undang-undang
☐ Tamhidi Perakaunan dan Muamalat

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? *

KAJIAN KEPUASAN PELANGGAN PENDAFTARAN PELAJAR BARU TAMHIDI SESI
AKADEMIK 2018/2019
CUSTOMER SATISFACTION SURVEY ON NEW TAMHIDI STUDENT REGISTRATION
ACADEMIC SESSION 2017/2018

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

1. Program Pengajian / Program

Tamhidi Perubatan	
Tamhidi Pengajian	
Tamhidi Sains dan Teknologi	
Tamhidi Syariah dan Undang-undang	
Tamhidi Perakaunan dan Muamalat	

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 menyiapkan pendaftaran? 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?

0-10 minutes	
10-20 minutes	
20-30 minutes	
30-40 minutes	
40-50 minutes	
50-60 minutes	
More than 60 minutes	

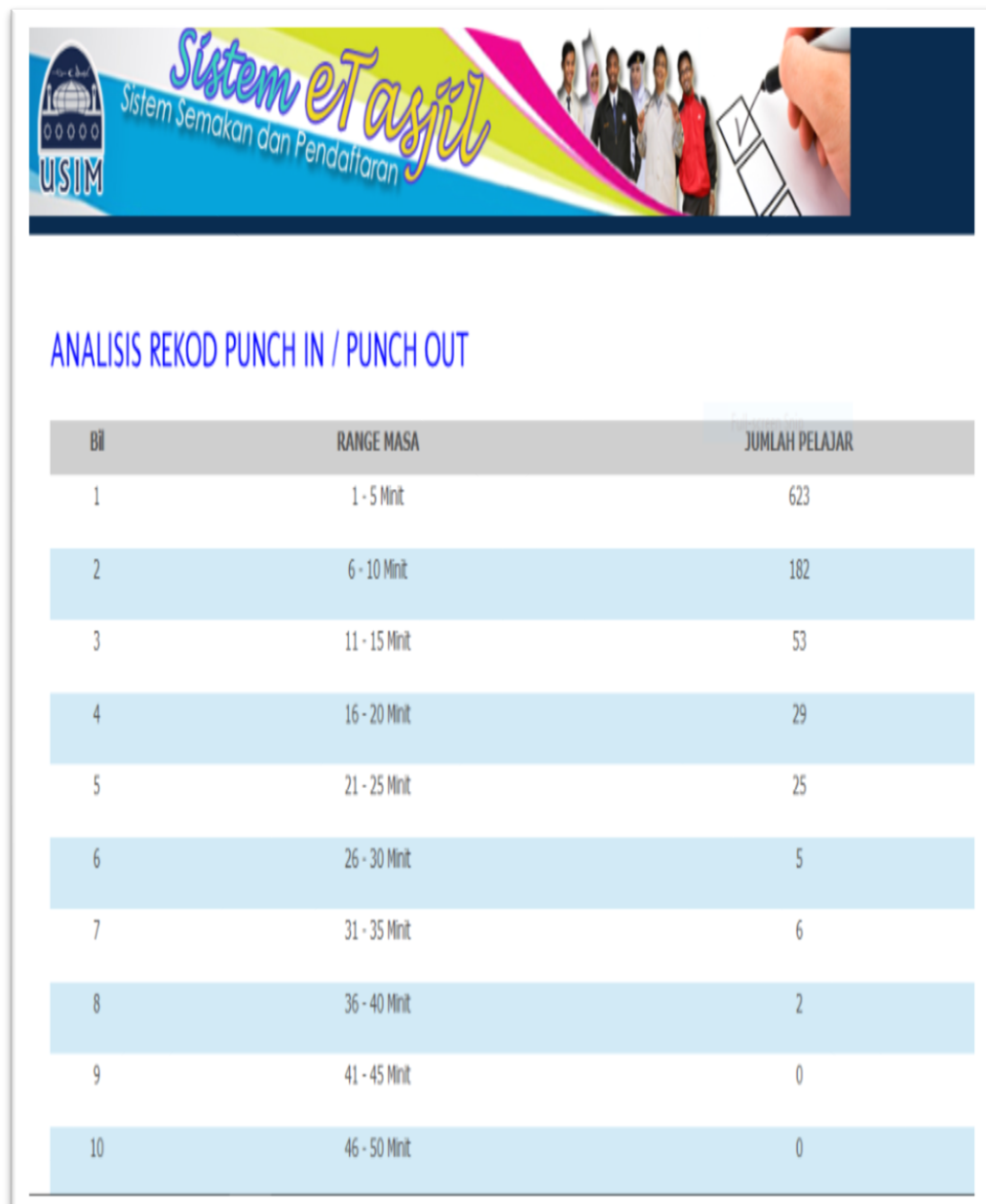
5. Adakah anda berpuas hati dengan layanan petugas? / Are you satisfied with the service from the staff ?

Ya / Yes	
Tidak / No	

- Terima Kasih / Thank you -

From the conducted survey, there is no doubt that the implementation of the newly developed system *eTasjil*, together with the new stream flow and the new registration process floor plan has proven to be more effective and efficient. It not only reduced the registration time taken per-student but also eliminates unnecessary wastes. As a verification step, the administrator has recorded the time taken by student from the start till the end of the registration process. These time data results are shown in the table as illustrated in *Figure 31* below.

FIGURE 31: THE TABLE BELOW DEMONSTRATES THE REAL TIME TAKEN BY THE STUDENTS FOR REGISTRATION



Total Number of Student: 925

Source: eTasjil system

The table indicates that the fastest time recorded was between 1-5 minutes comprises of 621 students out of 925 students who have registered and completed the registration process. It implies 67% had completed the registration process within this time range.

Then, trailed by 6-10 minutes consisted of 182 students which equivalent to 19%. 11-15 minutes comprises of 53 students which equivalent to 5.72%, 29 numbers of students completed the registration process between 16-20 minutes, equivalent to 3.13%, 25 students completed their registration between 21-25 minutes which equivalent to 2.7%. 5 students completed the registration process in the range of 26-30 minutes, equivalent to 0.5%, 6 students completed between 31-35 minutes, which brings to 0.6%, and finally 2 students completed the registration process between 36-40 minutes which conveys 0.2%. None of the new students completed their registration for more than 40 minutes.

