

## Quality Control Measures in the Clothing Industry: Case Study in the Keta Municipality

BY

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### Abstract

The study set out to unearth the quality control practices of clothing manufacturers in the Keta municipality of the Volta Region of Ghana. It further sought to assess the challenges that these manufacturers face in their bid to ensure quality in their production and come out with measures that could be used to mitigate the situation. The cross-sectional descriptive research methodology was adopted using a case study approach. It was found out that the use of obsolete and inadequate machinery and technology by the local clothing manufacturers which result in inefficiency and high cost of production. Also, the garment manufacturing industry is dominated by small scale enterprises which makes it difficult to apply large scale quality control measures in such companies. The study recommends that garment manufacturing firms should coordinate and form associations to educate and train potentials on quality control skills to oversee the quality control in the firms.

**Keywords:** Quality control, quality measures, measures, fashion, clothing industry

## BACKGROUND TO THE STUDY

Clothing is one of the three basic necessities of man, alongside food and shelter (Adu-Akwaboa, 2010). Although clothing is usually prioritized second to food, Nordas (2022) posits that one can go unnoticed without food or shelter for a moment, but without clothing, he or she may be perceived in a civilized world as insane or a mad person. Textile production has been the main pillar around which industrialization in Europe and other countries have evolved. The rationale for this, perhaps, may be due to the fact that the textile industry addresses one of the basic necessities of man, clothing, which is indispensable in life with high demand, and therefore industrialization of the "industry" was in the right direction to develop other industries.

Up until the 1960s, Ghana depended largely on United Kingdom and other European countries for textiles and other manufactured goods. This was due to the fact that the then government of Ghana did not have enough capital and technical expertise to establish and operate large-scale industries. Moreover, even if that was possible,

it was obvious that only the state-sponsored bodies could embark on industrialization in the country. Although the government had the desire and the will to establish profitable and productive industries in Ghana to boost the country's economy, it was extremely difficult to achieve this since establishing large-scale industries is capital-intensive (Osei-Bonsu, 2001).

However, when the government realized the need to raise the standard of living of Ghanaians, it became necessary to initiate strategic economic independence policies by developing an appropriate mixture of import substitution and export-oriented industrial production. This led to the establishment of the various state enterprises which included large-scale textile factories in the early 1960s. The establishment of the Textile Factory was paramount in the government's plans for industrialization in Ghana in the sense that, textile was considered as the most important consumer good around which industrialization in Ghana could

evolve, considering its socio-cultural and economic significance (Osei-Bonsu, 2001).

### Statement of the Problem

The Textile Industry in Ghana has moved from the predominantly large-scale state-owned textile and fabric manufacturing since the early 1960s into a private-dominated garment construction industry. In the industry (including services) besides productivity, quality is recognized as the other important criteria for becoming or remaining competitive in the market. In the Fashion Industry, quality is generally regarded as formal (aesthetic) requirement that can hardly be approached by technical or scientific methods. Fashion industries are undergoing automation using High Technology Equipment (CAD/CAM, robotics, body scanning, colour measurement, membranes, etc.) even in small-scale operations and therefore assessment of quality should also be of high priority to management of these companies.

Quality is of prime importance in any aspect of business. Customers demand and expect value for money. As producers of apparel, there must be a constant endeavour to produce work of good quality. For the textile and apparel industry, product quality is calculated in terms of quality and standard of fibres, yarns, fabric construction, colour fastness, designs, and the final finished garments. Quality control in terms of garment manufacturing, pre-sales and post-sales service, delivery, and pricing are essential for any garment manufacturer, or trader. However, certain quality-related problems, often seen in garment manufacturing like sewing, colour, sizing, or garment defects have been repeatedly reported by customers patronizing the products. The researcher perceives these quality-related problems to be a result of lack of quality control measures in the garment construction industry in Ghana. It is against this backdrop that the researcher is conducting this study to investigate into the quality control measures in the garment construction industry as a case study in Keta Municipality.

### Objectives of the Study

The study seeks to achieve the following objectives:

1. To identify the types of clothing items majorly produced in the Keta municipality.
2. To identify the challenges of the clothing industry in the Keta municipality in Ghana.
3. To find out the extent to which manufacturers of clothing in the Keta municipality adhere to quality control measures in their operations.

