

“A Study on Application of Lean Techniques for Optimizing Warehouse Time an Apparel Manufacturing at Quantum Knits”

M.Sivaraman¹, Dr. V. Kannan²

Professor²

KCT Business School

Corresponding Authors' email id: ksmsiva94@gmail.com

Abstract

This paper presents an overview related to warehouse optimization problems. The problems are divided in to several groups. First, the basic technical structure of warehouse is described. Second to assess the value added and Non-value added activities in the warehouse, which is in special attention in this work. Third, to find the time delay in the package and storage area and modified the warehouse layout design and material handling method. The main contribution of this paper is to show the current state of the art in optimization in mentioned three groups of interest in warehouse.

Keywords: *Value stream mapping, Warehouse, Fishbone analysis, Check sheet, Time study measurements*

I. INTRODUCTION

Lean manufacturing systematic method for waste minimization within a manufacturing system without sacrificing productivity. Lean also takes into account waste created overburden and waste created through unevenness n workloads. Lean manufacturing makes obvious what adds value by reducing everything. the article based on the value added and non

value added activities and rearrange the warehouse layout design. This study presents the case of a garment industry engaged in manufacturing of child wear in India. The industry was suffering with huge production losses due to improper utilization of overall resources. The industry is suggested value steam mapping and modified the warehouse layout design and implemented the roller conveyor

system adopt to improve process thus eliminating reprocess cost efficiently.

Value Stream Mapping:

Value Stream mapping is a Lean management method for analyzing the current state and designing a future state for the series of events that take a product or service from its beginning through to the customer.

Value added activities: IN garment industry, the activities that are considered as with value are the operations that have importance in producing the products to warehouse. They are each material scan and box scan and attach the bar code and loading the box in trolley and separate the materials in buyer wise and hanger and normal packing it is called ratio and solid.

Non – value added Activities: The Non value added activities are insignificant activities in producing the product. It found is transportation from one operation to another. The total time will consume based on the transportation each operator from one process to another.

Time Study:

- 1) Select the job to be studied. Break down the work content of the job into smallest possible elements

- 2) Observe the time for appropriate number of cycle

- 3) Determine the average.

RESEARCH PROBLEM

In India due to lower skill levels and traditional manufacturing systems, the garment industries are able to achieve the 50% to 60% productivity level. This project is done in an apparel manufacturing industry in Coimbatore, Tamilnadu. They are manufacturers of men and women t-shirts, polo shirts, leggings etc. The company has been facing problem with unbalanced productivity among the various operations in packing section and finished goods warehouse. Also by studying the current procedures and suggesting the implementation could yield a better efficiency on all aspects to reduce the wastages at Quantum Knits.

RESEARCH METHODOLOGY

a. Research Objectives:

- To study the present warehouse process
- To assess the value added and Non-value added activities in the operation of warehouse.

- To design of a optimize the warehouse layout design
- To assess the material handling method for optimization

b. Research Design: The primary data are fresh and collected for the first time. There are several methods in collecting the primary data which can be through time study method, interview method. In his research study primary data has been collected by labors and department managers for the collection on data.

The secondary data's are existing data that is been already collected. They can be referred from journals, books, reports & publications of industries.

Descriptive research:

Descriptive research is description of the state affairs, as it exists at present. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. The methods of research utilized in descriptive research are survey of all thinks

Period of study

The study is taken between the months of January 2018-april 2018.

LITERATURE REVIEW

Zajac, P.¹ The aim of this study is to provide a storage rack layout of raw materials for the new warehouse in accordance with the needs of storage space and material handling also more effective space usage. The minimize handling displacement distance of material that have the highest frequency of movement approach is used in this study. The result on the layout of the proposed generating material handling mileage for new warehouse is 8007 m. While the layout of the initial mileage amounted to 13.363 m.

T Saravana Kumar, PR Soumya, V Minu Manjari, RE Aishvariya, N Akalya² For any Company's economy, the industry cost, production time, total quality management and waste reduction have great impact. Focusing on these points Lean Manufacturing tools, a Japanese strategy, is implemented in this work. An apparel industry was studied and the bottleneck areas were identified through Value Stream Mapping (VSM). The bottleneck areas were identified and eliminated by implementing line balancing and parallel working section. The implementation of kaizen resulted in reduction of cycle time by 48.7%.

