Academic Journal of Business & Management
ISSN 2616-5902 Vol. 2, Issue 4: 92-99, DOI: 10.25236/AJBM.2020.020411

Custom and Ordinary Clothing Enterprises

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ABSTRACT. *The article tends to explore the differences in the business and control between the two categories of clothing enterprises, with specific consideration of the technological impact on these changes. The significant difference was the introduction of a computer for automation in the early phases of industry 3.0. Industry 4.0 is associated with the introduction of smart machines and production facilities capable of autonomously exchanging information and triggering actions and control without interventions of human beings. The industry 4.0 textile enterprises have extensive use of computer software for designing, and the software is fast, efficient, and quality-oriented. It means that the development will be streamlined, and few designers are needed. Hence, the customized system has optimized as opposed to the traditional method.*

KEYWORDS: *Clothing Enterprises, operating system, management strategies, technological transformation*

1. Introduction

The industrial revolution has dramatically impacted the manufacturing system over the decades. The shifts in different manufacturing specifications call for more complicated management strategies since sticking to a single management style in a transited industry implies failure. One cannot apply the management strategies that were used in the 1970s and expect it to be viable in this era of technological advancement. Every revolution in the industrial sector calls for change in the entire operating system of the organization. Industry 2.0 and 3.0 are associated with the initiation of technological transformation, where their aim aimed to make work easier (Sheth, 2019). The significant difference was the introduction of a computer for automation in the early phases of industry 3.0. Industry 4.0 is associated with the introduction of smart machines and production facilities capable of autonomously exchanging information and triggering actions and control without interventions of human beings (Roblek, Meško, & Krapež, 2016). Due to this, the design, quality control, marketing, logistics, and product characteristics of the two phases are different. Also, the management of the processes and the procedures of product development are not similar. The article tends to explore the differences in the

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business and control between the two categories of clothing enterprises, with specific consideration of the technological impact on these changes.

2. Product design and development

The design process in textiles involves designers in several activities, such as the decision of what to design by controlling or programming and creating different sample specifications up to control of the storage systems for the designs. In either industry, the design process is investigative, decisive, rational, and creative (Bae & May-Plumlee, 2016). One must, therefore, be able to conduct research and generate ideas before developing the product to get a new design. There is a secure connection between the design process and the design products. Creating designs from the perspectives of limited knowledge and materials results in constrained products, and it is due to the difference in the tools that are applied in the designing process, for instance, the application of different computer software.

The essential thing is understanding the relevance of the tools to the final product and the development of the product. In any textile industry, design and product development are the essential features that determine the outcomes of the entire process (Bae & May-Plumlee, 2016). There is a vast difference that exists between the customized textile industry and the traditional textile industry. The industry 4.0 textile enterprises have extensive use of computer software for designing, and the software is fast, efficient, and quality-oriented. It means that the development will be streamlined, and few designers are needed. Hence, the customized system has optimized as opposed to the traditional method.

Consequently, in the traditional model, complexity in the product design increases the chances of increased failure (Nilsson, 2014). The reason behind this is the lack of diversified elements of design as in the customized systems. In the traditional textile industry, there is a possibility of producing what is not customer-friendly since the design and development are all focused upon the prediction that will follow down to the final product. The color, pattern, selection of fabric, and version of the products in the traditional system is wholly dependent on the designer with minimal consideration of the customer. On the other hand, there can be a similar prediction on the customized model, but the final design decision lies with the customer. The flexibility with which the customized model presents itself limits the degree of failure. Also, based on the above argument, it is noteworthy that there is a significant workload within the traditional sector as opposed to the customized industry. For instance, the material's adaptation and customization ability and expression to fit a given design of a product are under modern exploration, which results in the creation of 3D and smart textiles. Comparing this to conventional textiles, structural modeling is not entirely tied to any specific technique (Wilson, 2001). Different material sections can be made to differ significantly and has the potential of including more than one type of raw material with different physical properties. Combination of the possibly printed 3D designs is currently researched upon, since the new software is coming up in the 4.0 industry, such as the use of the 3D CAD software. Another undeniable model is the Kinematics Dress venture of

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Nervous System, which has a triangular plate structure in solid acrylic plastic, with interfacing joints that encourage the ability to drape and develop in the material (Nilsson, 2014). The specific development of the 3D printed material is altered for every individual who arranges the dress; the blend and size of the parts are accomplished utilizing a calculation that uses a body output of the individual who will wear the piece of clothing. It, therefore, means that the significant difference in the two models is presented by the efficiency, time management, and risk reduction capabilities.