### Significance of the Study

For manufacturing firms to remain competitive and relevant in the market, customer satisfaction in the form of quality products must be ensured. This study will have meaningful and significance impact on both academia and industry. Thus, it will contribute to existing knowledge in the Clothing and Textile sector and will serve as a source of reference to students who might be doing a further study into this topic. Findings from this study would be useful in providing information on how to maximise profitability using quality control strategies. Again, this study will provide relevant information to institutions and heads of service providers to identify and meet the expectations of customers.

## LITERATURE REVIEW

### Quality Control in the Clothing Industry

Quality may be defined as the level of acceptance of goods or services. For the Textile and Apparel Industry, product quality is calculated in terms of quality and standard of fibers, yarns, fabric construction, colour fastness, designs, and the final finished garment products (Schmel, 2005). In the Garment Industry quality control is practiced right from the initial stage of sourcing raw materials to the stage of final finished garment. However, quality expectations for export are related to the type of customer segments and the retail outlets. Quality control and standards are one of the most important aspects of the content of any job and therefore a major factor in training.

Quality control is a method that centres on quality and on the long-term success of the organization through the *satisfaction of the customers*, as well as the benefit of all its members and society. (The term “total quality management” covers all elements of the traditionally used phrases and methods such as quality control, quality planning, quality assurance.) The Fashion Industry consists makers and sellers of fashionable *clothing* such as textile apparel (including knitwear), leather products (including footwear, leather goods, gloves, leather garment), and jewellery. From these definitions follows that while quality is associated with functionality and perfection, fashion is governed seemingly by appreciations or perceptions. Product quality is defined by its *rational* features; fashion reflects virtually *irrational* aspects depending on timely valid formal properties.

It has been argued by authors that total quality is an impractical or unachievable concept (Rich, 2008, p.1143). Some consider it to be a hazy and ambiguous concept, which is further confused by the founders of the philosophy. This viewpoint is strengthened by the fact that leading authors, like Deming and Crosby, use different terms while discussing the topic in the literature.

### Product Quality

Although product quality may be described by a set of physical, chemical, comfort, or environmental properties that can be established by appropriate laboratory tests, not all features (e.g. workmanship) can be expressed in numerical values. On the other hand, fashion related characteristics (e.g. form, shape, colour harmony) do not lend themselves for measuring at all. Products of fashion industries are valued by consumers in their integrity, i.e. both quality and fashion are considered – perhaps in different proportions in case of specific products – when purchased. The quality of industrial products has several components playing different roles in appreciating its value, namely:

- *Quality of the construction or structure*: set of product properties built in the design that becomes apparent both in the production process and use (e.g. grain of shoe upper or leather goods, composition of athletic footwear’s soles).

- *Functional quality* expressed by the product's suitability for its intended use, reliability, security, and comfort (e.g. geometry of travel goods vis-à-vis storage capacities, dimensions of shoe lasts, water-vapour permeability of shoes and gloves).
- *Production/execution quality* determined by workmanship and technology precision, absence of faults, realization of the (aesthetic) design (e.g. symmetry of left and right shoes and gloves, evenness of seams and overlaps, finishing consistency).
- *Realization/recognition quality* that plays an extremely important role in marketing of fashion goods (e.g. compliance with avant-garde trends).

As a consequence of specialization and globalization, the value chain is becoming increasingly fragmented and complex, whereas each participant – except ultimate consumers – acts both as buyer (in procuring materials and/or services) and supplier. In this relation quality arguments may arise around *adequacy* (compliance with order specification or sample), *functionality* (fitness for intended use), *reliability* (timeliness, adherence to agreed terms) and *consistency* (similarity within the batch).

#### Quality Assessment

Any definition of quality assessment implies relativity, i.e. quality of products can be described or assessed only in relation with some reference such as specifications, samples, standards, or other similar products. This relation is established by measuring using specific techniques which makes possible the comparison of product characteristics with some references. The task of quality assessment (measuring) is especially complex in case of fashion goods as quite a number of their features are either irrational (e.g. form harmony, colour combination, compliance with trends) or cannot be expressed in numbers (e.g. fit, comfort).