ANALYSIS & DISCUSSION

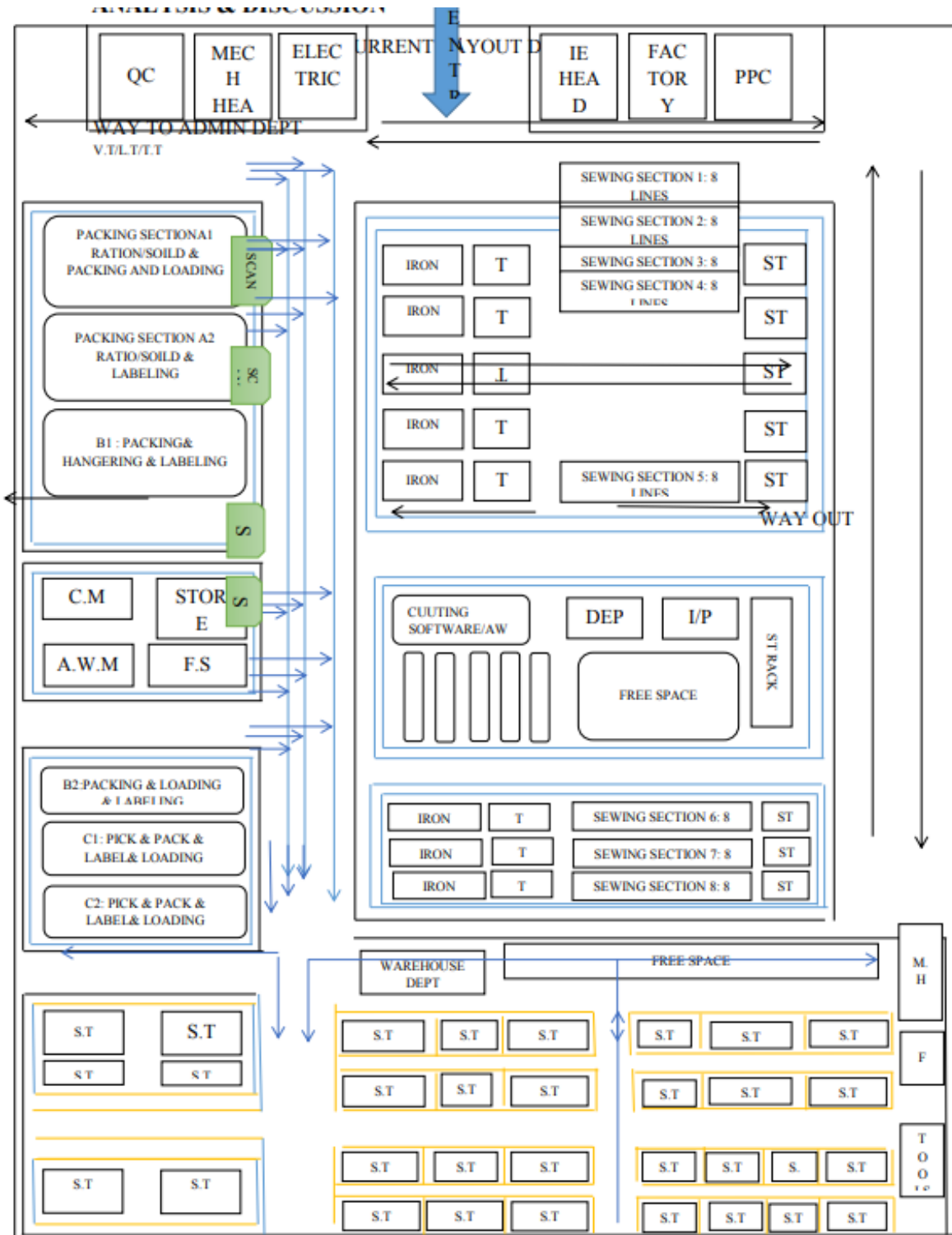


Figure: 1

Table No 1 Value Added And Non Value Added:

	Minutes	Typical	Target
Value Added Time	200		
Lead time	4786.26		
Non-Value Added	4586.26		
Value Added %	4.18%	5%	95%
NVA %	95.82%	95%	5%
Value-added ratio	1:23	1:19	19:1

WAREHOUSE:

	Minutes	Typical	Target
Value Added Time	70.24		
Lead time	349.44		
Non-Value Added	279.2		
Value Added %	20.10%	5%	95%
NVA %	79.90%	95%	5%
Value-added ratio	1:4	1:19	19:1

Takt time:

Takt Time (minutes/unit)							
Time available	Total Time		Breaks (min)	Cleanup (min)			Minutes Available
Days/week	6						
Hours/day	9		45	15			480
Takt Time	A1	A2	B1	B2	C1	C2	Total
Weekly demand	1789	275	337	331	1128	1437	5297
Daily demand	298	46	56	55	188	240	883
Percent of total sales	46%	7%	9%	9%	29%	27%	127%
Takt time (minutes per unit)	1.6	10.5	8.5	8.7	2.6	2.0	3.7
Cycle time/Operator	7.3	8.0	7.6	5.6	7.9	7.4	7.4
Number of Operators	4.5	0.8	0.9	0.6	3.1	3.7	3.2

Interpretation

- It is inferred for the above that value added time for packing & dispatch and Non-value added activities for packing and dispatch lack of material handling and automation process.
- Packing section overall time taken for the NVA 4786 mins
- It was found that the problem in the packing section. They take more time to picking and packing

process and then move to the warehouse

- Dispatch section NVA occurs 349minz to reduce the NVA activities to improve the layout design.

CONCLUSION

In the study of the company and completing this thesis work, I have learned that packing section and warehousing is an important piece of the company's activities and even if the main focus is on production, and more optional storage activities lead to the reduction of faculty operating costs and better efficiency by smart area and equipment and staff utilization

- 1) Introduced improvements for the optimization of warehousing (package and dispatch) have to be supported by other activities with less time and from a side of purchasing and production departments.
- 2) Testing adequate zoning techniques (division into sections) dispatch and package space.

3) Improvement of the methods used to optimize the results of the assessments of economic development.

4) To develop the information support. I believe, the implementation of the department ideas, will not only increase the efficiency of the warehousing process. but also be beneficial in terms of the financial state.

REFERENCE & CITATIONS

- 1) Richards, G. (2017). Warehouse management: a complete guide to improving efficiency and minimizing costs in the modern warehouse. Kogan Page Publishers.
 - 2) Emmett, S. (2005). Excellence in warehouse management: how to minimise costs and maximise value. John Wiley & Sons.
- <https://warehouse-planner.com/planner.cgi/select?bid=0>
<https://warehouseblueprint.com/gallery/>
<https://3dwarehouse.sketchup.com/search/?q=%20racking%20system&searchTab=model>