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## FACTORS AFFECTING CRITICAL PATH IN A GARMENT EXPORT FACTORY: AN EXPLORATORY STUDY

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### ABSTRACT:

*The study attempts to explore the factors that affect the critical path in a garment export factory. Factory visits, observation and in-depth interviews with merchandisers were carried out to explore these factors. Major findings of the study are: critical path is important because it helps to track the day-to-day process, highlights possible delays, ensures on-time delivery of orders. It increases the chances of shipment on time.*

**KEYWORDS:** Critical path, merchandiser, garment, export.

### 1. INTRODUCTION

Project managers today rely on scheduling tools based on the Critical Path Method (CPM) to determine the overall project duration and the activities' float times. Such data provide important information about the degree of flexibility with respect to the project schedule as well as the critical and noncritical activities, which leads to greater efficiency in planning and control of projects.

While CPM has been useful for scheduling construction projects, years of practice and research have highlighted a number of serious drawbacks that limit its use as a decision support tool. The traditional representation of CPM lacks the ability to clearly record and represent detailed as-built

information such as slow/fast progress and complete representation of work interruptions caused by the various parties involved.

The critical path method (CPM), or critical path analysis (CPA), is an algorithm for scheduling a set of project activities. It is commonly used in conjunction with the program evaluation and review technique (PERT). By focusing on the tasks that make up the critical path, the project manager maximizes the chances of completing the project on time. A network schedule of activities needs to be completed.

SCM encompasses the integrated planning and execution of processes required to optimize the flow of materials, information and financial capital in the areas that broadly include demand planning, sourcing, production, inventory management and storage, transportation or logistics and

return for excess or defective products. Both business strategy and specialized software are used in these endeavors to create a competitive advantage.

Supply chain management is an expansive, complex undertaking that relies on each partner -- from suppliers to manufacturers and beyond to run well. Because of this, effective supply chain management also requires change management, collaboration and risk management to create alignment and communication between all the entities.

### 2. OBJECTIVES

The main objective of this research is to understand the importance of Critical Path Management in a supply chain management running company and also how it helps in the functioning of the assigned work.

### 3. METHOD

An In-depth buying merchandising study was done using following techniques

- Interaction with export merchants and communication with the buyers (Primary Data Source)
- On the job experience (Primary Data Source)
- Online Questionnaire (Primary Data Source)

### 4. REVIEW OF LITERATURE

The critical path is simply all the tasks that determine the end date in your project schedule. If one of those tasks is late by one day, then your project end date will be extended by one day. Oftentimes, there will be tasks that are not on the critical path; this is due to the slack in the project schedule. If you refer to your current schedule, you can examine the Gantt chart and quickly identify the tasks that have some float compared to the tasks that have no slack.

Slack is the amount of time a task can be delayed without impacting the start date of a subsequent task. The critical path methodology is simply a technique to identify all the tasks that will directly impact the project end date.

The managers of many large projects use Critical Path Method (CPM) network scheduling to analyze and control their project schedule. While this method is applied with a great deal of success, on occasion the result is less than desired. These unsatisfactory results can come from excessive concentration on the "critical path" items and not providing adequate attention to other, less critical activities. At times this has resulted in inadequate overall planning and either under or over application of resources such as people, materials and equipment.

The use of logical network plans as a scheduling tool is widespread. This tool provides the most detailed and disciplined planning, status measurement and forecasting capability generally available. Logical networks are used as planning tools and can readily be used for controlling the project. The use of networks for planning and control is most often accomplished by first using the network logic as an analysis tool to identify the "critical path". Time estimates are then applied to the activities of the network and the longest path is identified by calculating all of the paths through the network. During the planning phase, plans developed using this method can be analyzed both to determine the longest path through the network and to evaluate the plan's ability to meet a predetermined project

end date (or key events within the project). The difference between the length of the longest path (to the key event) and the time required to satisfy the desired (or scheduled) date is known as "float" or "slack". Float can be either positive (extra time is available) or negative (not enough time exists). If the plan doesn't satisfy the objective dates, the CPM method determines the "negative float" of the project plan. This is then attacked by developing alternate project strategies. Such methods as overlapping activities that are ideally done in series and developing alternate sources of long lead supplies are considered. The ability to easily and quickly consider many alternate project strategies has been greatly enhanced in recent years as a result of the application of personal computers to the critical path analysis problem.

In many cases, the logical network and the Critical Path Method is then applied as a project control tool. The use of the Critical Path Method as a control tool includes gathering both actual activity status (accomplished or in-process) and forecasts of start dates and time spans of future activities. By analyzing the critical path during the accomplishment of the project, the expected completion of key events and the entire project can be forecast. These forecast dates are thought of as "What's going to happen if you don't do something to change the plan?" If the forecast dates are acceptable, alternate courses of action can be planned. Project managers typically concentrate on maintaining the planned dates for the key events and project completion. This approach includes reviewing activities planned to start in the near future for possible reduction in time spans and evaluating changes in forecasts of future activity timespans (particularly those where longer spans or delays are forecast) and key constraints. As the activities of the project are accomplished, the project management concentration is necessarily focused on the critical path. Other paths through the network that have float in them are given less attention since delays in these paths do not cause slips in the key events of the project. If

these other activities are delayed they become more critical, and if enough delay occurs, they become more critical than the previous critical path. Additionally, delays in non-critical activities reduce the options available to the project manager.