The lack of available objective numerical values for describing the market value of fashion articles does not mean that application of numerical methods would be impossible in determining the value of fashion goods (Schmel, 2005). Schmel further suggests that one of the simplest ways of quantifying all observed or considered properties is to assign *grade values* – the same way teachers evaluate the pupils' performance in schools. Obviously, this approach is applicable for any kind of properties – including those, which cannot be measured by laboratory equipment. It is quite easy to handle properties where the maximum or the minimum or a specific optimum value corresponds to the “best” or “excellent” quality. Similarly, the scale for transferring test results to grades may or may not be linear. The first thing usually opposed in such grading or ranking is the role of subjective judgment. One should, however, not forget that the selected set of properties used for specifications, as well as the requirements or standards – whether they are absolute, relative, desired, or planned –, are not absolute either.

#### Quality Control and Organisational Performance

A considerable amount of the quality control literature has investigated whether there is an association between Quality Control practices and organisational performance. Empirical

studies reveal contradictory findings. For example, substantial research provides empirical evidence that there is a positive association between TQM implementation and organisational performance (Shafiq, 2019; Tan, 2013; Douglas & Judge, 2001)

On the other hand, other work indicates that there is a weak or no relationship between TQM practices and business results, especially financial results (Sadikuglo & Oclay, 2014; Ho et al 2001).

Recent quality researchers support a positive association between quality implementation and organisational performance (Magd & Karyasetty, 2020; Al Shehan, 2019; Joiner, 2017; Sweis et al, 2016). For example, Al Shehan asserts that productivity increases with improvement of quality. Low quality means high cost and loss of competitive position. Similarly, Magd and Karyasetty (2020) state that if you concentrate on making quality certain, you can probably increase your profit by an amount your sales. They also report many success stories of companies which implemented quality improvement initiatives. They argue that these companies have saved millions of dollars by reducing error rates, minimising the cost of quality, eliminating customer complaints, and decreasing material handling costs.

#### The Concept of Total Quality Management

Vedant et al (2018) explain that the concept of Total Quality Management (TQM) represents the timeline of the old and new concepts of quality. The concept of quality has existed for many years though its meaning has changed over years. In the early twenties, quality management meant inspecting a product to ensure that it met with the specification. In 1940's, it became more statistically based, while in the 1960's, quality took a broader meaning and the concept began to be viewed as something that encompasses the entire organisation. Since the 1970's, quality was used as a competition base, with companies focusing more on improving quality in order to be more competitive (Sweis, et al, 2016).

TQM is one of the most important management innovations of the 20th century, and it has more influence on contemporary management practices than any other management movement (Kujala, 2002). According to Shafiq et al. (2019), TQM is a concept introduced by business and industry to establish standards and techniques that ensures the quality of products leaving and reaching firms through continuous action rather than through one final inspection. TQM is a philosophy in its own right embracing many areas. With, high emphasis on training, continuous improvement, loyalty and commitment, teams and quality circles, statistical process control, and Just In Time (JIT) production.

Vedant (2018), views TQM, “as an approach to doing business that attempts to maximize the competitiveness of an organization through the continual improvement of the quality of its products, services, people, processes, and environments”. Furthermore, according to Vedant et al (2018), TQM provides customers with defect-free products and service. Although the ultimate goal is to satisfy external customers, TQM recognizes that it will be difficult to satisfy external customers without meeting the requirements of internal customers as well. Therefore, it seeks to meet or exceed

the expectations of both internal and external customers (Jaca & Psomas, 2015) According to Martin and Saygili (2001: Online), quality is the key factor in improving a company's competitiveness in local and international markets, and for long-term survival. TQM is a state of mind and a philosophy, rather than specific set of procedure or methodology. Moreover, TQM ensures that organisational performance is maximized with the sharing of knowledge within a culture of continual learning, innovation, and improvement (Martin & Saygili, 2001).

TQM refers to the method used to enhance quality and productivity in an organisation (Gunasekaran, 1999 cited by Hughes 2006). TQM is a comprehensive systems approach that works horizontally across an organisation involving all departments and employees including suppliers and customers (Kurtus, 2007: Online). Unlike ISO9000:2000, TQM is not defined by international standards and there is no single correct way to implement TQM processes. It can be an approach to business, or even a philosophy or a state of mind, shared by management and staff (Tannock et al, 2002).

