

Enhancing Efficiency in Implementation of Administrative Procedures in Public Sector Organizations: With Special Reference to Issue of required Materials from Supply Division in University of Kelaniya, Sri Lanka – Case Study

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Abstract: This Paper discusses inefficiency of issuing required materials from supply division of the public sector organizations. The Purpose of this study is to improve the efficiency of issuing required materials from supply division which is instrumental for enhancing productivity of organizations. The key objective of this study is to introduce a new method that could be encountered prevailing inefficiency in the existing supply system of the model. Apart from that, following specific objectives; to identify the existing system, to understand factors that affected for inefficiencies are to be achieved. The study followed the Case study method and Qualitative and Quantitative method (mix method). Both methods use primary and secondary data. Randomly selected sample of data were collected from the issuing process of required materials from the supply division of the public sector organization model in this study i.e. University of Kelaniya. The data collected were analyzed by using simple statistical tools such as Mean values and Percentage values. This study has found that many issues have associated in the existing system which has adversely affected the aggravating inefficiency in issuing required materials from the supply division. More specifically, this study has found that the impact of the issues prevails in the process of achieving aims, primary and secondary objectives of material management on providing reasonable level of client services need to be redressed. Therefore, it can be concluded that exiting system of issuing required materials from the supply division is inefficient and ineffective. Furthermore, the impact of the traditional procedures of existing backward administrative system on entire process of issuing required materials associated with processing time, waiting time and time for transportation has been identified as the factor that has contributed for inefficiency.

Thus, this study proposes that a computer based automated method should be introduced to enhance the efficiency and effectiveness by minimizing processing time, waiting time and transportation problems in issuing required materials from the authorized supply division of the university. Since material management is a scientific technique, concerned with Planning, Organizing & Control of flow of materials, from their initial purchase to destination, the proposed innovation would provide a very useful service in getting the right quality & right quantity of supplies at right time, having good inventory control. In order to experience a service of effective management & supervision the relevant administrative officers should be trained to improve their competency in using above methods.

Keywords: Efficiency, Issuing required materials, Value Stream Mapping, Lead Time, Public Sector, University of Kelaniya

Date of Submission: 09-12-2019

Date of acceptance: 24-12-2019

I. Introduction

In this competitive world, Public Sector Organizations have to look at redefining and redesigning of their Administrative Procedures to attack the competitiveness demanded by the sector. Hence, it is essential to have tools which help in redesigning Administrative process in Public Sector. In this scenario, the value stream mapping tool was developed and presented as a practical method for redesigning of the production systems. (Muniyappa, 2016). Lean concept is to reduce waste and time of delivery in producing the quality products with economical and efficient manner with response to customer demand. The organizations which are practicing lean concept have achieved quality & cost advantages compared to the organizations that are still adhered to traditional production.

The Value Stream Mapping process is straight forward and simple. It always starts at employee demand and works back through documenting all the practices and collecting data which is required for procedures of a process. It shows in the map “Value stream” containing all the data such as work in the process, lead time, cycle time and number of process. Documenting relationship between the controls used to manage the

administrative process is very important in VSM. According to this situation, the university system is considered as one of the biggest public organizations which is consisted of 5669 teaching staff and 10646 non teaching staff. Teaching staff consists of the lecturers and professors while non teaching staff includes librarians, Medical Officers, and personnel in the Academic support and clerical and allied grades. (Sri Lanka University Statistic 2017).

The enrollment done in the respective years are as follows; Internal Students - 91063, External open & Distance learning students - 354684, Postgraduate local - 39972 and Foreign students - 665 (UGS Statistic 2017).

The Statistics prove the importance of the study and also its relevance to government. Productivity is a critical determinant of cost efficiency. (Businessdictionary.com). The Effectiveness is not a simple or clearly understandable term. Productivity is not simple and it has different diversified definitions based on varied situations.

Hence, efficiency is also not a simple or clearly understandable term but it is related to input and output at times. To make the relationship among two factors the suitable way is to reduce the cost of waste. In other words eliminating non value added activities of working process manages the labor, the freight and the inventory!"