Indeed, with the improvement of current registration process, we can see the improvement in terms of duration taken to complete the registration. The result has demonstrated the viability and effectiveness of the online registration system(*eTasjil*) which has been developed to cater for the needs of the registration process and by designing the new stream(flow) of registration process.

Comparison duration of time taken between previous and new registration is as follows;

DURATION OF TIME TAKEN TO COMPLETE THE REGISTRATION			
Previous Registration Process		New Registration Process	
0 – 20 Minutes	0%	0 – 20 Minutes 1-5 minutes 6-10 minutes 11-15 minutes 16-20 minutes	96%
20 – 40 Minutes	1.4%	20 – 40 Minutes 21-25 minutes 26-30 minutes 31-35 minutes 36-40 minutes	4%
40 – 60 Minutes	19.2%	40 – 60 Minutes	0%
60 Minutes & Above	79.4%	60 Minutes & Above	0%

As we can see in the illustration above, there are significant improvement on the duration of time taken for the new registration process. There is no registration that took more than 40 minutes to complete, as compared to previous process where 79.4% took more than 60 minutes and 19.2% took about 40 – 60 minutes to complete. Only 1.4% of the previous registration process were able to complete between 20 – 40 minutes as compared to 4% for the current registration process. The obvious difference is the duration between 0 – 20 minutes which is 96% as to compared to previous registration where no student was able to complete the registration within this time frame.

Based on the observation on the previous registration day, some students took longer than 20 minutes to complete their registration process. This is due to issues of registration and tuition fee payment by sponsorships. A bottleneck effect was observed at these financial related counters. To

counter this problem, more financial related counters will be set up in the future registration process. This was implemented during the recent *Tamhidi's* registration process and has been proved to be successful in expediting the registration process for sponsored students. Hence, the same framework and concept will be applied during the registration process for the undergraduate student this coming September.

11- Conclusion

Students who participated in the survey are from different faculties as illustrated in *Figure 11* above. 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. This has concluded the followings;

- 11.1- This paper had identified several areas of waste in the registration process. Feedbacks obtained from questionnaires and surveys has allowed us to look at the entire registration practise. From the administrative perspective, we are able to identify weaknesses and redundancies in terms of process in the registration flow, waste in terms of time, discrepancies in managing workforce, waste in terms of space /area and expenditure waste.
- 11.2- 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.
- 11.3- In this paper, we have applied the relevant tools and techniques to reduce /eliminate waste for the new student intake registration process. We have identified that the Value Stream Mapping that are often used in Lean environment has supporting methods to analyse and design flows at the system level across multiple processes. With its symbols to represent items and processes, it is intended to increase productivity by creating leaner operations which in turn make waste and quality problems easier to identify.

11.4- To initiate the application of the Value Stream Mapping towards new students' intake registration process, we have to identify types of wastes according to Lean even though we have initially identified them in laymen terms. We then identify waste removal operations before deriving to our findings by suggesting a map drawing of value stream and identifying actions also through waste removal operations and actions before suggesting solutions.

11.4.1- Types of Waste identified in new students' intake registration of USIM according to Lean are characterised as: Expenditure of Resources that Does Not Add Value for the Customer, Information Overflow, Waiting, Excess Inventory, Motion and Underutilization of People's Talents and Systems' Capabilities.

Figure 32 below describes Types of wastes in USIM's new student registration by each item;

FIGURE 32: TYPES OF WASTE IN USIM'S NEW STUDENT INTAKE REGISTRATION PROCESS IDENTIFIED THROUGH LEAN PRINCIPLES

	Type of Waste According to Lean	Waste Identified in USIM
1	Expenditure of Resources that Does Not Add Value for the Customer	1.1- USIM has to pay overtime to staff who are eligible to claim when working during weekends. 1.2- Venue at USIM's <i>Dewan Tuanku Canselor</i> (DTC) Hall for registration. 1.3- sending offer letters to the successful candidates to their respective home address via the post. 1.4- the administrator of the relevant Division did not set up the timetable and subjects earlier that will be taken by the students during their first year of studies before the registration day. 1.5- they called to register at the same time as they are not provided with specific or segregated times to attend the registration.
2	Information Overflow	2.1- converting students' data to hardcopy files where unnecessary storage of information is generated. 2.2- the satisfaction of the duration to complete the registration is inadequately low showing that unnecessary process flow exists
3	Waiting	3.1- The flow of the registration process itself needs to be improved as students had to go through lengthy process to complete the registration, <i>transportation time</i> need to reduce 3.2- the majority of students spent more than 60 minutes to complete the registration process.
4	Extra Processing	4.1- Students need to show their offer letter again to the staff for course registration and getting the class timetable
5	Excess Inventory	5.1- too many equipment, tools and stationeries were positioned at the same location at <i>Dewan Tuanku Canselor</i> (DTC) Hall. 5.2- the usage of the laptops during the registration day to compile student's data and converting them to hardcopy files.

		5.3- preparing the hardcopy files of students' details.
6	Motion	6.1- The flow of the registration process itself creates waste, as (10) ten counters were needed carry out the registration exercise. 6.2- waste incurred for the movement of the students moving from residential college to DTC Hall
7	Defective Information	None
8	Lack of Standardization	None
9	Underutilization of People's Talents and Systems' Capabilities	9.1- Comments on staff where "Staff is rude and unhelpful" 9.2- The satisfaction level towards staff is just above the average.

11.4.2- After identifying the types of wastes according to Lean, we then identify the waste removal operations by categorizing wastes into types of operations which are Non-value adding operations (NVA), Necessary but non-value adding (NNVA): and Value-adding (VA). To apply in the context of student's registration, we have identified all types of wastes in the VSM's process flow; eliminating all Non-Value Added Wastes, improving the conditions or minimizing Necessity but Non Value Added Wastes as well as maintaining Value Added but improving performance and minimizing productions. The actions for each items of the operations are listed on *Figure 33* while the Value Stream Mapping is illustrated in *Figure 34* below.