According to Jaca and Psomas (2015), TQM can be defined as a holistic management philosophy that seeks continuously to maximize customer satisfaction and continually to identify and eliminate non-value-adding activities from the organisation. TQM is a management philosophy for continuously improving quality of goods and service delivered through participation of all organisational members; it is a process of making quality a concern of everyone in the organisation (Zealelem & Getachew, 2002). The TQM philosophy emphasises lower costs by reducing waste, helping suppliers provide quality products, and satisfying the customer with quality goods and services. Furthermore, TQM foster organisational performance characterised by competitiveness and long-term profitability (Hansson, 2002). Currently, TQM is an accepted practice within enterprises regardless of size and financial status (Hodgetts, 1996: cited in Hansson, 2002). TQM is considered by many organisations to be a management paradigm capable of facilitating the attainment of continuous process improvement and external focus (Vedant et al., 2018).

According to Psychogios and Priporas (2007), TQM is in contrast to other quality management initiatives. It involves everyone in an organisation and the overall participation to quality strategy brings an increase flow of information and knowledge. Furthermore, it contributes in the distribution of intelligence to the bottom of the organisation for resolving problems (Powell, 1997 cited by Psychogios & Priporas 2007). TQM is an essential way of organising, and involving the whole organisation. (Oakland, 1998 cited by Psychogios & Priporas, 2007).

According to Psychogios and Priporas (2007) citing Dale (1996), the emphasis on seeking improvement opportunities, in addition focusing on planning, prevention, and participation requires the development of generations of managers who are dedicated to continuously improve the internal and the external customer needs.

According to Foster (2001), PDCA (Plan-Do-Check-Act) describes the activities a company needs to perform in order to incorporate continuous improvement in its operations. The concept represents a cycle that consists of a four-stage checklist that coordinates

organisations continuous improvement efforts. The PDCA Cycle is commonly referred to as the Shewhart cycle or Deming Wheel. The nature of this cycle indicate that continuous improvement is never ending process (See Figure 2.1)

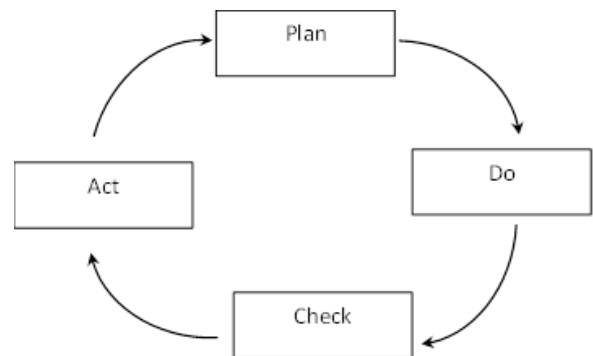


Figure 2.1: The PDCA Cycle  
(Source: Adapted from Foster, 2001)

According to Foster (2001), the four stages of the PDCA Cycle describe the activities an organisation needs to perform in order to incorporate continual improvements in its business processes. The specific steps in the PDCA cycle are elaborated upon:

- Plan: Organisations need to determine where the problem areas are.
- Do: Testing on a small scale in order to check whether the changes are solving the problems.
- Check: Check whether the results from the above testing are delivering the desired improved outcome.
- Act: Once the organisation is satisfied with the outcome of the testing, then it should be implement it on a large scale.

## MATERIALS AND METHODS

### Research Design

In undertaking this research the descriptive research methodology was adopted using a case study approach in examining the quality control measures of the clothing industry in the Keta Municipality. The target population in this study was all small and medium-scale garment/apparel construction companies in the Keta Municipal of the Volta Region of Ghana. However, the study selected the management and operational staff of eight (8) garment manufacturing companies in Keta with a total of 120 respondents sampled for data collection.

The study employed the descriptive survey method for the collection of quantitative data which allows for gathering of large-scale data upon which a basis for interpretation and generalisations can be drawn. The study is a cross-sectional survey taking into cognisance the fact that the researchers are conducting it solely for academic purposes. The study mainly used questionnaire with semi-structured interview conducted occasionally for data collection. This is because the nature of the variables under study calls for both qualitative and quantitative data which are appropriately collected using interview and questionnaire respectively.