The aim of the study is to improve efficiency of the Issue of required materials by eliminating waste in the process. The key objective of the study is to explore the possibilities of reorganizing the existing process of issuing required materials that is leading to reduce the lead time (LT). There are four specific objectives namely; 1. To recognize the existing issuing process of required materials 2. To understand the bottlenecks of the existing issuing process of required materials 3. To understand the existing rules and procedures belong to the issuing process of required materials 4. To identify ways and methods to overcome barriers for delaying in the issuing process of required materials

II. Literature Review

The study is carried out aiming at a key objective and four specific objectives. The specific objectives of the first stage are as follows:

- a. To recognize the existing process of issuing required materials in the University of Kelaniya
- b. To Understand the bottlenecks of the existing issuing required materials process
- c. To Understand the existing rules and procedures belong to the issuing required materials process
- d. To identify ways and means to overcome barriers to delays in the process of issuing required materials

a. To recognize the existing process of issuing required materials in the University of Kelaniya

In the process of recognizing the existing issuing process of required materials of the University of Kelaniya, empirical data was gathered using observation and manipulating interview methods appropriately. The Data was summarized in table 01, table 02 and table 03 in the paper. The table 01 shows the data relevant to the issue of required materials executed by the Supply division during years in succession from 2015 to 2018. The Table 02 and 03 show the time taken in each position of the process and time consumed for transportation of documents. According to table 01, the average of pages used in issuing required materials is 3100 per year and the average of the time spent for writing required materials in the due form, first point approval time, time for entering and pricing of the materials at the supply division, time for approval at the second point in supply division and time for checking and issuing indicated 31000min, 15500min, 62000min, 15500min and 62000min respectively in the years taken into account in the study. Finally the table 03 described the average time taken for transporting the requisition forms in between each points of the issuing process of the required materials. The total average time recorded for transportation is 9287min.

Table 01: The issuing process of required materials by each year by the Supply Division, University of Kelaniya

Year	Number of Books	Number of Pages	Total	Mean
2015	81	50	4050	3100
2016	57	50	2850	
2017	73	50	3650	
2018	37	50	1850	

Table 02 : The Time taken in each position of issuing process of required materials

Description	Year				Total	Mean
	2015	2016	2017	2018		
Writing time of Issue Order	4050x10min ¹ 40500min 675hours	2850x10min 28500min 475hours	3650x10min 36500min 608.3hours	1850x10min 18500min 308.3hours	124000min 2066.67 hours	31000min 516.6hours

First Point Time for approval of Issue order	4050x5min ² 20250min 337.5hours	2850x5min 14250min 237.5hours	3650x5min 18250min 304.1hours	1850x5min 9250min 154.1hours	62000min 1033.3 hours	15500min 258.3 hours
Recording and pricing of the goods at the Supply division	4050 x20min ³ 81000 min 1350hours	2850x20min 57000min 950hours	3650x20min 73000min 1216.6hours	1850x20min 37000min 616.6hours	248000min 4133.3 hours	62000min 1033.3hours
Second Point in supply Division Approval time of Issue order	4050x5min ⁴ 20250min 337.5hours	2850x5min 14250min 237.5hours	3650x5min 18250min 304.1hours	1850x5min 9250min 154.1hours	62000min 1033.3 hours	15500min 258.3 hours
Time for checking goods and issue order at the Stores	4050 x20min ⁵ 81000 min 1350hours	2850x20min 57000min 950hours	3650x20min 73000min 1216.6hours	1850x20min 37000min 616.6hours	248000min 4133.3 hours	62000min 1033.3hours
Total	243000min 4050hours	171000min 2850hours	219000min 3650hours	111000min 1850hours	744000min 12400hours	186000min 3100hours

- 10min¹ – Time spent for writing the issue order
- 5min² – Time spent for Approval of the issue order
- 20min³ – Time spent for checking the available goods and pricing them
- 5min⁴ – Time spent for Second approval to issue the goods
- 20min⁵ – Time spent for issue of the goods

After observation and discussions with employees it was fixed on the average time for writing issue order as 10 minutes. Similarly approval time spent for writing First Point Issue order form was 5 minutes, time for entering particulars of the goods into books and pricing them at the Supply division was 20 minutes, Time spent for approval of Issue order was 5 minutes at the second Point in supply Division and finally the time taken for Stores checking and issue of goods was 1033.3 hours. These scales are indicated in the table 02 above.

