



ABC ANALYSIS in a CLOTHING COMPANY

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Abstract: *In today's conditions, clothing companies should cope with the rivalry in order to survive in the sector. Shortening the process times, decreasing the costs, improving the quality are some of the ways of overcoming the competition.*

ABC analysis, which is also named pareto method or 80/20 rule, is a method that can be used for solving many problems in the factory. It helps to rank the data according to their importance degree. It prevents the company to concentrate on less important causes instead of doing something for vital ones. Thus, by focusing the main important issues, labor can be used for more efficient works and it is possible to save money and time.

In this study, ABC analysis was used for the data of fabric defects in quality control department of an apparel company. The apparel company procures the needed knitted fabric from different fabric suppliers. Working with different suppliers increases the diversity of problems. Monthly fabric quality control data were examined. All fabric defects were listed and then were ranked according to their quantity. By the help of this ranking, the primary fabric problems were detected and besides, the suppliers were evaluated predicating on these defects. Finally, precautions that are have to be taken were discussed.

Key words: Pareto, ABC analysis, fabric defects, 80/20 rule, apparel

1. INTRODUCTION

Apparel industry is essential with its effect on export income, employment and added value in manufacturing for most of developing countries.

The companies should improve their manufacturing processes as one of the things to do in order to get competitive advantage, to preserve their market share and to survive.

ABC analysis is one the methods that will help the companies to make some betterments in their processes. ABC analysis is also named pareto method or 80/20 rule in literature. The method sorts the data by their importance and is used in a variety of fields. In clothing companies, it is used in stock control, time management, process control and many others. Thus, it contributes to the improvement of works and it helps the companies to understand and to cater for the customer demands, to improve relationship with suppliers and sometimes to discover some investment opportunities.

In this study, ABC analysis is used to understand the main fabric defects in incoming quality control in an apparel company which has been sewing knitted garments. It was aimed to make some improvements in product quality and to take some precautions in fabric supplying process.

2. ABC ANALYSIS

Pareto analysis which is also called as the 80/20 rule and as ABC analysis classifies items according to their relative precedence values. It helps to distinguish vital causes from other less important causes and thus, labor can be used for more efficient works [1]. Juran named this principle as "vital few and trivial many". It states that for many events, roughly 80% of the effects come from 20% of the causes. [2,3]

ABC analysis means to classify subprojects into three classes A, B, and C [4,5,6]:

"A items" are very important and with very tight control and accurate records.

"B items" are media-important and with less tightly controlled and good records.

"C items" are less important with the simplest controls possible and minimal records.

The steps of ABC analysis are below [2]:

1. Collecting data on the most common problems or errors
2. Determining the frequency of repetition of problems during the implementation of projects;
3. Determining the percentage share of each problem;
4. Determining the cumulative percentage of each problem;
5. Forming the Pareto diagram;
6. Analysis of diagrams and proposing measures of improvement.

3. MATERIAL AND METHOD

This study was carried out in quality control department of a clothing company which is producing knitting garments. The monthly data of fabric incoming quality control were examined. The company worked with eight fabric suppliers in this time interval. Kilogram was used as the units for the defects of fabrics. The similar fabric defect types which were detected in the orders of different suppliers were sum up to define the total defect quantities in terms of types. Then, calculated total quantities were sorted in descending form. The percentage shares and then the cumulative percentage shares of the defects were calculated. Considering these cumulative percentage values, the defect types were classified as A, B and C.

4. RESULTS

During incoming quality control of fabric, the company confronted twenty-six defect types. However, only first four defect types which were classified as A, constituted the 76.2% of all as seen in Table 1 and Figure 1.



