



PROCESS MANAGEMENT IN THE CLOTHING INDUSTRY

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Mina Mazić^{1*}, Nikola Maksimović^{1,a}, Olga Stojanović¹, Danica Stojanović²

¹ATUSS, Academy of Technical and Art Applied Studies Belgrade, Department of Textile School for Design, Technology and Management, Belgrade, Serbia

*minapaunovic91@gmail.com, ORCID 0009-0003-7458-2891

^animaxg@gmail.com, ORCID 0009-0007-6018-7639

^bolga.stojanovic.dtm@gmail.com, ORCID 0009-0003-7458-2891

²Faculty of computing Union University, Belgrade, Serbia

danica.stojanovicc@gmail.com, ORCID 0009-0006-8285-8714

ABSTRACT: This study investigates the impact of the production process on the example of T-shirt production, with the aim of improving the existing production process. By examining priority and key processes, the research aims to identify key factors that need to be improved through the application of modern CAD technology. In addition to the change in technology, it is necessary to change the way the organization functions and the need for new management methods and implementation tools for continuous improvement of the performance of companies in the clothing industry.

Keywords: clothing industry, process management, improvement, performance.

UPRAVLJANJE PROCESIMA U ODEVNOJ INDUSTRIJI

APSTRAKT: Ova studija istražuje uticaj procesa proizvodnje primeru izrade majica, sa ciljem da se postojeći proces proizvodnje poboljša. Ispitivanjem prioriternih i ključnih procesa, istraživanje ima za cilj da identifikuje ključne faktore koje je potrebno unaprediti kroz primenu savremene CAD tehnologije. Pored promene tehnologije neophodno je da se promeni način funkcionisanja organizacije i potreba za novim menadžment metodama i alatima za implementaciju za kontinualno poboljšanje performansi preduzeća u odevnoj industriji.

Ključne reči: odevna industrija, upravljanje procesima, poboljšanje, performanse.

1. INTRODUCTION

The goal of every organization is to increase business efficiency while simultaneously reducing costs. That is why it is necessary to support the process approach of business

process management (Business Process Management - BPM). BPM as a concept is located between IT and management, and related employees, parts of the organization, applications, documents and other sources of information. Operational business process is defined as a recurring business process, which is performed by an organization as part of its daily activities [1]. The performance level of any process tends to decline over time, unless an effort is made to maintain it. If the business system is not improving, its competitors most certainly will. In the competitive garment industry, manufacturing costs are crucial for profitability and sustainability [2]. Today's users are always looking for more, which requires an increase in the quality of the offer, which causes an even greater increase in expectations. Process models are graphic presentations of business processes that describe step-by-step activities that should be performed in a certain order in order to complete a process, from start to finish. The purpose of well-defined processes is to graphically represent the essence of a business process. The most significant shift was made by the organization Business Process Management Initiative (BPMP), which defined a graphic notation for process display - Business Process Modeling Notation (hereinafter referred to as BPMN). BPMN was created to standardize and facilitate the graphical representation of business processes, the understanding of diagrams. A standard way of describing business processes has been defined, as well as the possibility of generating meta language code for describing and managing business processes from diagrams (Business Process Execution Language - hereinafter referred to as BPEL).

There are two versions of BPMN:

1. Simpler intended for managers and

2. More complex, which contains all the details needed to generate software code and is intended for IT experts. The basic requirement of the BPR approach is to change the organization of the company from a traditional, functional to a process way of doing business, given that the implementation of most business processes involves human resources from different organizational units, i.e. company functions. Regardless of whether the improvement, redesign or reengineering of business processes is carried out, after the completion of the changes, it is desirable to simulate or test the process. In this way, it would be determined whether the process is proceeding according to the desired course and whether the planned performance level of the process has been reached. If the change was successful, the process is implemented in the organization.

With the implementation of the redesigned process, one business process management cycle ends and a new one begins, which ensures continuous monitoring and improvement of business processes. Business process management is not a one-time procedure, but rather an iterative process that "lives" and unfolds as long as the organization itself "lives". A process-oriented organization strives to achieve the strategic goals of the organization through the improvement, management and control of critical processes [3].

Continuous improvement of business processes is related to the role of BPM and is usually achieved through the BPM life cycle. The concepts of the BPM life cycle differ in terms of the sequence and execution time of the phases. This form of management implies the need to change the way the organization functions and the need for new management methods and tools for implementation [4].

2. METHODS

Analyzing is a critical process in a company that produces men's and women's T-shirts. The biggest problem occurs in the structural preparation, when grading the T-shirts that this company produces. Modelers, technologists and quality controllers are participants in the mentioned operation. The operation is performed using the manual grading method. The operation is time-consuming and requires a lot of manual work. Based on the management survey, the business process related to BPM was analyzed at the same time.