11.5- Once the redesigning of the process using the Lean Techniques is carried out, we have suggested solutions guided by these waste removal operations. Three ultimate suggestions of solution are the invention and the development of the students' registration system *eTasjil*, Improvement of registration process and improvement of resource utilization. As actions and recommended solutions under Value Stream Mapping are illustrated in *Figure 20* above.

11.6- Identify the waste by applying the Kaizen theory, which means for continuous improvement in the value stream map for the current state, desired state and future state of the registration process.

FIGURE 33: SUGGESTED REGISTRATION FLOW WITH VALUE STREAM SYMBOLS

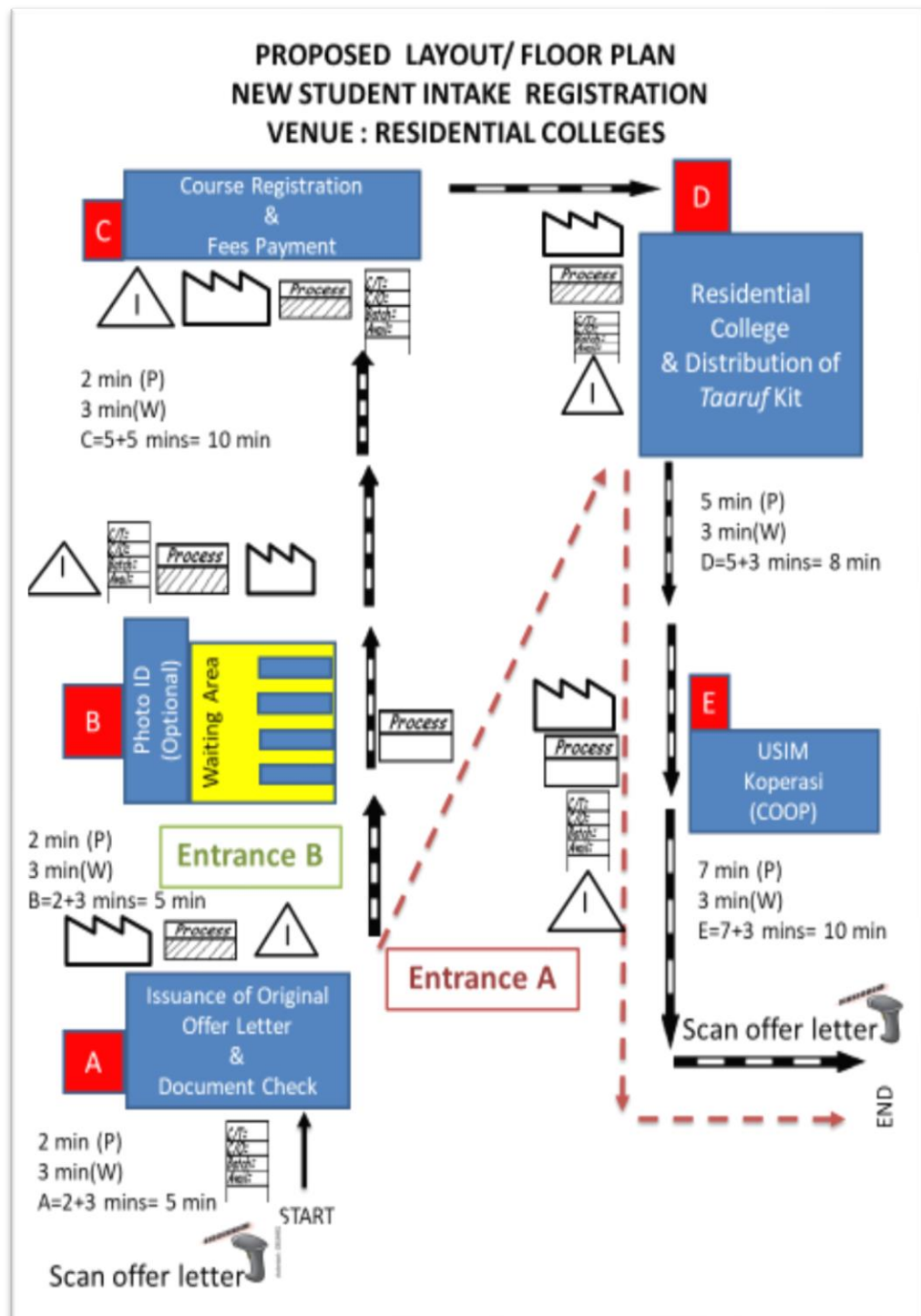
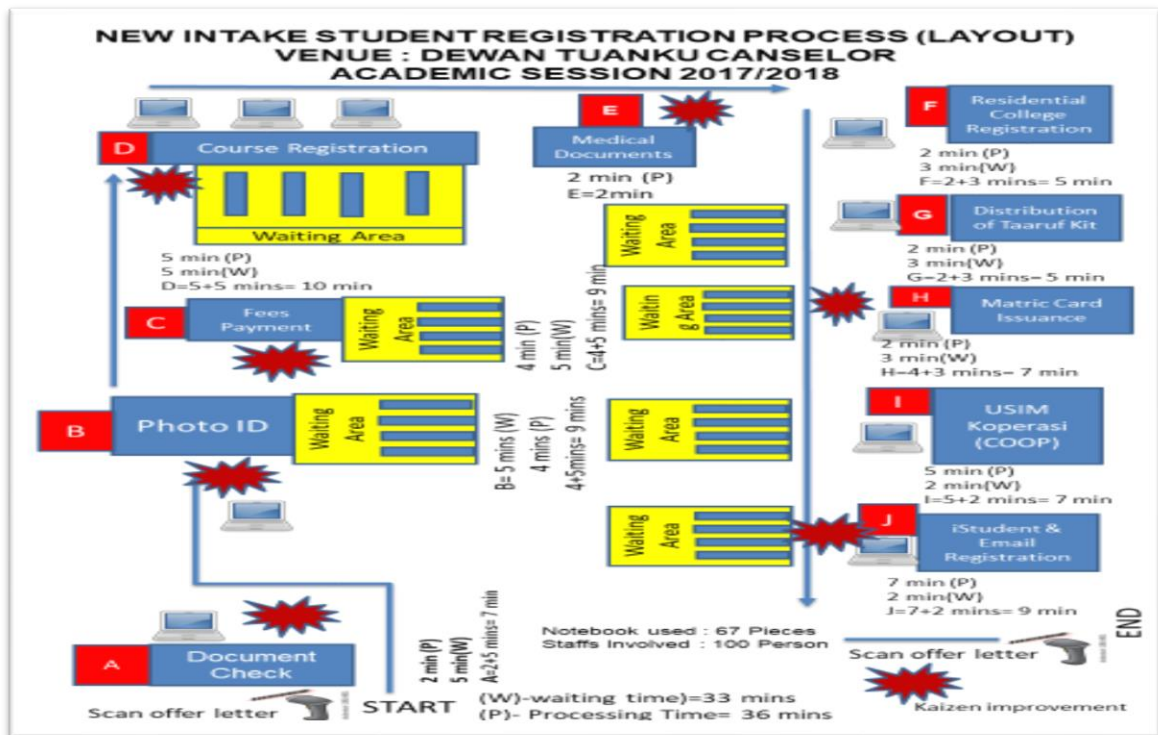
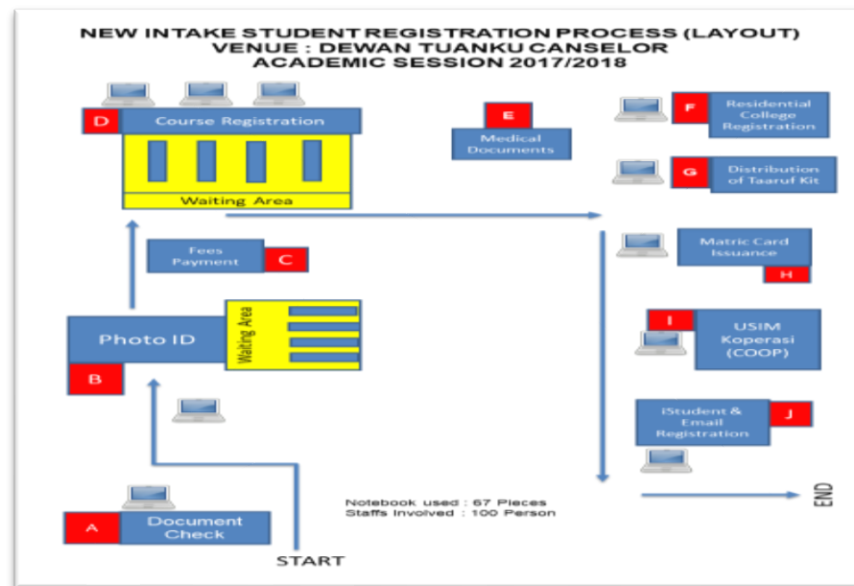


