Investigation of Root Causes for the Delays for Finishing Department in Garment Industry

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ABSTRACT

To survive and succeed in garment manufacturing business in today's era of globalization and with increasing competition, it is important for firms to analyze the environment in which it is operating and should get necessary decisions to be more competitive. But according to the literature, Sri Lanka is well behind off on time delivery though it is a key success factor in garment Industry. The main objective of this study is to investigate, discuss the root causes and suggest solutions for overcoming the problem of delays to finishing department of garment industry. Referring to company's past data, work orders were analyzed to investigate root causes for the delays and further investigation were carried out by observation. In order to be competitive in the market, this delay has to be eliminated. Therefore the solutions have been proposed as findings of the study to avoid production delays, sample stage delays and other common issues and the organizations have to select the best feasible solution among them for their factory to overcome this delay.

KEYWORDS: Lead Time, Root Causes, Shipment Delay

INTRODUCTION

Sri Lankan garment industry has experienced phenomenal growth during the past twenty-five years (*Central Bank of Sri Lanka*) and has emerged as a major sector of the economy in terms of its contribution to industrial production, foreign exchange earnings and employment generation.

Finishing a garment, or in other words, make it ready to send to the end customer is not a single departmental process. It has to be sent through different departments and need to meet certain requirements in departmental level. Coordination will be done by the merchandisers and planning department is responsible for fixing the dates for the rest of the required processes. Sample room plays a major role in getting the order into bulk stage. After the bulk gets confirmed, cutting, embroidering, marker room, sewing, washing and finishing

departments are responsible for finishing the garments that are to be sent to the end customers while Industrial Engineering and the Quality departments are acting a supportive role for the production. As the final stage of a garment, scanning, trimming, buttoning, thread sucking, pressing and finally packing has to be done. Since, a considerable amount of time is spent on these operations, any delay to the finishing department would cause for a shipment delay or a quality loss of the final garments.

After the production process, all the garments are received to the receiving section and will be audited the quality of those garments. Only if it is passed through the audit section, the rest of the processes will proceed. To meet the exact shipment date of the order, the above production process must flow without any disruption and garments must be arrived on time. Also the garments need to be met the quality requirements. Otherwise, finishing department will not be able to complete the tasks as scheduled. If they fail, it will add a huge additional cost for the organization as air freights.

The main objective of the study is to find out root causes for the shipment delays

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which can create an additional cost for the organization. Once the causes for these delays have been identified, the options to eliminate, reduce or control these causes will be proposed. Then, ultimately wish to improve the productivity and the profitability by utilizing the resources effectively and efficiently. Hence this would discover real causes of the delays and ends up with finding detail description of the problems. Then it would help in finding and recommending solutions for delays.

LITRETURE REVIEW

The competitive strength of the Sri Lankan garment industry is based on cheap labor, a literate labour force, high labour standards, investment-friendly government policies and strategic shipping lanes *(Kelegama & Wijayasiri, 2004)*. On the other hand, there are competitive disadvantages, such as long lead times, weak marketing, lack of product development, low labour productivity and so on due to outdated technology *(Kelegama & Wijayasiri, 2004)*.

According to the analysis done for six months in Jupiter Garment Unit found that there were seven delayed shipments out of 60 total shipments and those delays were occurred mostly due to sewing problems *(Anitha, 2009)*.

A study about the operator activities and the percentages of distribution of operations in garment industry to analyze the personal and delay allowances, with the help of the previous records and work sampling technique has proven that 72.7 percent of working time in an general sewing room was spent for productive activities and 23.2 percent for personal and unavoidable delay allowances. This study tried to propose some strategies for garment industry regarding the ways of minimizing costs and minimizing delays for finishing products through labor flexibility. It was also discussed about different skill levels of the personnels and balancing them without any disruptions to the production (An analysis of apparel manufacturing SMEs)

METHODOLOGY

The required secondary data were gathered by referring company information systems and reports such as schedule, green list. After selecting the main root causes, the research study was carried out by performing a further analysis using observation and brainstorming methods. Having analyzed these delays, probable solutions will be proposed and tested for their applicability to solve the real problem as mentioned in the Figure 1.
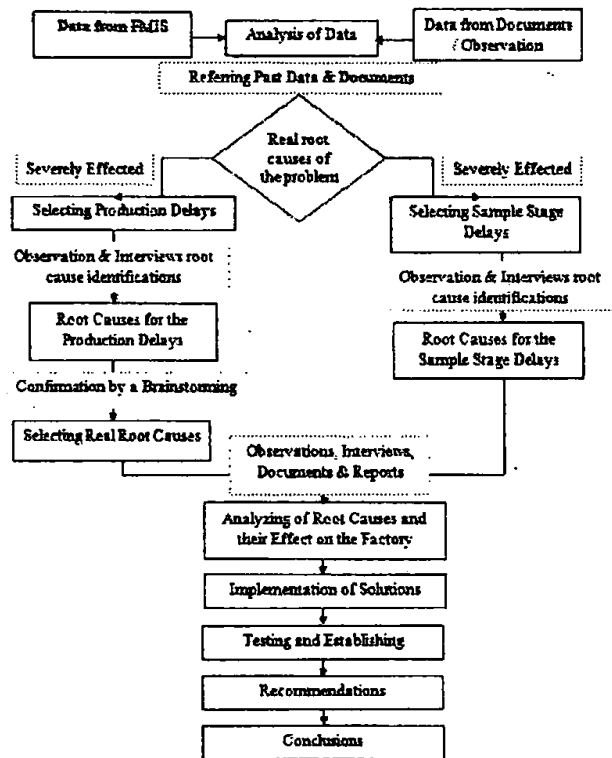