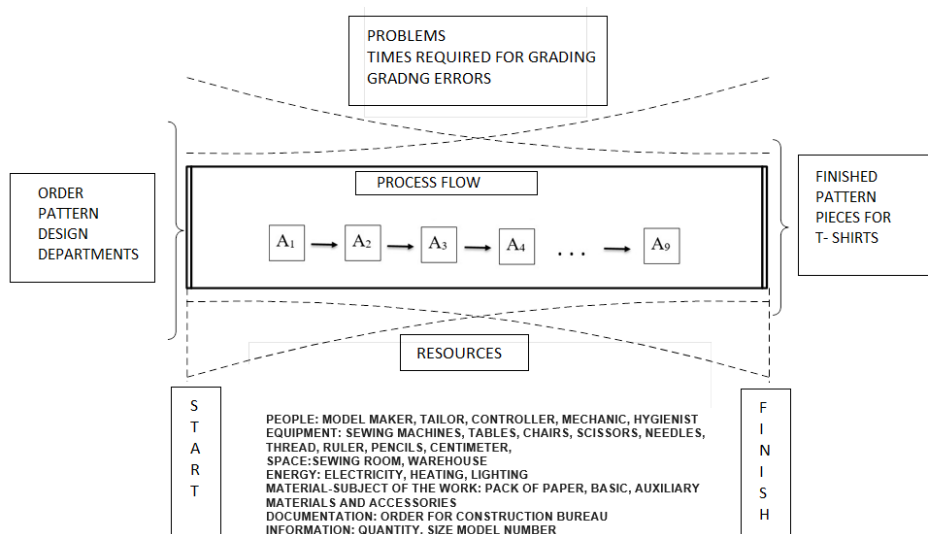


Figure 1: Representation of the process for making a T-shirt

- A1 - Basic pattern making for T-shirts,
- A2- T-shirt pattern design,
- A3- Production preparation for T-shirts,
- A4- Tailoring of the test sample
- A5- Sewing a trial pattern
- A6- T-shirt grading
- A7- Fitting the cropped image

The t-shirt grading operation requires a lot of work depending on the t-shirt model. The total time required for this operation is 1 hour. This is a significant waste of time, especially when you consider that this operation is done manually by measuring the grading time on the CAD system, this operation takes 6 minutes. The entire process was analyzed, the times compared where the entire process is accelerated 10 times compared to the classic one. One of the main problems in this process is that the operation is performed manually, this is a demanding task that leads to errors. Errors are common and controllers must inspect

each cut individually and determine errors during grading. Table 1 shows the subjects and points for checking.

Table 1: PQCDSM checklist

SUBJECT OF CHECK	CHECK POINTS
PRODUCTIVITY (P)	The time of the t-shirt grading process is longer than the planned required time. It is necessary to shorten the production time.
QUALITY (Q)	The quality is at a high level, it should not be changed.
COSTS (C)	Costs have increased due to energy consumption.
DELIVERY (D)	There is a possibility of faster delivery, by shortening the construction preparation time, i.e. gradation of the base model.
SECURITY (S)	Security is at a high level.
MORAL(M)	There is a problem between the workers and the delivery date of the ordered goods.

Training for workers in construction preparation - t-shirt grading on the CAD system aims to train new workers to perform tasks and adapt old workers to process changes. The duration of the training is 5 working days. The training methods are lecture, demonstration, practical exercise and testing. The training is carried out by a professional and experienced lecturer, who evaluates the workers after the training. The training takes place in the company's premises. This will help to make maximum use of the training workers and to acquire the necessary knowledge and skills to create a new way of grading T-shirts.

From the point of view of the process, and with the aim of achieving added value for the end user, it is important to: Analyze the process and test the capacity, understand interactions with the process, analyze the participation of human resources. BPM implies a permanent and continuous organizational commitment to manage business processes [5]. This permanent and continuous commitment is implemented through a BPM life cycle model with clearly defined steps and feedback. It is the basis for achieving continuous improvement as well as ensuring the alignment of the organization's business processes with strategic business goals.

Process measurement can be defined as the application of the management cycle with an emphasis on organizational processes [6] and can be performed through the BPI model of integral process performance management, which belongs to the group of methods known as BPI (Business Process Intelligence). BPI is a process-oriented system for measuring the success of an organization's operations, which enables insight into the process structure in the segment where critical data is generated. It enables active, precise and quick monitoring of operational business at all times with the ability to react. BPI enables the definition of process goals and key indicators of success for those goals, determination of target values of indicators, continuous monitoring of process efficiency and effectiveness, as well as the



use of methods, techniques and information technology that facilitate the management of company processes.

3. CONCLUSION

After analyzing the existing situation, it was determined that the state of the process is not satisfactory and that it is necessary to move on to solving the problem. By improving the t-shirt grading operation, we speed up model making. The proposal to solve the problem is to introduce a CAD system, which would drastically reduce the total time required for this process and increase the quality of the performed operation. Train existing human resources to work on the CAD system This can significantly improve the economic efficiency of production. At the same time, it is necessary to model the business process in which equipment, human resources, the introduction of IT technology will be carried out faster and processes and information will be processed. Process modeling contributes to determining the justification of process improvement, so the proposal is to apply the BPI model of integral management of process performance.

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