FIGURE 34: CURRENT NEW STUDENT REGISTRATION PROCESS LAYOUT



VSM CURRENT STATE

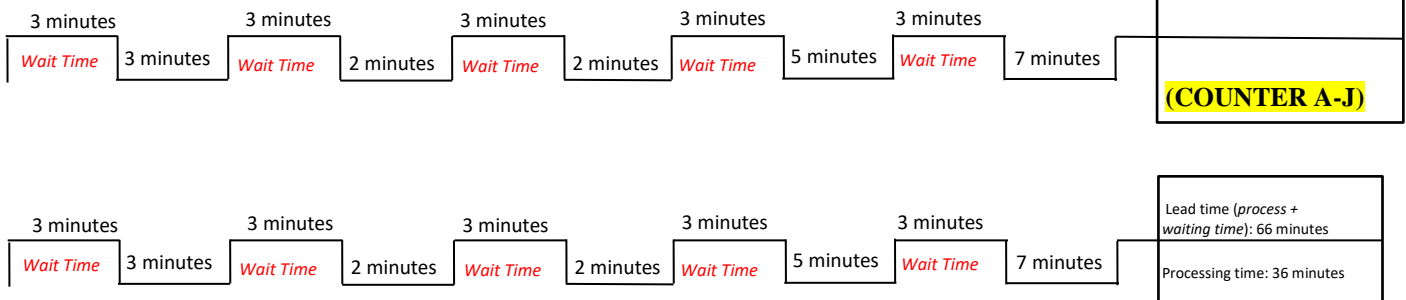
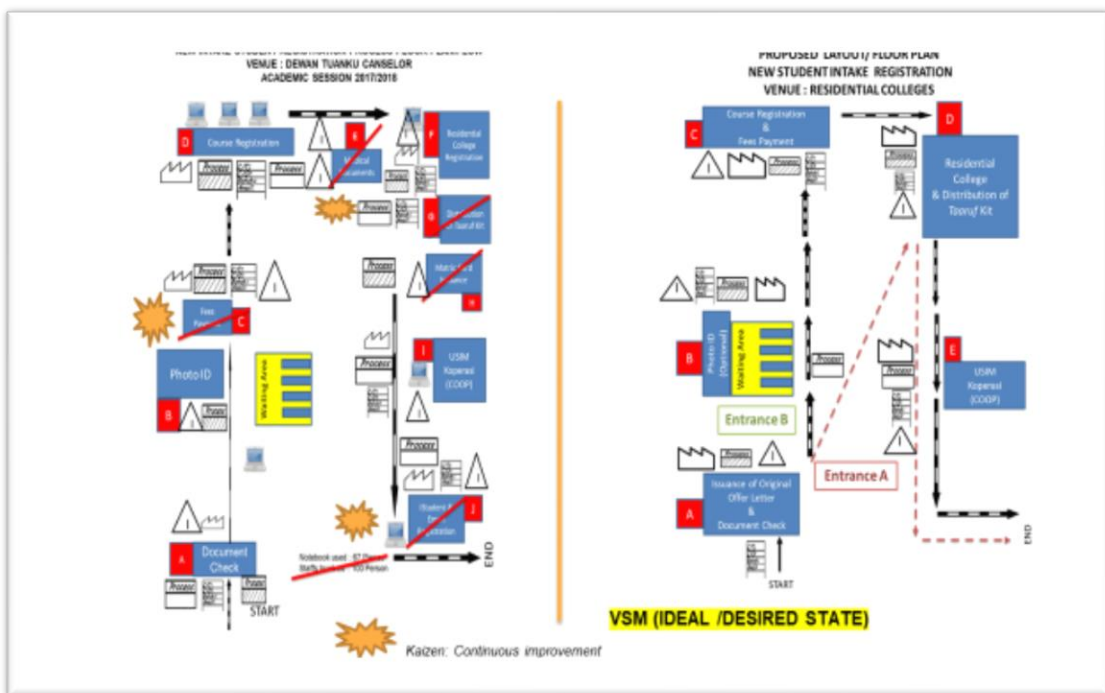
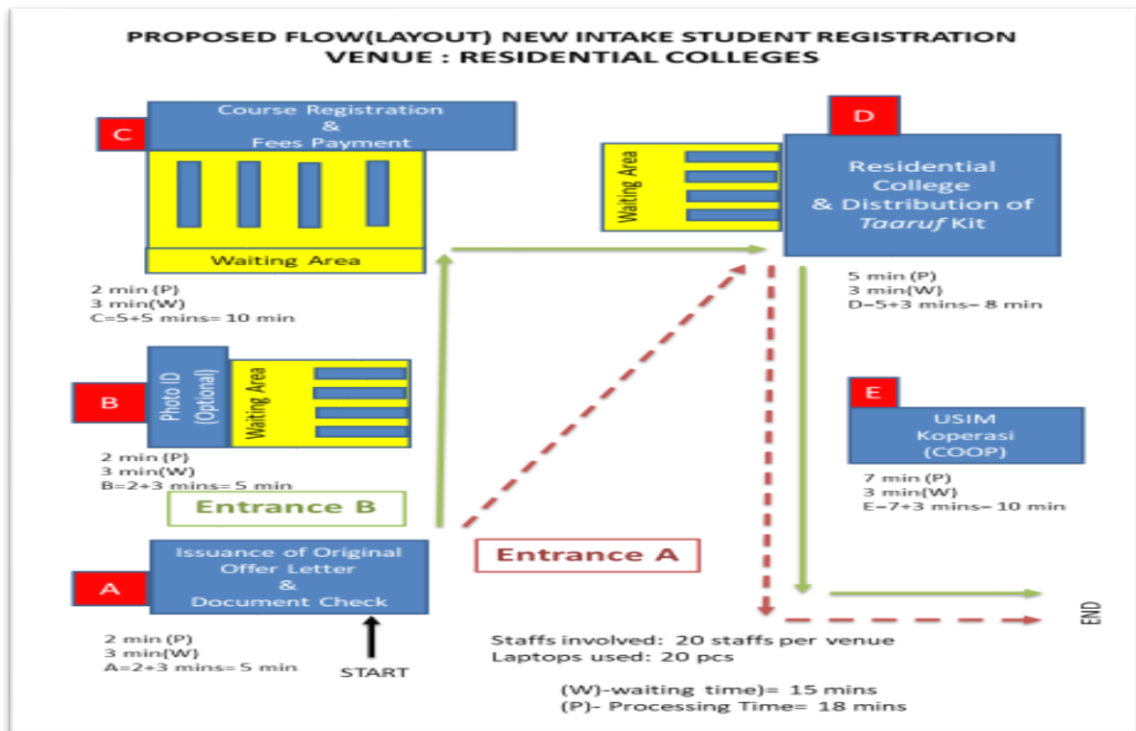


