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ANALYSIS OF CPM IN GARMENT INDUSTRY

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ABSTRACT

Apparel business applies different techniques to keep pace with the incremental competition conditions and changing consumer demands. The new design needs new analysis; new manufacturing technique which will take much more time. There is no practice of scientific analysis to manufacturing a new design garment. Critical path method is one of the most effective techniques which is a systematic approach to identifying and reducing manufacturing time through the earliest start time and the earliest finish time and also provides a scientific method for product manufacturing and whole production management. This study was carried out at a men`s T shirt producer and baby caps i.e., a ready wear company. As part of my research, I analyzed the current state of the production line after that The T-shirt and cap production line was organized using CPM technology. The main strategy of CPM was actually highly appreciated Uptime by reducing conventional manufacturing time. As a result, the use of CPM in garment manufacturing The lead time for manufacturing time is shortened, and the entire manufacturing system takes a new approach. Manufacturers can produce products in a very short time, and apparel makers can manufacture modern fashion production projects.

Keywords:
Garment Industry, CPM, Operation breakdown.

INTRODUCTION

Today, the clothing business is fiercely competitive worldwide. It may take 3 to 6 months to produce and ship where and when fashion changes in a week. So if you are a manufacturer Want to maintain the international apparel market they need to build Your product in a very short time[1].

For manufacturers Modern fashion, fashion, and Ready-towear for the mass market, it will be difficult to claim yourself in the market Clothing market. This research introduced a new scientific approach Manufacture. The critical path method establishes the flow of production Graph showing the minimum time possible by shortening the conventional time Method.[2].

The critical path method known by the acronym CPM is How to streamline the ordering of planned activities or tasks plan. CPM is a scientific approach to analyzing new designs. Manufacture. This is a management tool designed to ensure the success of your project Timely completion. Fashion changes in its own cycle. Or Estimating the future production layout is an important factor in deciding it.[3]. Overall performance of the new production layout: the faster this is A better production layout will provide a better one if the information is known Product within a very short time. Traditional production practices Time depends on the number and cycle of clothing operations Time, operator efficiency and allowance. Will take the maximum time Manufactured using standard operator efficiency. [3], [4].

Standard Allowed minutes (SAM) will add an additional charge to the cycle time (At least 10% of all bonus bundles, machines and staff) But it also increases work efficiency. SAM provides the design Generation time of all operations, not the critical path method (CPM) provides the minimum amount of time required for manufacturing. The critical path method saves more time than the traditional method Every step of the production and shipping task. [5] Normal, the layout of the process depends on the design of the garment, the type of fabric and the structure the Processing and quantifying the use of each dependent is extreme and makes the process flow chart. [6]. Normal, the layout of the process depends on the design of the garment, the type of fabric and the structure. Processing and quantifying the use of each dependent is extreme. The first stage of layout (most often patterning) is difficult and

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layout before production [7]– [10] Most layouts are kept in the next product, so it's very important or the design is implicitly determined by the choices made during the process Refinement of new product concept and detailed design. [11].

Popular critical path method Manufacturing system in very different application contexts or The critical path is a sequence of individual activities in a project. [12].

CRITICAL PATH METHOD

The critical path method (CPM) is a technique where you identify tasks that are necessary for project completion and determine scheduling flexibilities. A critical path in project management is the longest sequence of activities that must be finished on time in order for the entire project to be complete. CPM is a resource utilization algorithm for planning a series of project activities. The basic technique for using CPM is to model your project, including: A list of all the tasks needed to complete the project dependencies between tasks.

METHODOLOGY

Garments usually consist of various parts and a series of processes / operations. All parts and processes maintain the order to make the perfect garment. Suspending an operation means how to create an operation list in sequence. A standard set of operations in the apparel industry, such as process name, SMV, M / C type, destination, etc. [13]..

The research was conducted in one of the Garment Industry in Tirupur that manufacturesT-Shirts, kid's wear and womens (with 120 sets). Initially the observation and investigations are conducted. Along with this, individual interviews were taken to know the work processes, job requirements and the discomforts faced by the factory. Later, the working methods and operation breakdown were analysed. The SAM value for each operation were noted. The critical path are identified and operation breakdown of T-shirt and caps were changed using the CPM . Based on the implementation of CPM Method the process flowchart was changed for t-shirt and cap.