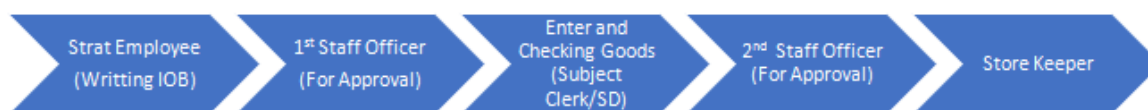
Table 03 :The transportation time for the process of issuing required materials

Description	Year												Average Time
	2015			2016			2017			2018			
	Time per employee	Number of Pages	Total Time	Time per employee	Number of Pages	Total Time	Time per employee	Number of Pages	Total Time	Time per employee	Number of Pages	Total Time	
Employee to first point	3 min	4050	12150 min	3min	2850	8550 min	3min	3650	10950 min	3min	1850	5500mi n	9287.5 min 154.8 hrs.
First point to second point	180 min	4050	729000 min	180m in	2850	51300 0min	180m in	3650	65700 0min	180 min	1850	333000 min	2232000 Min 37200 hrs.
Second point to third point	3 min	4050	12150 min	3min	2850	8550 min	3min	3650	10950 min	3min	1850	5500mi n	37150min 619.1 hrs.
Third point to forth point	180 min	4050	729000 min	180m in	2850	51300 0min	180m in	3650	65700 0min	180 min	1850	333000 min	2232000Min 37200 hrs.
Total													4510437min 75173.9 hrs.

Source: as per the observed data

The table 03 shows time taken for transportation in the existing process of issuing required materials. There are four transportation gaps across the three stations namely, Employee to first point, first point to second point, second point to third point and finally third point to forth point. The average time taken for transportation in each gap shows as 154.8 hours, 37200 hours, 619.1 hours and 37200 hours respectively. After observation and the discussions held with the employees and having measured the time with care using stop watches it was decided that the average time for the process with issue order book was 366 minutes.

Figure 01: The existing process of transportation related to issue of required materials of the University of Kelaniya



Source: as per the observed data

The figure 01 illustrates movement of the Issue order book in the existing process of issuing required materials in the University of Kelaniya. According to the University of Kelaniya all the Departments and Units require materials and in general they apply for them for academic and non academic purposes every month.

b. To Understand the bottlenecks of the existing issuing required materials process

A bottleneck (or constraint) in a supply chain means the resource that requires the longest time of operations in the supply chain for certain demand. Usually, the phenomenon is that insufficiency of materials is a consequence of a bottleneck and the increase of inventory before the institute runs into bottleneck. (www.lean-manufacturing-japan.com). This paper discusses the bottleneck in the process of issuing required materials itself and how policies in Issue order book process make bottlenecks.

c. To Understand the existing rules and procedures belong to the issuing required materials process

As a government organization, the University System follows the University Establishment code and Financial Regulations. Some verbal instruction has been followed by the supply division. However, it is found that the authorities giving verbal instructions violate the same themselves as to fit them with the practical circumstances.

d. To identify ways and means to overcome barriers to delays in the process of issuing required materials

According to this process waste and time are the main barriers. Waste in the process includes process waste and transportation waste. In particular, most of the time spent is for transportation.