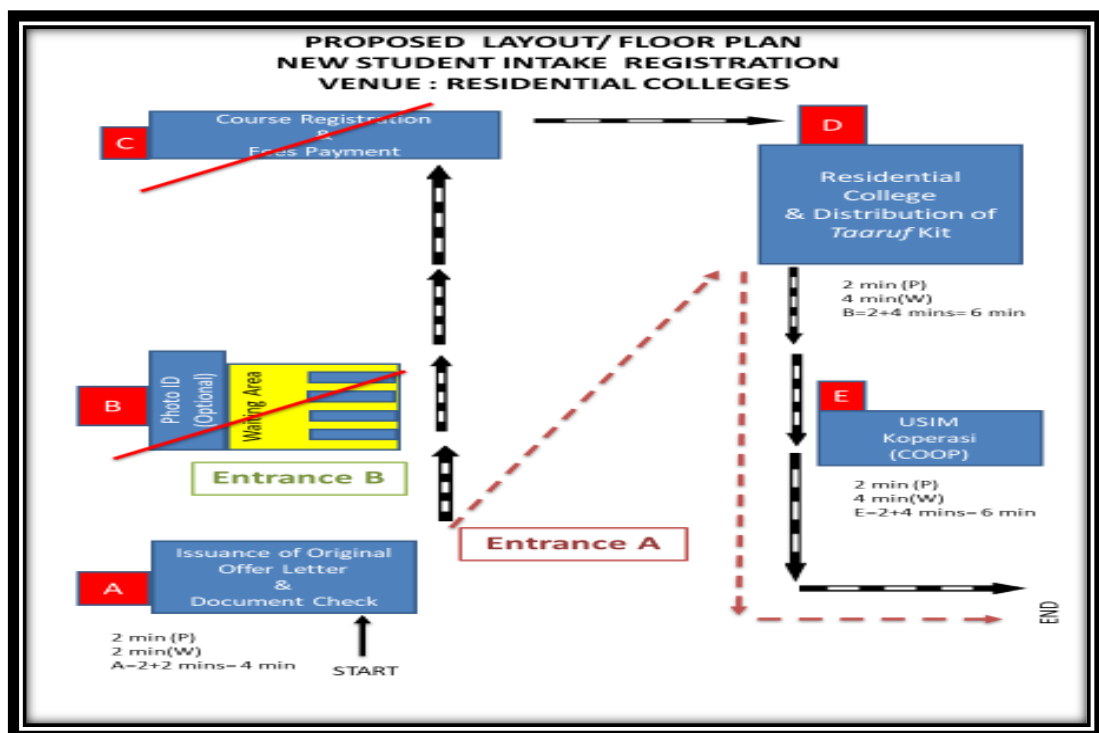
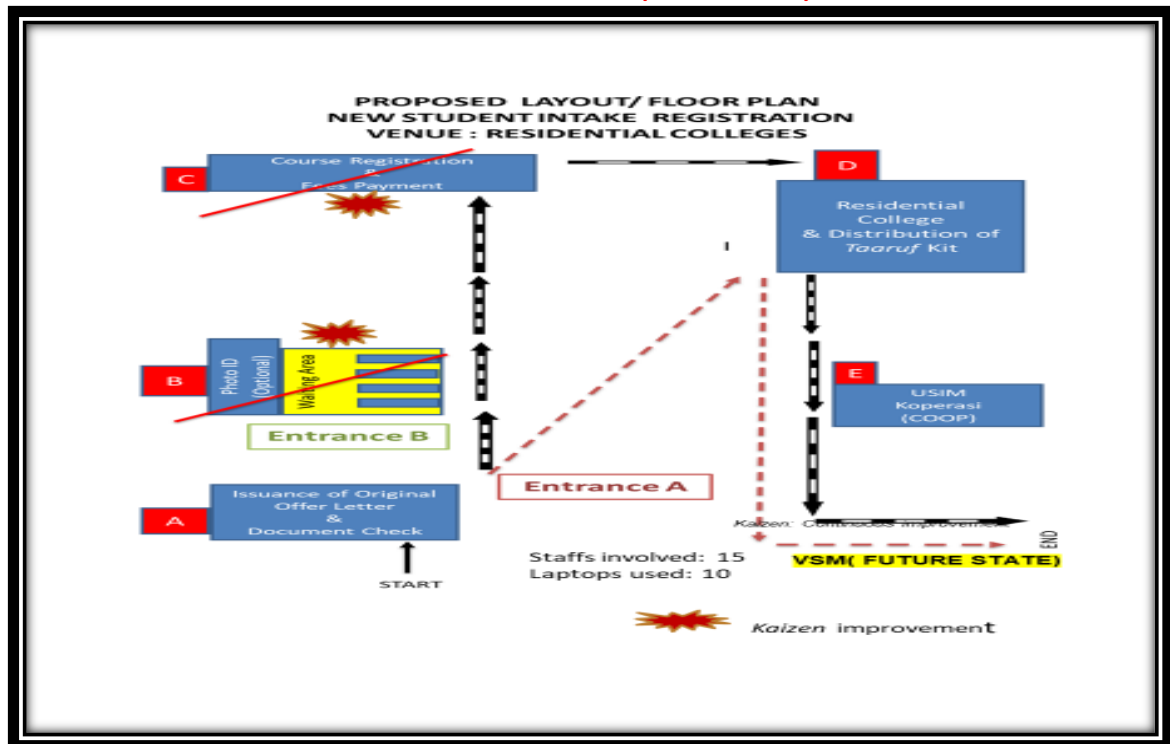
FIGURE 35: PROPOSED NEW STUDENT REGISTRATION PROCESS LAYOUT AFTER THE IMPLEMENTATION OF VALUE STREAM MAPPING (IN DESIRED/IDEAL STATE)



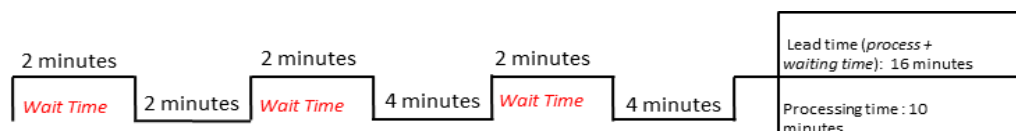
(COUNTER A – COUNTER E)

