

APPLICATION'S BARRIERS OF QUALITY SYSTEMS IN READY-MADE GARMENT FACTORIES IN THE KINGDOM OF SAUDI ARABIA

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Abstract: Most types of garment products are produced through a series of sequential processes that vary slightly from one factory to another. Each part of the manufacturing process affects the final quality of clothing. The primary purpose of quality control is to ensure the existence of the product at the lowest possible cost. In practice, this cannot be achieved by controlling production processes and minimizing the occurrence of defective production and beyond the limits of specifications. The research aims to identify the different factors that affect the quality of production of women's abaya in Jeddah, to analyze methods of women's abaya quality control and to develop proposals for methods to raise quality

Keywords: quality systems, ready-made garment industry.

1 INTRODUCTION

The ready-made garment is one of the manufacturing industries that are produced in multiple departments, and it is done by converting raw materials into clothing products. Since it is one of the consumer industries, it includes all types of under and outer wear that people consume at all times, and its manufacture depends on the use of textile products. This is the reason which makes the two sectors closely related to each other, and therefore the establishment of integrated industries is considered necessary to achieve economic exploitation [1].

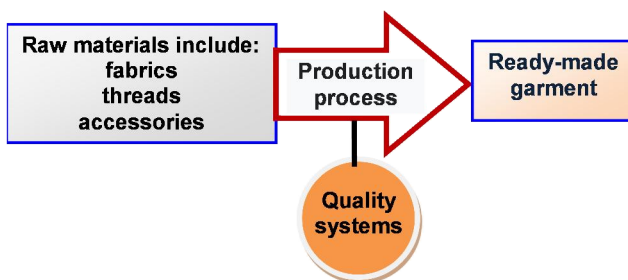


Figure 1 The role of inputs and outputs within the garment factory

Most types of ready-made garment are produced through a series of successive processes that vary slight from one factory to another, and each of these processes consists of a work cycle that contains a series of important stages such as cutting, knitting, finishing and ironing, with the aim of completing a work or completing a unit of production. Every part

of the manufacturing process affects the final quality of the garment [2].

The Garment production processes can be illustrated through the following format:

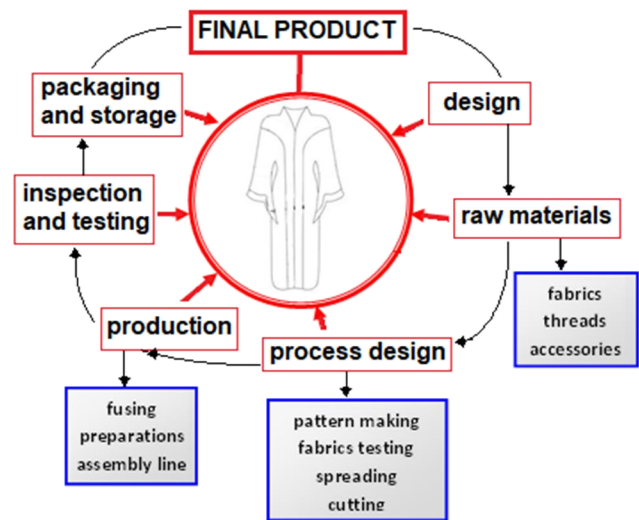


Figure 2 Ready-made garment production processes

1.1 Quality in the ready-made garment industry

Quality control

Control requires the presence of requirements and follow-up to achieve these requirements and intervenes to try to correct any deviation from the requirements that occurs during the fulfilment. If we apply the concept of control in the field of quality, then the requirements mean standard

levels of quality and control which means an attempt to correct any deviation in quality from its standard level. Accordingly, we can define quality control as all the activities and efforts exerted by all employees of the facility, that combine to achieve the desired standard levels of quality [3].

The primary purpose of quality control is to ensure the quality of the product at the lowest possible cost. In practice, this cannot be achieved by controlling production processes and minimizing the occurrence of defective production and beyond the limits of specifications.