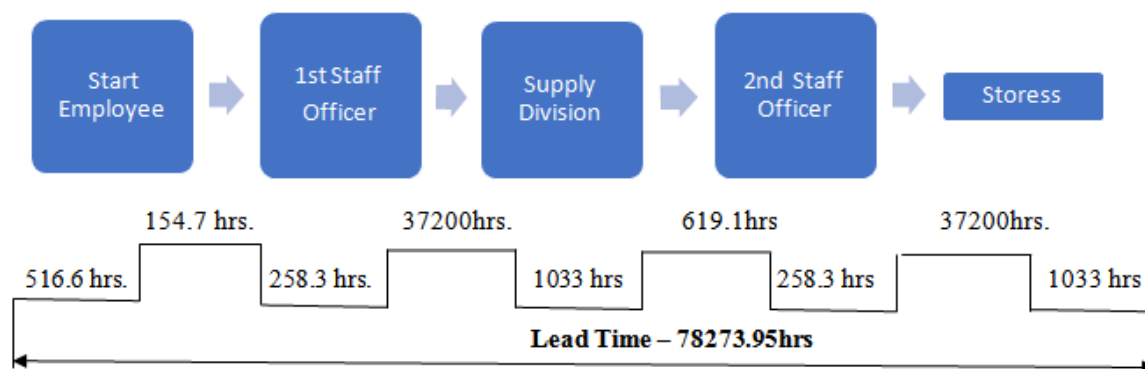
Analysis of the Data

Data were analyzed according to the Objectives of the study. As indicated by the table 04 the average time taken for transportation in the existing IOBP is...

III. Result and Findings

Data were collected according to the four objectives of the study and were summarized for making analysis. Thus, table 04 shows the analysis of the total average transportation, process Time and Cost. As indicated by the table 04, the lead time of the existing IOBP is 75173.9 hours. This creates a cost of 12,779,580.00 LKR per year. The calculations were made using the actual average rate of labour hours, which is of 170 LKR. The lead time of the existing process of issue order book is shown in the figure below (figure 02). As demonstrated by the figure (Figure 02) the Lead Time of the existing IOBP is **78273.95** hours which costs 13306580.00 LKR annually.

Figure 02: Step One – Existing process of issuing required materials of Transportation Map of the University of Kelaniya with VSM



Simplified value stream Map of existing issuing process of required materials of the University of Kelaniya (figure 2) was defined as the average time of the process based on one year. The lead time was considered as the average of the measurement for the amount of transportation time and process time in the entire IOBP from beginning to the end.

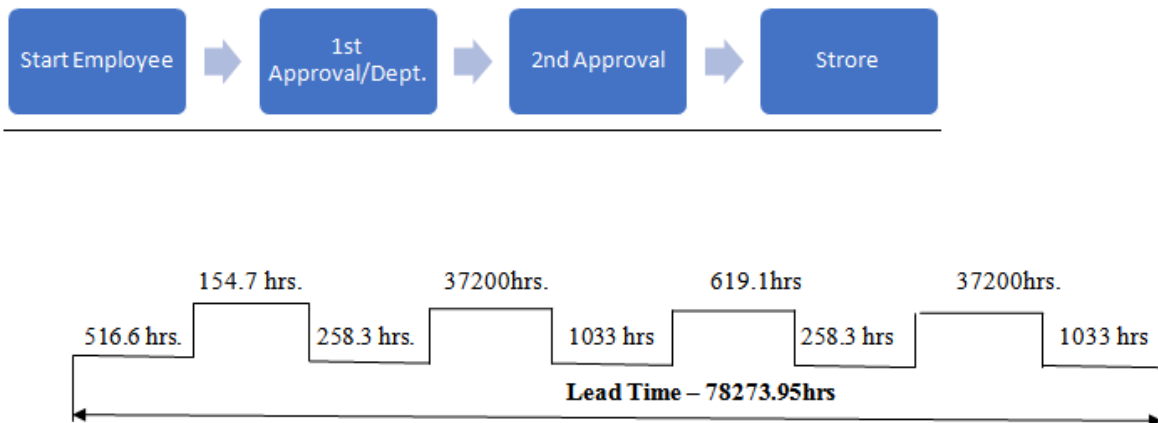
Table 04: The Total Average Transportation and Process Time and Cost