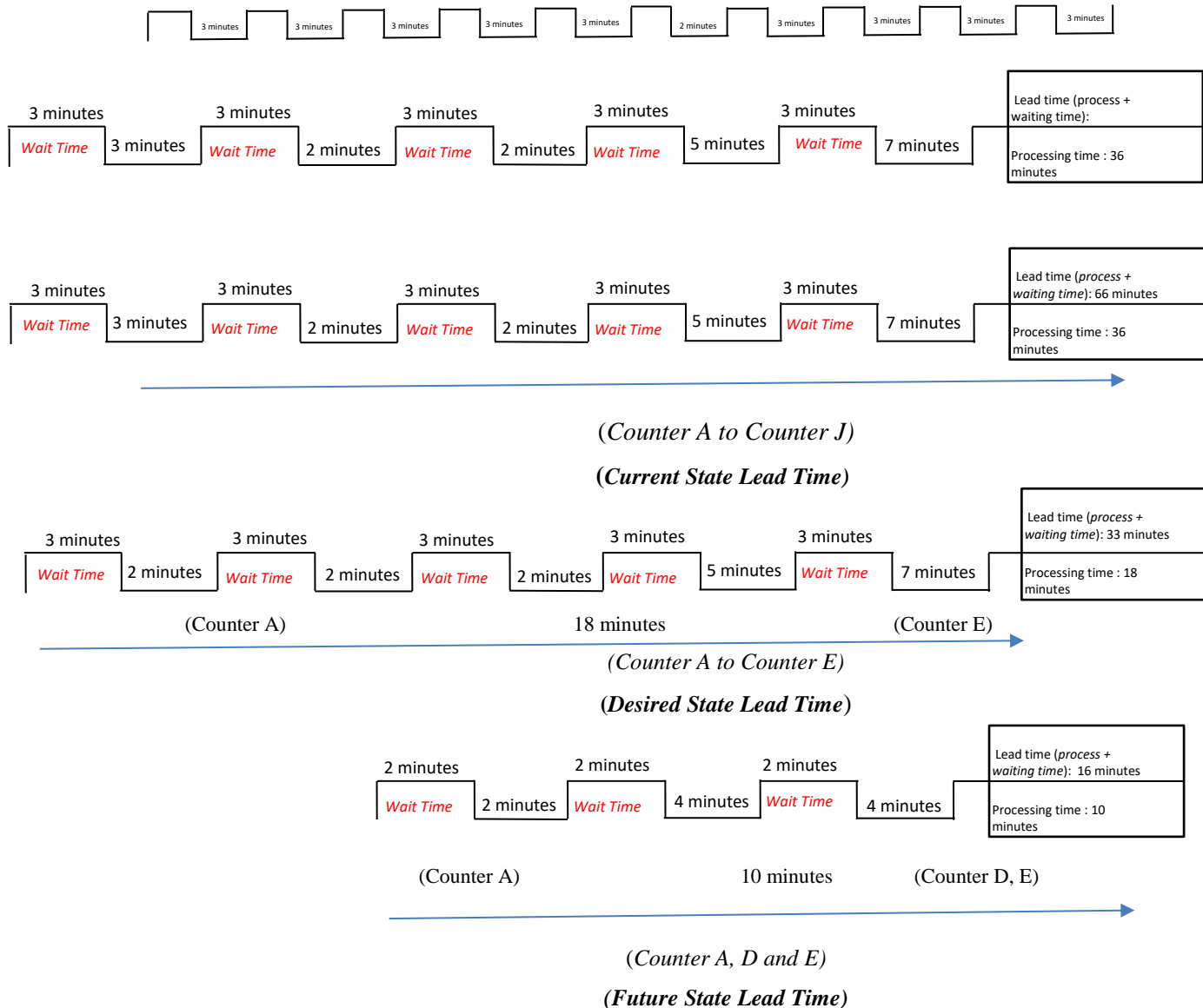
3 minutes	2 minutes	3 minutes	2 minutes	3 minutes	2 minutes	3 minutes	5 minutes	3 minutes	7 minutes	Lead time (process + waiting time): 33 minutes
Wait Time		Wait Time		Wait Time		Wait Time		Wait Time		Processing time: 18 minutes

