Colovic, J Textile Sci Eng 2015, 5:3
DOI: 10.4172/2165-8064.1000199

Journal of Textile Science & Engineering

Opinion Open Access

Optimization of Planning in Garment Manufacturing

Gordana Colovic*

The College of Textile-Design, Technology and Management, Belgrade, Serbia

Introduction

The daily production of clothing deals with many work orders, so it is necessary to complete Scheduling (shop floor control). Priorities can be determined on the basis of several rules:

- FIFO (first-in, first-out),

- LIFO (last-in, first-out),

- DDATE (earliest due date) - which product must be made first,

- CUSTPR (highest customer priority) - first the product for priority customers,

- SETUP (similar setup) - first the similar products which require a minimum setting of machines,

- SPT (shortest processing time) - priority for products that last for the shortest period,

- LPT (Longest Processing Time) - priority for products that last for the longest period.

Priority DDATE can have variations:

- SLACK (Slack minimum) - priority for jobs that have less time margin:

- CR (smallest critical ratio) - priority for jobs with smaller ratio of the remaining time to maturity and remaining processing time:

If CR > 1, then the product is made before the deadline

If CR < 1, then it's late

If CR = 1, then it is done on time

Already deployed operations often change their order, since there are new jobs coming into production. Scheduling is performed according to the above rules, which can be modified in a way that corresponds to the number of resources or the complex global rules:

- Expanded SPT (shortest processing time) - jobs are divided into A, B and C, according to their duration. Jobs A are performed with a minimum duration, but every few hours the production is interrupted and job B is performed. Jobs C are performed every day each.

- WINQ (work-in-next-queue) - sees the duration of performing job at the next resource.

- NOPN (fewest number of remaining operation) - according to the number of resources that are yet to be used.

- S/OPN (Slack per remaining operation) - according to the time reserve for the rest of the job.

- RWK (Remaining work) - a variant of SPT, the duration of performing whole job on all resources.

Resources which are bottlenecks have a negative effect on the process efficiency, because they limit its real capacity and do not provide a high-quality, fast and flexible production. Goldratt's limiting theory [1], defines a bottleneck in the process or in the company, because it assumes that the goal of every company is to "create money". Limiting theory is what prevents the system or process to reach a higher level of performance, i.e. it focuses on real capacity, inventory and production costs. Goldratt's theory coordinates production flow with demand according to the following principles:

1. It is necessary to harmonize the flow of the process, not the capacities of phases of the process,

2. Efficiency of bottleneck is not determined by its capacity, but by other constraints,

3. Utilization and use of resources are different concepts,

4. An hour wasted due to the bottleneck is an hour lost for the entire process,

5. An hour saved at bottleneck is an illusion,

6. Series of transfer do not need to be equal to the size of the production series,

7. Sizes of production series do not need to be fixed,

8. Lead time of process is the result of designing process,

9. When designing a process one should always bear in mind the constraints (bottlenecks) [2].

Technological process of production of clothing uses the technique of parallel ways of moving cut parts of garment from one operation to another together with scheduling and deployment of technological operations on the production capacities by checking the availability of resources. Thereby the making or installation of certain parts of garment is performed by an arbitrary number of operations whose scheduling is known to everybody, as well as the duration of individual operations. The optimization of technological operations is shown in Figures 1 and 2.

The most frequently used expressions for the network activities are CPM (Circle Plan Methods), PDM (Precedence Diagramming Method) and PERT (Program Evaluation and Review Technique), and the types of networks are:

- AOA (Activity-on-arc).
- AON (Activity-on-node).

***Corresponding author:** Gordana Colovic, The College of Textile-Design, Technology and Management, Belgrade, Serbia, E-mail: gordanacolovic@gmail.com

Received April 27, 2015; **Accepted** April 28, 2015; **Published** May 15, 2015

Citation: Colovic G (2015) Optimization of Planning in Garment Manufacturing. J Textile Sci Eng 5: 199. doi:10.4172/2165-8064.1000199

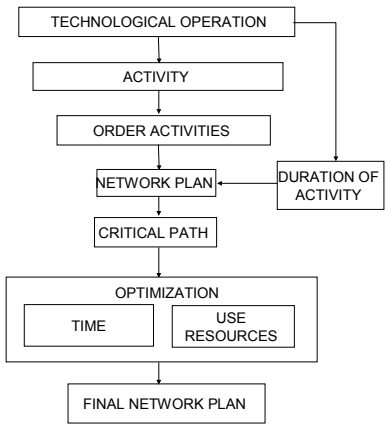

Figure 1: Optimization of technological operations.

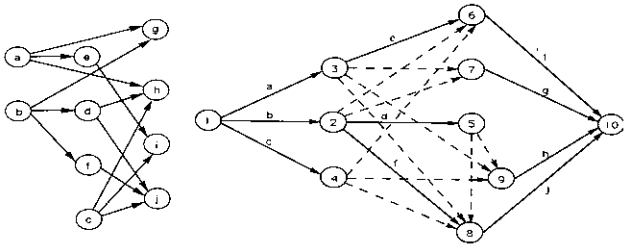

Figure 2: Network diagram.

References

1. Goldratt EM (1997) Critical Chain, The North River Publishing Corporation, USA
2. Colovic G (2010) Management of technology systems in the garment industry, Woodhead Publishing Ltd., India