Figure 1: Research Design

Two methods of data collecting were used considering it's applicability and appropriateness of the method.

History of the problem and the past solutions given to them was collected using websites and accessing company's information systems such as,

- Factory Management Information Systems (FMIS)
- Quality Management Systems (QMS)
- Joint British American Systems (JBA)

Past data were gathered mainly from the FMIS system and daily documents were referred to prove the problem. But these data did not consist many of required details.

Therefore, Green List and the Schedule were used for further analysis and those contain data about all work orders and dates of specific points of the work orders. To prove the problem, records of three months were analyzed and there were around 450 work orders and statistically, it was an adequate sample to take a decision.

In addition to that, Observations, brainstorming, and personnel interviews were used as the main methods collecting primary data.

To conclude any work order as a delayed one in a certain point, company standards have been followed. According to the standard lead times between each points of the work order, dates are fixed in the schedule. Initially, the sewing date will be fixed considering the efficiency, number of operators and the Standard Allocated Hours (SAH) of the garment. Then other dates will be fixed according to the company standards. If any work order exceeds the company standard limits, then it is identified as a delayed order. Such that, while considering company standards all delay points can be identified.

Since the historical data does not prove the real causes for the delays, a further analysis was carried out within the departments to investigate the root causes of the problem. To find the problems in production lines, observations were conducted during two months period of time.

Since the accuracy of these data is the most important factor to conduct these observations, in order to identify whether there was a delay in the line, an assumption (considering production loss in clock hours comparing with the planned quantity for the day) was taken. The frequency of occurrence was considered in analyzing the data.

DATA COLLECTION AND ANALYSIS

To prove the prevailing problem, data relate to past three month were analyzed and shows in Table 1. Accordingly it was

indicated that only 75% of deliveries were on time while other 25% made delays.

Table 1: Shipment Delays

| On Time Delivery	Delayed Delivery
411	137
75%	25%

These delayed orders have been deeply analyzed to find the root causes for such delays and shows in Figure 2 below.
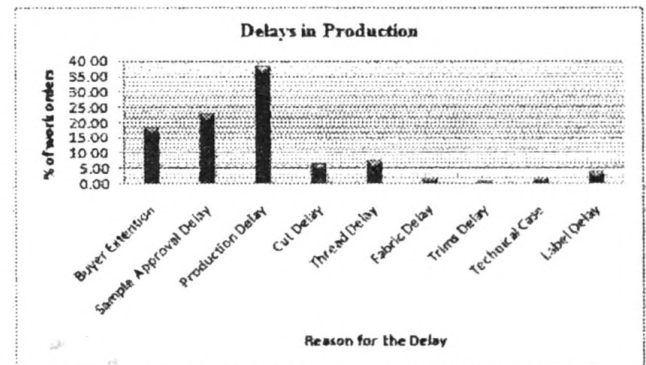
Figure 2: Analysis of Production Delays

According to the Figure 2, production delays were identified as the most effected factor to the company which shows nearly 38%. These production delays affected the organization in several ways. From the analysis it was found that the absenteeism has contributed for the production delays considerably.

Absenteeism has been one of main problems for the organization for years. Work study officers had to face huge problems in balancing the production line with operators to get the planned output due to the higher absenteeism rate. On average, out of 850 employees 41 employees were absent during working days. The pattern of the absenteeism has been shown in Figure 3.
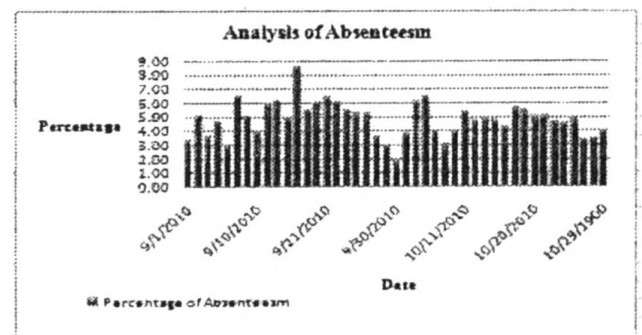
Figure 3: Analysis of Absenteeism