FIGURE 36: PROPOSED NEW STUDENT REGISTRATION PROCESS LAYOUT AFTER THE IMPLEMENTATION OF VALUE STREAM MAPPING (FUTURE STATE)



(COUNTER A, D AND E)





In the current registration process, new students are required to start their registration from counter A to counter J, as shown in figure 7.4 above. The time taken to complete each process (*takt time*) per student at each counter has been recorded by the administrators.

From the recorded data, the administrators have concluded that each student should take approximately 36 minutes without taking into account the *transportation time* (moving from one counter to another) which considered as a bottleneck in the process to complete the entire registration process. As mentioned earlier, the waiting time for each process took about 3-5 minutes per student, which means the total lead time to complete the registration process will be in the range of 66-86 minutes per student (*figure 34*).

By applying the VSM method, the time duration in the current process, the ideal time required and also the expected time for the future process will be mapped out. In order to achieve this, all non-value adding operation for the customers (students) as identified in *Figure 20*, need to be eliminated. Upon the elimination, the expected and ideal time per student is estimated to be at 18 minutes (*Figure 35*) and the waiting time is about 13 minutes throughout the process

For the future state of the process, by identifying the root cause of the bottleneck problem during registration process, unnecessary process as shown in (*Figure 36*) will be eliminated and multiple servers will be provided at counters that caused the bottleneck problem. This will further reduce the duration time taken and is expected to take less than 10 minutes per student to complete the registration while the waiting time is expected to be around 6 minutes. We have managed to identify the process that need to be eliminated by putting in the *kaizen* symbol in the map for a continuous improvement in the process.

As a contingency plan or as an alternative for those who have not uploaded their documents in advance prior to the registration process, the University will also provide counters and workstations for the students to do so online. Furthermore, if there is a system breakdown during the registration day, such as internet failure or other technical issues the system is still accessible as it is available both web-based and also through the local network

Continually improving the process using the tools introduced with the goal to achieve perfection for customer satisfaction and the organization is a good move to maintain customer's satisfaction as it is the end product for academic service industry, which is the university.

11.7- Bring benefits to the university when lean is applied; drastically reduction or total elimination of build ups in operations processes.

11.8- Elimination of unwanted practises within processes and reduction of complex processes.

11.9 -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. Indeed, this paper proposed methods for improving the efficiency of administrative services based on lean implementation.

As a result, the lean practise has been implemented in the registration process by eliminating unnecessary process (waste) and implementing the new flow of the registration process by exercising the lean theories and principles.

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.

This new procedures in registration process which apply the lean principles in order to eliminate waste, unnecessary action, process and flow will definitely not only eliminate wasted time but also reduce the cost for the University, do good deeds which bring benefits to the customers(students), for the sake of both human being and organization was also mentioned in the Holy Quran: surah *Al-Asr (The Time)*: verse 103(1-3) which brings the meaning to the humankind to appreciate the time given by Allah Al-Mighty as stated below:

1. By Al-'Asr (the time).2. Verily! Man is in loss,3. Except those who believe (in Islamic Monotheism) and do righteous good deeds, and recommend one another to the truth (i.e. order one another to perform all kinds of good deeds (Al-Ma'ruf)which Allah has ordained, and abstain from all kinds of sins and evil deeds (Al-Munkar)which Allah has forbidden), and recommend one another to patience (for the sufferings, harms, and injuries which one may encounter in Allah's Cause during preaching His religion of Islamic Monotheism or Jihad, etc.).

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.
- Arlbjørn, 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. doi:10.1007/978-3-642-16358-6_72
- 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 8SQ, 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.
- <https://www.cnccookbook.com/value-stream-mapping-lean-manufacturing-principles-part-4/>
(Accessed on July 9, 2018)
- <https://i2.wp.com/image.slidesharecdn.com/previewwoec-vsmprojecttemplate01-2015-150117111716-conversion-gate> (Accessed on July 10, 2018)
- Rich, Nick; Esain, Ann; Bateman, Nicola (1997), *Lean Evolution: Lessons from the Workplace*, Cambridge University Press
- 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. doi:10.1108/01443570910925361
- 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.
- The Holy Quran: (*Al-'Asr 103:1-103:3*)
- USIM website at <http://www.usim.edu.my>
- Etasjil System :USIM*
- 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.
- Wikipedia, Value Stream Mapping; Retrieved 30 June 2018 from https://en.wikipedia.org/wiki/Value_stream_mapping

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.