Analysis of operation breakdown
Observation of production flow
Finding the critical paths
Analysis of various solutions
Implementation of CPM techniques

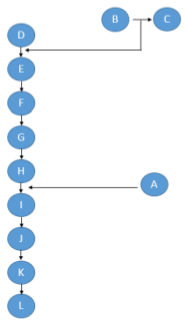

Figure 1 operation breakdown of T-shirt

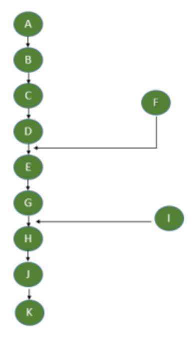

Figure 2 operation breakdown of cap

RESULTS AND DISCUSSIONS

The sewing department takes more time for preparing and assembling of garment for using traditional method of process flow. The developing countries and the lowmiddle income countries apparel manufacturers export Ready-Made-Garment to the developed countries who are the fashion leaders world-wide. To sustain in the international apparel businesses, it will be needed scientific approach using technological method for production to consume the

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lead time or else the apparel business will be only for classic fashion for low and medium category product.By using this CPM, we can reduce the lead time by(TSHIRT) 0.41s per garment. By using this CPM, we can reduce the lead time by(CAP) 0.36s per garment.

ACTIVITY	OPERATION	M/C	BASIC TIME	BASIC TIME WITH ALLOWANCE 30%
A	Sleeve hem	F/L	40s	52s
B	Join the neck rib	SNL	14s	18.2s
C	Open the seam and tack	SNL	16s	20.8s
D	Join shoulder	O/L	38s	49.4s
E	Attach the neck rib to body	O/L	48s	62.4s
F	Attach the main label	SNL	28s	36.4s
G	Attach tape to neck, fold & cut tap	SNL/ FL	66s	85.8s
H	Close the neck tape	SNL	43s	55.9s
I	Attach sleeve	O/L	56s	72.8s
J	Side seam with care label	O/L	65s	84.5s
K	Bottom hemming	F/L	48s	62.4s
L	Tack sleeve	SNL	28s	33.4
		TOTAL	490s	634s /6.34 mins

Fig 1 a: Operation breakdown before implementing CPM(T-shirt)

ACTIVITY	OPERATION	M/C	BASIC TIME	BASIC TIME WITH ALLOWANCE 30%
D	Join shoulder	O/L	33s	42.9s
B	Join the neck rib	SNL	10s	13s
C	Open the seam and tack	SNL	12s	15.6s
A	Sleeve hem	F/L	25s	32.5s
E	Attach the neck rib to body	O/L	48s	62.4s
F	Attach the main label	SNL	28s	36.4s
G	Attach tape to neck, fold & cut tap	SNL/ FL	66s	85.8s
H	Close the neck tape	SNL	43s	55.9s
I	Attach sleeve	O/L	56s	72.8s
J	Side seam with care label	O/L	65s	84.5s
K	Bottom hemming	F/L	48s	62.4s
L	Tack sleeve	SNL	22s	28.6
		TOTAL	467s	593s /5.93 mins

Fig 1 b: Operation breakdown after implementing CPM (T-shirt)

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S.NO	OPERATION	M/C	BASIC TIME	BASIC TIME WITH ALLOWANCE 30%
A	Ear panel	OL	50	65
B	Shaping (Dart) ear panel	SNLS	75	97.5
C	Cap outer dart attach	SNLS	40	52
D	Cap outer attach	SNLS	60	8
E	Cap inner lining attach	SNLS	40	52
F	Joining of ear with outer panel	SNLS	25	32.5
G	Joining of outer and inner panel	SNLS	40	52
H	Joining the outer panel with belt	OL	40	52
I	Belt finishing	SNLS	45	58.5
J	Peak at side	SNLS	20	26.5
K	Attaching wash care	SNLS	10	13
			445s/7.4m	509s/ 8.48mins

Fig 2 a: Operation breakdown before implementing CPM (Cap)

S.NO	OPERATION	M/C	BASIC TIME	BASIC TIME WITH ALLOWANCE 30%
A	Ear panel	OL	50	65
B	Shaping (Dart) ear panel	SNLS	75	97.5
C	Cap outer dart attach	SNLS	40	52
D	Cap outer attach	SNLS	60	8
F	Joining of ear with outer panel	SNLS	25	20
E	Cap inner lining attach	SNLS	40	52
G	Joining of outer and inner panel	SNLS	40	52
I	Belt finishing	SNLS	35	35
H	Joining the outer panel with belt	OL	40	52
J	Peak at side	SNLS	20	26.5
K	Attaching wash care	SNLS	10	13
			435s/7.25m	473s/7.88m

Fig 2 b: Operation breakdown after implementing CPM (Cap)

. It was also evident that By using this CPM, we can reduce the lead time by(TSHIRT) 0.41s per garment. By using this CPM, we can reduce the lead time by(CAP) 0.36s per garment .

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CONCLUSION

Clothing manufacturers Fashion changes in a week due to political issues, technical issues, Social and economic impacts that are changing the epidemic, So the manufacturing process needs to be developed as soon as possible, the scientific approach using techniques to consume LEAD time for production. The sewing department takes time to prepare and assemble garments using traditional methods of the process flow. Developing world and low and middle income clothing makers use Readymade Garment .A developed country that is a fashion leader in the world maintain used scientifically in international clothing stores, the technical approach to production is Lead time Otherwise, the clothing store is only used for classic fashion Products in the low and medium categories.

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