The Figure 4 shows below have analyzed the machine operator's skill level and proved that no operators are beyond 20% skill level. As a result, balancing the line with operators become difficult and the learning time of the operation get extended.
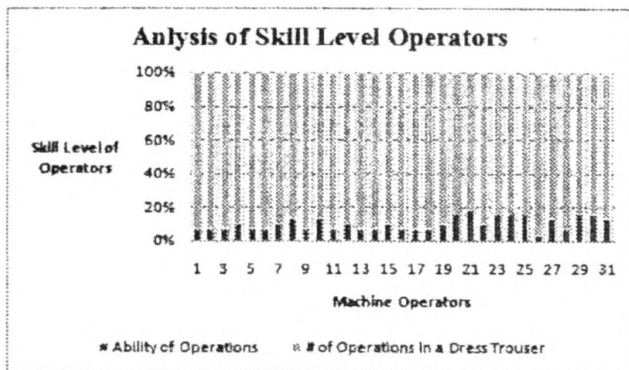

Figure 4: Analysis of Skill Level

The high resignation rate of employees was also identified as one of the main causes for production problems. When there are new employees, they have to be trained at least three months to achieve the required skill level for the operation. During that time, the organization has a few numbers of productive heads as more have undergone for training programmes. The pattern of the resigning has been shown in Figure 5.
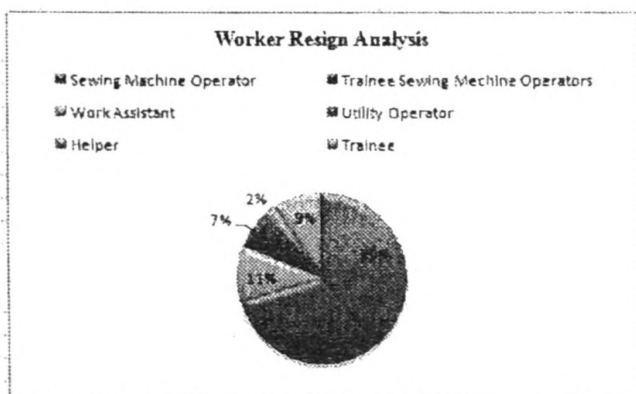

Figure 5: Analysis of Resign

High reject rate was also another identified cause which increases the finishing time of the garment. Figure 6 explains such reject rates in work orders. On the other hand, when there is high end line reject rate, work order adds additional time for reworks and that will generate additional cost for the organization. When referring to these details, it can be concluded that most of the

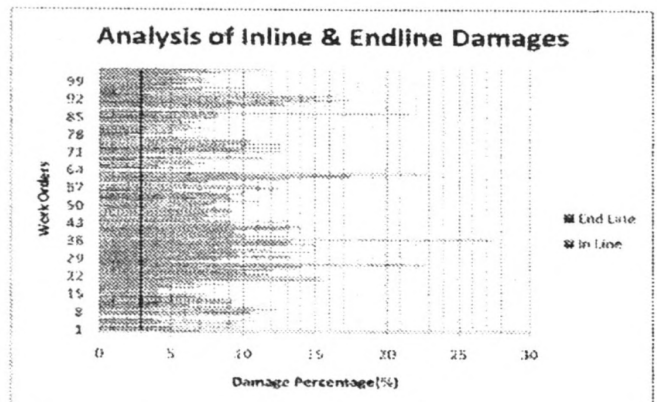work orders have its reject rate than the acceptable rate of 3%.

Figure 6: Analysis of Damages

The sample stage delays were also found as the second mostly affected factor to the organization and revealed that it is nearly 23%. Label delay, Thread delay, Fabric delay, Pattern mistakes, Damages, Documentation problems, Machine problems and Test reports delay are the main reasons for these sample stage delays and have represented the details of each in Table 2.

Table 2: Sample Stage Delays

Reason for the Delay	Frequency of Occurrences
Label Delay	60
Thread Delay	53
Fabric Delay	12
Pattern Mistakes	23
Development Problems	6
Technical Problems	9
Damages	32
Washing Problems	4
Difficult Styles	4
Test Reports Delay	18
Documentation Problems	11
Machine Problems	23

DISCUSSION AND CONCLUSION

This research was done for reducing the shipment delays that affect the garment industry severely which will increase the cost and losing the reputation of the organization. By identifying and analyzing root causes, several solutions have been proposed to overcome the delays. Since it has proven that production department and the sample stage of the garment have created

severe impacts on this issue, the organizations must pay their attention on implementing solutions for the identified root causes. Solutions would save a large amount of money for the organization.

Then, it is necessary to take actions to implement simple modifications for the system which does not need much efforts and cost. Also, the organization must go for the strategic decision to change the culture of the organization with the help of intellectuals. This changing process must be conducted in proper way by a person who has the capability of doing that kind of changes. Applicability of implementing theories like kaizen, lean manufacturing, etc must be studied and implemented to change the prevailing unproductive system in the organization.

Since apparel industry depends on labor intensive technologies the research can be further extending to investigate delays in the manual handling and the human behaviors. Also, it can do research to examine how technology will benefit the apparel industry by introducing automated machines to avoid such delays.

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