APPENDICES:

STUDENTS' SATISFACTION SURVEY ON REGISTRATION PROCESS (UNDERGRADUATE LEVEL)

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(FKP)	
FACULTY OF QURANIC AND SUNNAH STUDIES(FPQS)	
FACULTY OF MAJOR LANGUAGE STUDIES(FPBUI)	
FACULTY OF SCIENCE AND TECHNOLOGY(FST)	
FACULTY OF LEADERSHIP AND MANAGEMENT(FKP)	
FACULTY OF MEDICINE AND HEALTH SCIENCES(FPSK)	
FACULTY OF DENTISTRY(FPG)	
FACULTY OF SYARIAH AND LAW(FSU)	
FACULTY OF ENGINEERING AND BUILT ENVIRONMENT (FKAB)	

2. Adakah anda berpuas hati 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 take 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 -

STUDENTS' SATISFACTION SURVEY ON REGISTRATION PROCESS (TAMHIDI)

KAJIAN KEPUASAN PELANGGAN PENDAFTARAN PELAJAR BARU TAMHIDI SESI AKADEMIK 2018/2019

CUSTOMER SATISFACTION SURVEY ON NEW TAMHIDI STUDENT REGISTRATION ACADEMIC SESSION 2017/2018

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

1. Program Pengajian / Program

Tamhidi Perubatan	
Tamhidi Pergigian	
Tamhidi Sains dan Teknologi	
Tamhidi Syariah dan Undang-undang	
Tamhidi Perakaunan dan Muamalat	

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 menyiapkan pendaftaran? 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 take to complete the registration?

0-10 minutes	
10-20 minutes	
20-30 minutes	
30-40 minutes	
40-50 minutes	
50-60 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	

- Terima Kasih / Thank you -

Qualitative Method: Interview questions with relevant departments involved in the registration process:

- *Bursar Office*
- *Division of Academic Management*
- *Student Affairs Department*
- *IT Department (Goal ITQAN)*

1. Do you think that our registration process for new student intake is efficient?
2. Have you receive any complaints from the students in regards to the registration process?
3. What are the preparation need to be done before the registration day?
4. Can you briefly explain the process that will be carried out at each counter?
5. How long does it take for the registration process (by counter) to be completed per student?
6. What are the expenses incurred in the registration process?
7. What are the equipment/devices needed in the registration process?

By Department: *Bursar Office*

Division of Academic Management

Student Affairs Department

IT Department (Goal ITQAN)

8. How many administrators(staffs) involved in the registration process?
9. How many buses were required to transport/ transfer the students from *Dewan Tuanku Canselor Hall* (DTC) to residential colleges?
10. Is there any other method to simplify the registration process, especially on the duration time taken?

New Student Intake Registration Day for Tamhidi Programme



USIM ADMISSION OFFER LETTER

SAMPLE

SURAT TAWARAN KEMASUKAN

USIM 1.6.10/238/1.380.8 (2311)

Bahagian Pengurusan Akademik
Tel : 06-798 8144 / 8333 Faks: 06-798 8334 / 6023

NURUL FARHANAH BINTI ABD WAHAB
LOT PTD 14235 JALAN NAB LONG
KAMPUNG PADANG LERAK 2
TANGKAK 84900
JOHOR

Saudara/i

TAWARAN KEMASUKAN KE UNIVERSITI SAINS ISLAM MALAYSIA (USIM) SEMESTER 1, SESI AKADEMIK 2017/2018

Tahniah, sukacita dimaklumkan bahawa Saudara/i telah ditawarkan mengikuti pengajian seperti berikut:

Program Pengajian : SARJANA MUDA KOMUNIKASI MEDIA BAHARU DENGAN KEPUJIAN
Kod Program Pengajian : QP57
Tempoh Pengajian : EMPAT (4) TAHUN
Fakulti : FAKULTI KEPIMPINAN DAN PENGURUSAN

Maklumat Pendaftaran :

Tarikh : 5 SEPTEMBER 2017 (SELASA)
Masa : 9.00 PAGI - 4.00 PETANG
Tempat : DEWAN TUANKU CANSELOR
Bayaran : RM 2401.50
(Bayaran hendaklah dibayarkan sebelum pendaftaran)
Kolej Kediaman : KOLEJ KEDIAMAN 1

Untuk makluman Saudara/i, Kerajaan Malaysia menanggung sebahagian besar yuran pengajian (tidak termasuk yuran pendaftaran, yuran penginapan dan yuran benzang setiap semester*) Saudara/i seperti berikut:

Kod Program Pengajian	Yuran Pengajian Keseluruhan Sebenar (RM)	Yuran Pengajian Yang Dibayar Oleh Pelajar (RM)	Yuran Pengajian Yang Ditanggung Oleh Kerajaan (RM)
QP57	37,064.00	4,072.00	33,012.00

* Sila rujuk Panduan Pendaftaran bagi struktur yuran keseluruhan.

Tawaran kemasukan ini adalah bertakluk kepada syarat-syarat tawaran seperti yang dinyatakan dalam Panduan Pendaftaran yang boleh dimuat turun melalui etaj.usim.edu.my.

Sekian, terima kasih.

Yang benar,


(HAMMAD FARID MOHD SAUDI)
Ketua
Bahagian Pengurusan Akademik
b.p. Pendaftar

Bahagian Pengurusan Akademik, Aras 2, Bangunan Canselor,
Universiti Sains Islam Malaysia,
Bandar Baru Nilai, 71800 Nilai, Negeri Sembilan, Malaysia.
Tel.: (+606) 7988 000 Faks : (+606) 7986 023 Laman Web : www.usim.edu.my

**Barcode will be scanned
At Counter A and J**