The researchers visited the establishments and briefed the management and operational staff on the purpose of the study and its educational implications after permission was sought and granted by the Heads of the establishments involved. The respondents were allowed some time to raise questions about things they did not understand. After the discussion, copies of the questionnaires were distributed to them to respond to at their own convenience. Interview schedules were conducted on separate days in order to ensure objectivity. On the whole, the researchers spent about three weeks for the collection of the data. All respondents responded to the questionnaire. Data obtained from the respondents through questionnaires and interviews were analysed in relation to the research questions.

**RESULTS AND DISCUSSIONS**

**Objective One: To identify the types of clothing items majorly produced in the Keta municipality.**

Table 1: Type of clothing items produced

Type of garment manufactured	Responses		
	Frequency (f)	Percentage of responses (%)	Percentage of cases (%)
Ladies' wear	58	22.7	48.33
Gents' wear	65	25.4	54.17
Children's wear	103	40.2	85.8

Smocks	12	4.7	10
Suits	18	7.0	15
<b>Total</b>	<b>256</b>	<b>100.0</b>	<b>213</b>

Table 1 presents responses on the type of clothing items manufactured by the fashion establishments or organizations sampled for the study. From Table 1, it is seen that 58 respondents representing 48.33% case-wise, responded that they produced ladies' wears. Again, 65(54.17%) of respondents said they produced gents wears. A further look Table 1 reveals that 123 respondents representing 85.8 percent indicated that they produced children's wears. The surge in this number is attributable to the fact that almost all respondents who reported to produce exclusive ladies' wears and gents wears also likely selected children's wears. This indicates that the shops which dealt with female garments dealt in both female adults and children and similar holds true for those selecting gents/male garments. This confirms the assertions of Textiles Value Chain (2021) and Horyn (2012) that children wears are abundant on the global world because of the growing population of children in societies.

A critical look at the Table 1 shows that most of the establishments produced single-sex garments for adults and kids with only a few producing for both sexes and both young and old. It is, therefore, viewed that majority of Fashion Designers have learned only single-sex wears manufacturing than both sexes in Ghana because of gender issues related to culture and tradition as similarly supported by Richards (2022) and Allyson (2015).

**Objective Two: To identify the challenges of the clothing industry in the Keta municipality in Ghana.**

Table 2: Challenges faced by garment manufacturers

Variables	SD		D		N		A		SA		Mean (x̄)
	F	%	f	%	f	%	f	%	f	%	
Buildings and machine infrastructure are not up to standard	12	10%	23	19.2%	18	15%	47	39.2%	20	16.6%	3.14
The machines used are inadequate	17	14%	22	19.6%	21	17.4%	25	21.1%	34	26.6%	3.30
The machines used are obsolete	15	11.2%	16	13.1%	18	15.0%	34	29.9%	36	30.8%	3.72
Difficulty in getting good raw materials	19	15.8%	51	42.5%	14	11.67%	16	13.33%	20	16.67%	1.67
Poor packaging	49	43.9%	32	26.2%	9	6.5%	13	11.2%	15	12.1%	2.12
Poor demand of locally made clothing	16	13.2%	25	21.7%	29	24.5%	27	22.6%	22	17.9%	3.08
Ineffective marketing strategies	27	22.5%	37	30.83%	18	15%	27	22.5%	11	9.2%	1.27
Financial constraints and access to credit	18	15%	26	22.4%	19	15.9%	31	26.2%	25	19.6%	3.91
Lack of proper machinery to check quality	20	16%	20	16%	16	13.2%	32	27.4%	32	27.4%	3.44
Lack of technical know-how in garment quality control	36	33.6%	21	19.6%	16	15.0%	22	20.6%	12	11.2%	2.94
Stiff competition from imported products	18	15%	30	22.4%	28	26.2%	19	15.9%	23	19.6%	3.85

Table 2 presents data on the challenges faced by garment manufacturers in the Keta Municipality. It is seen from Table 2 that, the following variables constituted challenges for garment

manufacturers in the Keta Municipal. The variables are listed in order of their computed mean values. Financial constraints and access to credit (x=3.91), stiff competition from imported products

( $x=3.85$ ), machine obsolescence (3.72), lack of proper machines to check quality (3.44), inadequacy of machines (3.30) and buildings and machine infrastructure not up to standard (3.14) all received mean values above the computed mid-point mean. A closer look at the table reveals consistently higher 'agreement' values (SA + A) over 'disagreement' values (SD + D). From the challenges listed, it is seen that the dominant theme among the challenges is machine infrastructure and access to funds. These were observed because funding is related to the acquisition of machine infrastructure. This clearly manifests in Ntiri and Mintah (2016) and Marcoo et al (2013) contention that the major challenge faced by Ghanaian local textiles industries is lack of capital to enable them acquire the necessary tools and materials to produce quality designs and cloths.

