A Study on Raw Material Write Off in the Sri Lankan Apparel Industry

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ABSTRACT

The Sri Lankan apparel industry has become a key player in the economy of the country. Today the industry has to face many challenges on its sustenance. One such is the heavy dependence on importing raw materials. Therefore it is important to study on minimizing raw material wastage called as "raw material write off". The main objective of this study was to find the major factors that affect raw material write off in the apparel industry. The study was done as a case study of the Sri Lankan apparel industry and designed as a quantitative research. The dependent variable was raw material write off. Added surplus, order surplus and yield per yardage saving were identified as the independent variables based on comprehensive literature review and work floor experience of the selected company. The primary data were collected through author observations and several interviews. Data were collected from 85 schedules which were randomly selected. The necessary hypotheses were then developed and statistically tested with normality test and correlation analysis. Multiple Linear Regression analysis was conducted to identify the relationship between the variables. The results showed that yield per yardage saving mostly contributed on raw material write off hence the apparel industry should pay more attention on this factor to minimize raw material write off.

KEYWORDS: Added Surplus, Order Surplus, Raw Material Write Off, Sri Lankan Apparel Industry, Yield per Yardage Saving

INTRODUCTION

The Sri Lankan apparel industry plays a major role in the economy of the country. It has become the leader, contributing to the Sri Lankan export revenue (Dheerasinghe, 2003 cited in Ranaweera, 2014). It also contributes 90% to the textile and garment exports and 55% to the total exports of the country (Department of Census and Statistics, 2012). Therefore this industry has established a sustained increase over the last decades.

The Sri Lankan apparel industry has diversified its products in international markets. Its major markets are the USA and Europe while exporting the apparels to Italy, Japan, German, Belgium, France and Netherlands at a considerable level.

Though the apparel industry performs its best in the country, still it has not become a key player in the world. This inability has created many challenges over the Sri Lankan apparel industry today. One such challenge is the heavy dependence on the imported raw materials (Central Bank of Sri Lanka, 2014). Therefore raw material has become a significant factor in the industry.

Many apparel manufacturers in Sri Lanka presently create raw material wastage defined as "write off" in their operational level. This causes many financial losses. Raw material write off accounts for fabric, packing trims and sewing trims in the apparel manufacturing. However the major contribution is occurred in fabric.

Fabric write off explains the quantity of fabric left in the stores after a particular order has been delivered or shipped Thomas, 2012). This amount of raw material

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adversely affects the organizational profit and fills the floor space which then becomes a burden to the organization.

The requirement of customers and ordered designs are often changed with the fashion developments in the industry. This matter also accounts for raw material write off since the same fabric is not used for another style.

This study has identified raw material write off as a major problem in the Sri Lankan apparel industry and therefore identifies the ways of creating raw material write off based on a selected apparel manufacturing company.

LITERATURE REVIEW

The Sri Lankan apparel manufacturers are using different types of raw materials such as fabric, trims etc. Fabric is the widely used raw material of a garment and the largest cost factor. Since the prices of fabric are continuously increasing, the cost of a garment is also increasing (Hands et al., 1997). The cost of fabric is a determinant factor in apparel manufacturing. Several authors have discussed the related cost of garment manufacturing. Powell (1977, cited in Hands et al., 1997) estimated that the fabric costs alone to be 35% to 40% of the selling price of a garment. A reduction of 2.5% in fabric could save a company 1% in cost (Hands et al., 1997). Further, Broadhead (2003) also stated that no other single refinement in production can provide substantial savings as easily as fabric control. Therefore minimizing of fabric write off can increase the profit of the apparel industry.

The recent empirical literature has described effective methods of using fabric in the apparel industry to minimize its waste. Thomas (2012) explained that the best fabric utilization is to use every inch of what is being bought, converting it into garments and then ultimately into earnings. As he identified, only 82% of fabric is effectively used and the remaining 18% will lose by any way. Further he identified addition of allowances and variations in width etc. to

calculate the actual use of fabric and cutting waste as the possible ways of creating raw material write off. Therefore that study emphasized the economic loss created by raw material write off.

Authors in the recent past has defined raw material write off in different terms (Powell, 1977 cited in Hands et al., 1997; Thomas, 2012). Their definitions have mentioned about the remaining quantities in the stores after an order is settled. But they did not consider these for the effective use of fabric. That was one lacking point reviewed in the relevant literature. Therefore this study incorporated both ordered quantity and the achieved raw material consumption to define the write off quantity.