3. Production quality control

The services and products offered should be at a position of meeting and even exceeding the customer's expectations based on the efficiency, durability, ease of use, comfort, and performance. Noteworthy, there must be consistency in quality, and there should be resources meant for supporting and implementing those activities strictly related to the management and control of quality (Sizwe & Charles, 2017). Quality management in the textile industry is entirely concerned with inputs fed in the clothing making process, the worker's skills, and the presence of adequate sewing machines capable of having quality thread sewing. It is a rewarding practice by the consumers, especially when they receive quality clothes. Also, in all enterprises, success is determined by the ability to provide and maintain acceptable quality standards. In the traditional mass production of textiles, the computer-aided design systems were applied as a confirmatory test in the raw material before it is fed into the process. There are factors on which quality fitness of the garment industry is based on such as – durability, performance, visual, and the garment's perceived quality and reliability. Notably, the definition of quality should be based on a specific cost framework.

In the traditional mass garment production, quality control is carried out in four stages; CAD confirmation, garment sample conformation, pre-production confirmation, and pre-shipment confirmation. The reason behind this is to ensure consistency in the product at every step to avoid any mistakes or unwarranted loss (Sizwe & Charles, 2017). Application of CAD confirmation is due to its fastness, ability to reduce duplication and cost reduction ability. In CAD, the mathematically processed samples are integrated within designing software whereby the fitness of the sampled species is checked. It implies that the process of CAD is a combination of a given designing software and a computer system to create a dependable and quality product. It entails geometric model definition, translator definition, an algorithm of the interface, an algorithm of the design and analyzing, detailing and drafting, and documentation.

On the other hand, in customized mass production, the engineering designs are transformed into end products using the implemented computers. The geometric model and interface algorithm are similar to those applied in the traditional model, with a little advancement in the compatibility. Moreover, in the customized model, error in quality is unavoidable since the products have a lot of unique features, and quality checking is randomized. Also, due to limited resources in most traditional

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models, quality control processes such as PDCA (Plan-Do-Check-Act) Cycles, fishbone diagrams, scatter plots, brainstorming, flow-charts, trend –charts, and Pareto-charts are applied.

In effect, it means that the batch quality in the traditional model is quite stable since quality is confirmed throughout the lifeline of the product generation. Final product digital simulation in the customized clothing industry is the basis for avoidance of error in the 4.0 sectors. The reason why the traditional garment processing industries were so strict on quality in every step of production was to limit the possibility of loss, which become severe. As opposed to the old models, industry 4.0 has the unique ability to have the losses controlled. Additionally, either the two cases, international quality recommendations such as ISO 2859, is applied to ensure alignment with conformity, measurements, and quality.

4. Marketing

Marketing of the products in either form of the industries relies upon the preference of the customers and the trending demands (Ahmed, Kabir, Uddin, & Ferdous, 2014). Every passing season presents a unique request for designs, and it upon the management of these organizations to conduct a market survey and understand the requirements of their potential customers. In the traditional model of marketing, a lot of advertising and marketing strategies were employed to have a great capture of the market and customers. The marketing strategies were aimed at selling the design concept and the styles that could match the need of the population served. Therefore, before any launch of a new design, it is apparent to understand what the customers require. They mostly employ either of the four models; direct mail, print, broadcast, and telephone (Bae & May-Plumlee, 2016). These models are used since they can reach many people at a go, and they can be formulated to fit the description of the industry. Also, the mode that the organization will employ in marketing will depend on their advertising budget.

In traditional marketing, media is almost applied at all times since it is easy to sell brands and tell the prospected customers what is available for them. In other words, traditional textile industries sold out what they thought could be appreciated by the customers. Market trials are determined by the response of the customers towards a given design. Consequently, the customized models of marketing are advanced, and they rely on the customers to create the product that they need (Giri & Rai, 2013). For instance, they use social media groups such as Facebook, WhatsApp, and Tweeter to encourage interactions with the customers. During these interactions, they learn what the customers require, and they use that to produce their designs or improve the designs. It implies that marketing is based on the design quality since there are many designs with different tastes and preferences amongst the customers.

Noteworthy, reliance on social media marketing and using the customers as the final developers of the product in the customized textile industries means they will need a few salespersons (Wang, 2019). Online marketing is entirely opposed to

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traditional marketing, where one must back up with non-media offline stores since it involves getting the information directly from a prospected customer. This method is beneficial, even to the production and designing, since it reduces the incidences of failure once a product is processed. In the customized textile industry, non-media publicity helps in the expansion of the turnover, for instance, provision of customized uniforms for enterprises, public institutions, or schools that need to wear a uniform (Ge & Li, 2019). Also, offline store establishment creates experience stores, which still support seeing the real products and make necessary adjustments based on the consumer's individual preferences, before making orders on the customized online platforms. Discursively, customized marketing helps in the realization of a broad, flexible, and dependable market scheme that aims at limiting the occurrence of market failure but improving the profit margin.