## 5. VARIABLES IDENTIFIED IN CRITICAL PATH IN A GARMENT EXPORT FACTORY

Critical Path is done in a sequence and each job is dependent to each other.

- **Order book date:** It is a day when the order is booked. PO is generated. How much amount of garment needs to ship in how many hits etc.
- **Trims sheet:** Trim is received after 3-4 days of order placement. It includes all the trims instructions regarding the garment which is to be manufactured.
- **Lab dips:** It is received from the factory in 10-14 days from the order placed and then we as a merchandisers check it from our side and send it to the buyer for approval.
- **Revised lab dips:** Buyer reviews the lab dips and if the dips is not going with the pantone number offered by the buyer then it asks for revised lab dips. It generally takes a week time to do so
- **Trims:** Trims are received mostly within 12 days from the placed trim sheet date and then again we as buying house merchandisers review it and send it to the buyer for approval. Approvals are received in a week or so and again we convey the same to the factory.
- **Bulk fabric:** After all the fitting are approved, bulk is ordered for the production of the samples and is in-house ten days prior the cut date.
- **Cut date:** 38 After the fabric is in house, the cut date starts in a couple of days according to the amount of quantity is placed.
- **Production start date:** Just after the completion of cutting the factory starts making the sample. But before making in bulk a development sample is made and then it is got confirmed by the buyer then the actual action takes place.
- **Pre-Production Sample:** After development, a pre-production sample that we call it as a PP sample is made and sent it to the buyer for confirmation. It's done 32 days before ship date.
- **1st Fit sample:** Generally Debenhams follows three fits. The very 1st fit is done seventeen days prior the 2nd fit sample.
- **2nd Fit sample:** After the approval of 1st fit sample, 2nd fit is made and is checked with the last fit sample. Mostly is goes 10 days after the 1st fit sample.
- **3rd Fit sample:** Third fit sample is the sent to the buyer after the approval of 2nd fit and is generally sent after 10 days of 2nd fit sample.
- **Gold Seal sample:** This is the final sample which is going to be in the store after reviewing all rounds of fits. It is sealed with all the important instructions including wash care labels, price, tags etc.
- **Test Reports:** Test reports are done 42 days prior the shipment date. Tests include pull test, pilling test, trims are suitable or not considering the user.
- **Ex-factory date:** Just before a week of shipment, the merchandise should leave the factory so that all the custom formalities are done on time.
- **Shipment date:** Shipment date is a date when the order must be shipped to the destination without any delays in such a manner that the merchandise be in the store according to the season and trend.

As from the above pointers it is very much understood that all the activities are dependent on each other. Delay in one job can affect the whole critical path. It is important to maintain the critical path as a buying house merchandiser it is the key responsibility to look after at each and every stage of the activity and give a go ahead in every possible stage. There is a continuous chase with the factory is involved. Time to time updates with the buyers and keeping everything on the tip of the head is a must.

## 6. SUGGESTIONS

- Merchandisers should maintain the Critical Path.

- Very important that there is visibility of same for all the team members i.e; designing/merchandising/technical.
- Critical path should be weekly updated all the submission should be followed and met, if anything goes behind the schedule, it should be updated in such a way where buyer is not supposed to be panic.
- Strong monitoring and on time troubleshooting. Informing customer in advance about the delays so that they can plan their intake accordingly.
- When it comes to factories, It has also been seen that even though Quality have been the most important parameter while choosing a vendor, but when it actually came to choose which they would like to have more business with, the factory which gave timely delivery and costing/pricing was chosen.
- One should update CP every week and run through with senior every week to alert.
- Vendors within house fabric facility should be preferred.
- Also department should provide some training in critical path to the new comers.

## 8. CONCLUSION

On the basis of the overall research it can be concluded that how important it is for a merchandiser to have a good command over critical path and all the different factories to fulfil all the requirements of the customers which will eventually turn into a profitable business for both the parties and also helps in strengthen the long term relationship.

Suppliers are viewed as critical resources for the textile/apparel retailers. They have to be managed to derive the maximum potential in the supply chain, and the selection of the supplier after identifying their USP is the most critical task in the supply management.

An important point to remember is that CPM is an open-ended process that permits different degrees of involvement by management to suit their various needs and objectives. In other words, one can use CPM at whatever level of detail when feel is necessary.

CPM identifies the most critical elements in the plan, focusing management's attention to the 10 to 20% of the project that is most constraining on the scheduling.

The charting in a CPM also enables the managers to determine start time, end time, slack time and float time associated with each activity of the project.

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