**Objective Three: To find out the extent to which manufacturers of clothing in the Keta municipality adhere to quality control measures in their operations**

Table 3: Quality checks performed on garments within the production process

Responses	Frequency (f)	Percentage (%)
Uneven neck shape	12	10
Broken and missing stitches	33	27.5
Unsecured buttons	17	14.2
Untrimmed threads and fabrics	24	20
Double stitch	26	21.7
Poor ironing	8	6.6
Total	120	100.0

The data presented in Table 3 indicate that the most often checked quality defect in garment construction among the fashion establishments in Keta Municipality is broken and/or missing stitches. This option received 33 responses representing 27.5%. The next quality defect frequently checked for by garment manufacturers is double stitching. It was later revealed after enquiries from respondents that, the reason for the apparent over-fixation on stitch quality is that the single attribute that mostly affects the finishing and quality of garments is the stitching or seaming. Broken or missing stitches easily reduce the lifespan of the garment whilst double stitching mars the aesthetic appearance of the finished garment.

Apart from stitching, untrimmed threads and fabrics and unsecured buttons were also considered important quality aspects in the manufacture of garments. To this end, untrimmed threads and fabrics received 20% of responses whilst unsecured buttons received 14.2% of responses. Other quality attributes which were checked by the fashion establishments were uneven neck shape which received 10% of responses and poor ironing which received 6.6%.

From the foregoing, it is seen that clothing manufacturing organisations or establishments in the Keta municipality actually

conducted quality checks on the finished products before they are packaged to the market for customers. In other words, Sarkar (2012) supports that quality checks done on Textile Apparel improve quality products and Hamzawy (2017) expresses further that inspection methods on finished textile products enhance good sales and build a cordial relationship between producers and customers.

### CONCLUSIONS

The researcher made various conclusions from the results of the study. The following are some of the conclusions made:

- Most of the employees in the garment construction sector received their training through apprenticeship and hence the notion of quality control was given to them in an informal sense which stressed less on its importance.
- Various challenges hindered the adherence of clothing manufacturing companies to quality. Chief among these challenges were machine obsolescence and inadequacy, poor demand for locally made clothing, and difficulty in getting good raw materials.

Organisations did not expressly measure customer satisfaction through rigorous processes which stifled their improvement in quality for the customer.

### RECOMMENDATIONS

From the findings of this study, the researcher wishes to make the following recommendations to stakeholders in the industry to ensure the highest standards of quality in garment construction:

- i. Garment construction firms such as dressmakers association, tailors association, and fashion designer associations should come together and form associations to educate and train their human resource on quality control skills in the firms.
- ii. Managers of clothing construction firms must endeavour to employ personnel skilled in the art of quality to be in charge of quality control i.e. a quality control officer.
- iii. Clothing manufacturers such as production managers should develop schemes that will enable them to measure customer satisfaction.
- iv. Production managers or supervisors must conduct periodic refresher courses/training for their staff to improve on their knowledge in quality assurance.
- v. The government should provide a legislation to ease the access of credit facilities of garment manufacturers for them to acquire state-of-the-art machinery that will lead to improvement of quality in their products. This will encourage more investors to invest in the sector since the sector will be perceived as viable and sustainable.

### Suggestions for Further Studies

To future researchers who may wish to conduct studies into similar area as that of this study, the researcher suggests that the study area should be expanded to cover a wider geographical area in order to make the study truly generalizable. Again, future studies can be conducted to check the quality practices in the textile manufacturing industry since they are the providers of the raw

materials for the Garment Industry and as such, any quality loophole in their production ultimately affects the quality of finished garments at the garment manufacturer's end.

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