Also, the marketing of the products in the two phases of the textile industry can be viewed in terms of storage capacity (Ahmed, Kabir, Uddin, & Ferdous, 2014). A large amount of business space is needed in the traditional textile industry model since production is inconsiderate of the possible customer reactions. They produce to satisfy their production capacity, which is subject to the constraints of cost. Lack of physical operation space is never an issue in a customized system since more ideal operation spaces can be improvised using proper operations. However, the textile industry is faced with great opportunities in mass customization, which is a new model of the product (Dong, Dong, Li, & Jia, 2012). Through this, there is increased customer awareness satisfaction on the quality and the demands of the product functionalities; thus, low cost and short time lead. It is evident that the textile industries, irrespective of the operation mode, produce the necessary commodities. Contrarily, the diverse elements of fashion provide ample space for customers to choose their preferred color, fabrics, brands, and drapes. Therefore, the production system should be considerate of their customers' capabilities and preferences based upon their mass production and economic scales.

5. Product characteristics and production management

In any given mode of manufacturing, the distinguishing features are the product characteristics. Also, it is the characteristics that will influence the style of management that the organization administration will apply (Cho & Jin, 2015). In the traditional mass textile production, size is one of the most sensitive characteristics of their products. They produce different product sizes whose quantity is predicted by market demand. The market demand cannot have the same size. It is this that partly explains the variation in the product sizes in the traditional products. To ensure uniformity in the product's size, both the textile models use the small (S), medium (M), and large (L) connotations. The S M L implies that at least everyone in the market is considered (Cho & Jin, 2015).

The market demand never affects the customized models since they can produce the parts of a whole product as they wait for different tastes and preferences by the consumers. Having these products' components in place is essential as the delivery period can be shortened (Berra, Piatti, & Vitali, 1995). The phenomenon behind the

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shortening of the delivery period in the customized models is the fact that the production process will not start from scratch. It is easy to combine available parts to form a complete product. Therefore, the customized model is more efficient when it comes to meeting the demands of the customers and responding to the quick requests of the customers.

Also, since the traditional model is concerned with the design style, it means that the quality of the design is under minimal consideration (Sizwe & Charles, 2017). Once the quality of the material is ascertained, the traditional models ensure that the fundamentals of the design are met. Depending on the specification of the consumer, the classic models will strive to meet these expectations. It means that the basic configurations such as texture and structure will be uniform, with some little disparities in the design, especially when it is complicated.

Moreover, in the traditional model, the process is characterized by energy conservation since industry 2.0, and 3.0 operates under the intense application of energy (Pal, 2017). The design of the product is made in a manner that will ensure the efficient utilization of energy. Also, energy applicability should be geared towards the use of environmentally friendly procedures. Notably, customized designs assume a lot of design capabilities and applications since they should comply with the technological changes and include artificial intelligence. The rise in green manufacturing in textile and apparel is resulting from the earth's inability to maintain the resilience of balancing the natural capital and human expectations. This trend characterizes customized products with eco-friendliness and sensitivity to environmental health.

Process management in either form of the industry will require prerequisite knowledge on the processes ongoing on the plant. In the traditional model, management is based mainly upon ensuring every person does his part to ensure the final product is of the desired standard. Human resource management is at its peak since the firm contains many people working around to ensure the process goes into completion. Contrarily, the customized system requires control of the system and the connection that exists in the electronic space. Poor management of the machines and the technology is costly. Since customization involves an input of the customer, the administration works to ensure their relationship with the customer’s remains objective at all times. However, this does not dismiss the fact that process management for quality products should be overridden in an attempt to have the system maintained electronically.

6. Logistic inventory

The textile and apparel applying the traditional model of production use low costs of logistics in the process (Basu, 2011). The predictions are made within the walls of the organization with minimal consideration of the consumers' say. Also, the operation lines of the industries applying the traditional model is almost similar every day, and this means that there is little logistics needed to meet the demands. However, the cost of inventory is high due to subsequent processes that require

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maximum utilization of all departments (Giri & Rai, 2013). The bigger the workforce, the higher the cost of inventory. Noteworthy, in the customized models, meeting the expectations of the customers require the employment of many strategies to have all their needs met. The development of logistics is costly, but the workforce and resources needed are minimal. It is this that creates less cost of inventory (Giri & Rai, 2013). Delivery is made upon request, and this implies that the list can be quickly followed. The traditional system has an immediate store delivery, with short online delivery cycles. Once the stock available is depleted, it takes time to meet the demand of the consumers, since designing, coloration, and raw material acquisition takes time. On the other hand, in customized models, running out of stock is hard, but this does not negate the fact that the logistics period is long for both online and physical store delivery.

7. Conclusion

Conclusively, technology has played a significant role in the textile manufacturing industry, and the shift is projected to increase as long as the advancement in technology remains. It is noteworthy that technological advancements push the sector's shift to a more customer-based one. The designing software being created currently links the industries with customer specifications. Also, in the process of analyzing the real difference between the two models of textile industries, quality control, and management is an essential factor of consideration. A lot of wastages in either the companies occur when quality is not met, especially during raw material confirmation and specifications. Therefore, the implementation of quality control measures and other information technology systems in process management help in reducing errors and production cost. However, this study leaves a broad scope for future research on the relevance of models on the current fight for ensuring green manufacturing procedures.

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