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Table 1: Classification of Fabric Defects

Fabric Defects	Quantity(kg)	Percentage (%)	Cumulative %	Class
Color	2874.33	28.72	28.72	A
Fabric weight	2058.77	20.57	49.29	A
Hand	1569.16	15.68	64.97	A
Spirality	1123.7	11.23	76.2	A
Abrage	714.7	7.15	83.35	B
Point mark	580.8	5.80	89.15	B
Turning yellow	356	3.56	92.71	B
Raising	326	3.26	95.97	B
Shrinkage	217.49	2.17	98.14	C
Report size	136.1	1.36	99.5	C
Pilling	30.12	0.3	99.8	C
Smear	20.56	0.2	100	C

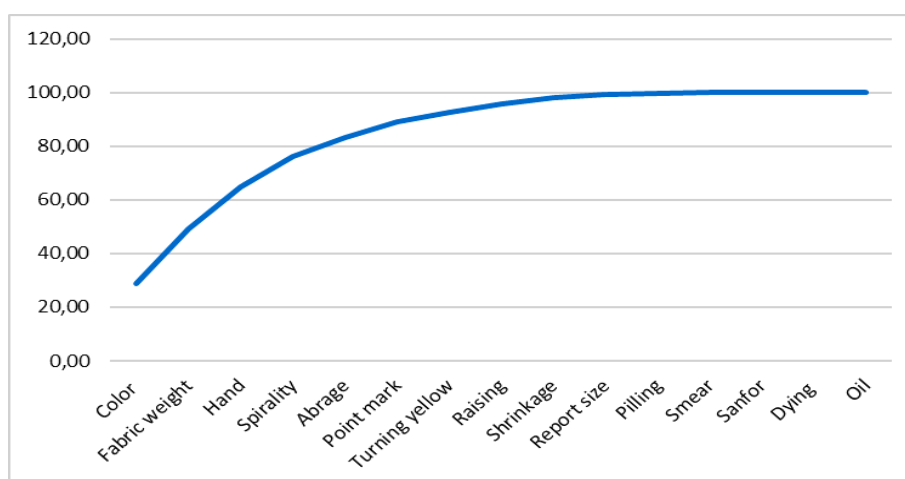


Fig 1: Fabric Defects ABC Analysis Graph

B and C class defects constituted 23,8% and 4,03% respectively. The company should concentrate on A class. For a further analysis, the data of A class were examined with the aim of seeing the distribution of these defects according to the suppliers (Table 2).

Table 2: Distribution of A class Defects according to the Suppliers

Fabric Defects	FABRIC SUPPLIERS							
	S1	S2	S3	S4	S5	S6	S7	S8
Color	2,9%	60,41%	27,7%	6,6%				3,2%
Fabric weight	5,2%	29,19%	69,47%	1,2%				
Hand		19,85%	64,28%		15,5%			0,3%
Spirality		58,9%					41,1%	

In Table 2, some the suppliers show big problem about some defects. The company can follow the performances of the suppliers and may eliminate bad performers and work intensely with the good performers.



5. CONCLUSION

Time and money are fundamental competition arguments for most of companies in a competitive environment. They should use their resources efficiently. ABC analysis is one of useful tools that will help to achieve this.

At the end of our study, it was seen that there were just four main type of fabric quality problems and the company should use their limited resources to minimise them. These results also showed the performances of suppliers and gave an idea about which precautions should be taken.

REFERENCES

- [1] S.Ozcan (2001), İstatistiksel Proses Kontrol Tekniklerinden Pareto Analizi Ve Çimento Sanayiinde Bir Uygulama, CU İktisadi İdari Bilimler Dergisi, Cilt. 2, Sayı.2 pp. 151-174
- [2] Juran, J.M.; Gryna, Jr.F.M.: Quality Control Handbook (4th edition), McGraw Hill, 1988.
- [3] B. Stojčetočić, Ž. Šarkoćević, D. Lazarević, D. Marjanović (2015), Application of the Pareto Analysis in Project Management, 9th International Quality Conference, June 2015, pp. 655-658
- [4]A. Ultsch (2002) Technical Report [Online]. Available: https://www.researchgate.net/profile/Alfred_Ultsch/publication/228908722_Proof_of_Pareto%27s_8020_law_and_Precise_Limits_for_ABC-Analysis/links/544652920cf2d62c304db2fd/Proof-of-Paretos-80-20-law-and-Precise-Limits-for-ABC-Analysis.pdf
- [5] J.Skorkovský, Pareto analysis-simplified, Retrieved: 17/04/2017 Available: https://is.muni.cz/el/1456/jaro2017/MKH_RIOP/Pareto_analysis-inventory_ABC_simplified_20160511.pdf
- [6] P. Guo (2013), "Product Standardization – A Case Study of Asak Miljøstein AS", Master thesis, Molde University College