Cost Components	The Average Measurement	Hours	Value
Number of Pages	3100	-	-
writing time of Issue Order form	31000min	516.6hours	x170= Rs.87890.00
Approval time of First Point Issue order form	15500min	258.3 hours	x170= Rs.43860.00
Time of entering and pricing the materials at the Supply division	62000min	1033.3hours	x170= Rs.175610.00
Approval time of Issue order form at the Second Point in supply Division	15500min	258.3 hours	x170= Rs.43860.00
Time for checking and issuing materials	62000min	1033.3hours	x170= Rs.175610.00
Time for Transportation	4510437min	75173.9hours	x170=12,779,580.00
Lead Time	4696437min	78273.9 hours	Rs.13306580.00

Proposed Issue order Book Process Map

Because of the advancement of information technologies, A Management Information System (MIS) is also required to develop an innovative measure in the issuing process of required materials. Importantly, adaptation to the modern facilities is convenient in reduction and elimination of non value added activities from existing issuing process of required materials. Thus, a new issuing process with the support of MIS is proposed by this study.

Figure 03: Step Three – The proposed issuing process of required material transportation Map of the University of Kelaniya



*No Transportation Time in Proposed IOMP

Table 05: The Average Measurement: For Developed Issuing Process of Required Materials Map

Cost Components	The Average Measurement	Hours	Value
Number of Pages	3100	-	-
For Selection of the goods	3100x3min- 9300min	155 hours	x170= Rs.26350.00
For 1 st Approval	3100x1min - 3100min	51.67 hours	x170= Rs.8783.90
For 2 nd Approval	3100x1min - 3100min	51.67 hours	x170= Rs.8783.90
Stores	3100x2min – 6200min	103.33 hours	x170= Rs.17510.00
Transportation	-	-	-
Lead Time	21700min	361.67	Rs. 61427.80

The proposed issuing process of required materials is an automated system which is controlled by a central database. The existing approval process for conducting issue of required materials can proceed through the proposed system and then the hidden and non value added activities can be drastically reduced. According to the Proposed Process some activities that are beyond the considered process but relevant to this and especially transportation cost can be reduced.

IV. Conclusion

This case study carried out with special reference to Issue of required Materials from Supply Division in the University of Kelaniya has revealed that the current operation of the preceding process has not been revised for over 60 years. Thus, the study proposes that the operating system of the process has to be updated and modernized for its sustainability. Hence, the Study followed a process oriented approach with special reference to the improvement of the existing issuing process. In terms of the approach employed (POA) there are possibilities to reduce lead time and make the process significantly efficient by eliminating the waste in the existing issuing process of required materials and reorganize the process with the automation incorporated supply management system. The result of this research further confirms the citation published in the *International Journal of Scientific Research and Management* with regard to a study carried out on "Looking for Employees Efficiency? Change the System through Value Stream Mapping" (K. & D. P., 2019).

Future Scope

The Following are suggested for future work.

This research work is only focuses on elimination of the existing Process and proposing a new process to issue required materials. The research may further be explored in many administrative Processes of other lean tools namely 5S, Kaizen and TPM.

Acknowledgments

We thank all the employees of the University of Kelaniya, who cooperated with us to conduct this study. Mr. W. M Karunaratna, the registrar of the University of Kelaniya, encouraged the study in no small ways giving approval to collect necessary data with no hesitation. Ms. Dhammika Ambegoda, the Director, Zero Defect Council, considered this research to conduct in a Zero Defect Project. Also subject clerks and the staff of the Supply Division should be acknowledged for rendering their invaluable service and assistance towards this study.

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Tarangani D.P. "Enhancing Efficiency in Implementation of Administrative Procedures in Public Sector Organizations: With Special Reference to Issue of required Materials from Supply Division in University of Kelaniya, Sri Lanka – Case Study". *IOSR Journal of Economics and Finance (IOSR-JEF)*, vol. 10, no. 6, 2019, pp. 53-58.