There are four practical steps involved in controlling the quality of industrial products:

1. Determining the required level of quality through market research, product designs and specification.
2. Evaluating the conformity between the product and the specifications, and this is by taking regular samples from the production line and then conducting measurement operations on its characteristics. And compare the results with their counterparts specified in the specifications and determine the values of the difference between them.
3. Evaluating and analyzing the causes leading to these differences and taking corrective and preventive measures.
4. Planning for continuous improvement of quality by reviewing product specifications [4].

Rajkishore Nayak and Rajiv Padhye [5] divide quality in the ready-made garment industry into three steps:

I. Preproduction quality control

During preproduction quality control, all garment's elements is tested before assembling. Other production supplies "interlinings, threads and other design elements" are manufactured to ensure their quality before starting to manufacture. This affects the factory by save time and money in the long term.

II. Quality control during production

Achieving the quality of apparel products depends on every step in the production process, which includes pattern drawing, spreading, cutting, assembling and finishing. Accuracy must be followed in cutting as well as during the assembling of parts. Careless sewing or poor attention to detail leads to unacceptable errors in the final product.

III. Final inspection

The final inspection process is carried out after conducting a quality test of materials and the quality of manufacturing processes. Products are tested according to the requirements for performance, general appearance, size and fit. It's tested by placing garments in manikins or models. In addition to visually inspecting them to ensure that

they are free from any errors in the production process. Thus, the stitching quality and the connection of the components of the garment and the accessories are checked [5].

Production process of garments like fabrics, accessories, etc. in the warehouse always starts when all of the necessary items are received, and is done after the material delivered. Usually, manufacturers check the quality in the "Checkpoints" to be sure that the only good quality items will be use.

Table 1 Inspection level

Department	Inspection level
fabric store	random check according to AQL 2.5
accessories & trim	random check according to AQL 2.5
fabric spreading and cutting	marker checking , fabric test report check, fabric spreading, cutting, sorting and bundling
embroidery & printing	check up 100% on embroidery, printing
sewing	in line check at crucial operation, random checking end of line 100%checking
finishing	final inspection (after pressing)

Quality Checkpoints in Garment Production [6] (onlineclothingstudy.com)

This approach improves product quality and increases productivity by placing emphasis on product, process design and monitoring.

Advantages of an effective quality system [7]:

- increase customer satisfaction
- low waste rate,
- high motivation for workers,
- for a more efficient and effective organization,
- achieving better positions in the markets,
- make more profits.

Therefore, the focus of this research has been on identifying the various factors that affect the quality of women's abaya production in Jeddah, Kingdom of Saudi Arabia, and strengthening the basic concepts of quality and methods of application, review and evaluation of the technical personnel in ready-made garment factories.

2 EXPERIMENTAL

Research aims:

- identify the different factors that affect the quality of production of women's abaya in Jeddah,
- analyze methods of women's abaya quality control,
- develop proposals for methods to raise quality.

Research importance:

- contribute to the advancement of the readymade garment industry in the kingdom of Saudi Arabia,

- spreading the culture of applying quality systems by strengthening its basic concepts,
- providing scientific support to technical personnel inside ready-to-wear factories.

Research limits: choosing 5 factories for the production of women's abaya in Jeddah, Saudi Arabia.

Research methodology: descriptive approach follows through analytical study.

Research tools: field visits, a questionnaire, interviews.

The practical study included assessing the quality of 5 factories for women's abaya production in Jeddah through exploratory field visits, linking them to theoretical studies, applying research tools; then identifying quality problems in the stages of producing the women's abaya, and drawing conclusions and discussing them.

3 RESEARCH RESULTS

3.1 The various factors that affect the quality of running the women's abaya

They are divided into four types:

- I. Defects related to process materials (raw material)
- II. Defects caused by human errors (including the use of untrained workers, frequent defects due to human errors during assembly operations)
- III. Defects caused by machines and equipment as a result of temporary or permanent faults in the embroidery and production machines.
- IV. Errors due to mixed factors, because it is not possible to specifically limit the cause of the defects.