This study also considered the quantities that are received to the apparel manufacturer due to supplier tolerances or safety margins. That was not sufficiently reviewed in the literature, but it was a common practice followed by the selected apparel manufacturing company.

The apparel industry is also contributing to the environmental pollution because it adds the raw material write off which is a waste. Crofton (2000, cited in Gam et al., 2009) identified apparel industry as a major contributor creating environmental hazards through apparel manufacturing and landfills. Therefore the fabric write off has indirectly affected the imbalance of the environment. This emphasizes the importance of this study in an environmental perspective.

This substantive literature provided evidence for raw material write off and ways of its generation. But no sufficient empirical literature provided evidence within the accessible limits in the local context. Therefore this study was done to fill this existing empirical gap.

METHODOLOGY

Research Design

Based on the literature review and author observations, the relevant variables

were identified. The dependent variable was raw material write off and independent variables were added surplus, order surplus and yield per yardage (YY) saving.

- Added Surplus = the difference between the ordered and required fabric quantities

- Order Surplus = the difference between the received and ordered fabric quantities

- YY saving = the difference between ordered and actual YY

This study was designed with these variables and then statistically analyzed to draw conclusions.

DATA COLLECTION AND ANALYSIS

85 schedules were randomly selected as the sample of this study.

Since the identified variables were quantitative, data were directly obtained by observing the production work floor of several garments in the selected apparel manufacturing company. For further reference and assurance of the data, some secondary data sources and interviews were used.

The normality of the data was tested by using the relevant statistics and the hypothesis. All the data were then further analyzed with 95% confident level.

Based on the identified research frame work, the hypotheses were developed and statistically tested to find whether the added surplus, order surplus and YY saving impact on the raw material write off.

Correlation analysis was done to identify the association between the variables and also multi-collinearity was tested.

To find the impact of added surplus, order surplus and YY saving on raw material write off, multiple linear regression analysis was performed. A quantitative relationship was developed to model the relationship between the raw material write off quantity and the significant factors. Conclusions and recommendations were then made to minimize the raw material write off problem based on the results.

RESULTS & DISCUSSION

Since the data were normally distributed, the relevant statistical tests were used for further analysis.

The correlation analysis showed significant relationships among raw material write off, added surplus and YY saving.

The regression analysis identified the following linear model at 95% confidence level.

Write Off Quantity = 108.291 + 0.868 Added Surplus + 70.839 YY savings

Since this model explained 71.4% of the data, it can be considered to be good enough to explain raw material write off in the apparel industry.

The results were used to conclude that the three independent variables contributed to raw material write off in different percentages as depicted in the Figure 1.
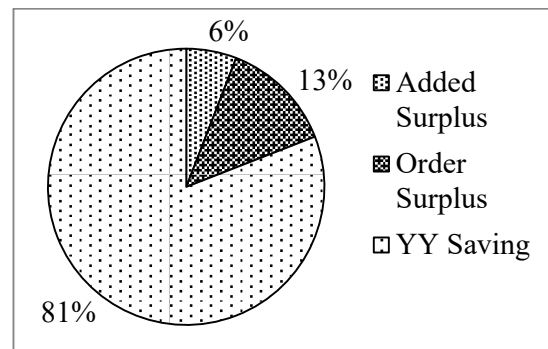

Figure 1: Contribution of Three Variables to Raw Material Write Off

Since YY saving contributes the mostly to create raw material write off, more attention should be given to that. This can be affected by changing patterns according to the demand, width increase and improving markers of the design.

CONCLUSION

The results concluded that added surplus and YY savings are the most affecting factors to the raw material write off in the Sri Lankan apparel industry. Further when compared with the contribution of each identified reason to the write off quantity, YY Savings contribute mostly to the raw material write off quantity.

Thus it can be concluded that the Sri Lankan apparel industry needs to be more focused on these factors in order to minimize raw material write off quantity.

Finally the study suggests adopting lean manufacturing as a waste minimizing technique to the Sri Lankan apparel industry. Since this study did not consider other raw material such as, packing trims, sewing trims, etc. there are further research opportunities on identifying factors affecting on write off of those raw material also.

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