The following is an explanation of the defects that were detected during the practical study:

I. Defects in operating materials

These materials include: fabrics, threads and accessories.

II. Defects caused by human errors (assembly defects)

Usually the number of workers in this stage is greater than at any other stage, so the occurrence of many errors is very possible, and monitoring this process while it performs is extremely important to complete it correctly the first time.

III. Defects caused by machinery and equipment

Production and quality are affected by several factors that may be due to defects in machines. These faults include:

- The life of the operating machines.
- Absence of periodic maintenance.
- Negligence in the maintenance system (periodic - intermittent).

- The worker's lack of awareness of all the factors surrounding the machine (the method of operation and dealing with machine problems that may occur during production)

IV. Mistakes due to mixed factors

Sometimes the defect cannot be classified precisely as the defects appear due to both human factors and machine faults

3.2 Quality control methods for the production of women's abaya

Before embarking on quality processes, all factors affecting them must be identified and limited to develop quality plans to reduce these defects and eliminate them as much as possible.

The process of describing operating defects includes four stages:

- list all possible defects,
- preparing the defect description form,
- preparing illustrations for each defect,
- follow up the percentage of the appearance of each defect throughout production periods.

The following is a presentation of these points that were observed during the practical study:

1. Determine the operating defects

All possible errors that may occur during the operation period are counted. The most important sources for this inventory are:

- customer reports,
- attention payed to the product and the identification of all production defects
- reports of quality supervisors and supervisors of production lines.

2. Preparing the defect description form

This is an essential step for operating quality control, and operating defects are described in order to be rectified and taken into account.

3. Preparing illustrative models for the production model

During the production process, samples of the correct product shape are described in order to distribute them to each stage of the operation, as well as to the quality control, as well as the initial sample of the model according to the customer's request is placed in a visible and easy place and this sample is used as a model for all production personnel. Illustrations are also prepared in the event of any defect to clarify the causes of this defect and methods of treatment.

4. Observation and evaluation

The process of observation and evaluation takes place through periodic monitoring of the amount the workers' responses to the method adopted for quality and on the base of the determination of the deficiencies in the capabilities of the factory.

4 CONCLUSION

From what has been presented above, we can extract the most important measures to raise the quality of operating the women's abaya:

- putting check points for the fabric while it is straightening in preparation for the cutting process,
- putting quality during and after the cutting process and matching the parts of the resulting piece with the pattern and making a report on that,
- preparing a periodic program for inspection and maintenance of the factory machines in a way that does not hinder production, which increases the efficiency of the machine and reduces the errors resulting from it,
- establish a regular system for changing the machine needles whenever needed by the maintenance worker,
- preparing training programs for workers on a regular basis to raise their efficiency,
- providing an alternative worker and motivating workers to raise their efficiency,
- the periodic interview with the workers to clarify the most important strengths and weaknesses of each worker and motivate them to develop their skills,
- make quality a general behavior for all workers at all levels, including workers and supervisors of production lines, through periodic meetings with them,
- preparing illustrations of the shape of defects that appear in the final and undesirable product, their causes and ways to avoid them,
- at the beginning of production, an initial form for the quality reports is defined and distributed to the quality supervisors,
- evaluating the quality control schedule is one of the most important factors that lead to raising the quality of operation and quickly identifying production problems,
- knowing the causes of defects and classifying them into defects (labor - machines - raw materials - cloth - mixed),
- the necessity of linking the incentive rate to both the quality and the quantity of production.

Recommendations:

- continuous training for technical personnel in the garment industry in Saudi Arabia,
- adding quality courses in specialized colleges to support the labor market with qualified cadres,
- every garment factory should implement different quality management tools.

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