SUSTAINABLE FASHION STRATEGIES: A STUDY APPLIED TO THE DEVELOPMENT OF CLOTHING PRODUCTS

ESTRATÉGIAS SUSTENTÁVEIS DE MODA: UM ESTUDO APLICADO AO DESENVOLVIMENTO DE PRODUTOS DE VESTUÁRIO

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Key Words
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Palavras Chave
Sustentabilidade; Indústria do vestuário; Desenvolvimento de produtos

ABSTRACT

The current productive methods and the exaggerated consumption generate a socio-environmental crisis to the planet. However, industries gradually seek to incorporate sustainable practices in order to meet the needs of new consumers who are concerned with environmental and social issues in product consumption. Therefore, the present study have as an objective to identify how sustainable strategies contribute to the development of clothing products that reduce environmental impacts. For this study, a systematized and exploratory review was used, through bibliographic research, with the application of qualitative methods. Finally, we present sustainable strategies related to the product methodology that provide the reduction of harm caused to the environment by the production and excessive consumption of garments.

RESUMO

Os métodos produtivos vigentes e o consumo exacerbado geram uma crise socioambiental ao planeta. No entanto, gradativamente, as indústrias buscam a incorporação de práticas sustentáveis a fim de atender às necessidades dos novos consumidores que se preocupam com questões ambientais e sociais no consumo de produtos. Diante disso, o presente estudo teve como objetivo identificar como as estratégias sustentáveis podem favorecer o desenvolvimento de produtos de vestuário reduzindo, assim, os impactos ambientais. Para o estudo, foi utilizada uma revisão sistematizada e exploratória, por meio de pesquisa bibliográfica, com a aplicação de métodos qualitativos. Por fim, observou-se o surgimento de novos conceitos que buscam a redução dos malefícios causados ao ambiente pelos processos produtivos da indústria de vestuário.

1. INTRODUCTION

The socio-environmental crisis generated over the years by the current industrial production methods and over-consumption, which aim primarily at economic growth, gain new perspectives with the emergence of the concept of sustainability applied to production processes and ways of consumption.

As a result, industries increasingly seek to integrate into the sustainable market, moving towards practices that reduce environmental and social impacts, a need accentuated by the presence of new consumers who are concerned about the damages that their consumption can cause to the environment and society in general (GWILT, 2014; REFOSCO et al. 2011).

Clothing industry has shown greater concerns regarding the damage caused to nature and social welfare, seeking to gradually integrate sustainable practices in its productive processes that combine the individual characteristics of fashion products with the concepts of sustainability (GWILT, 2014). Thus, the present study aims to identify how sustainable strategies contribute to the development of clothing products that reduce environmental damage.

2. SUSTAINABLE FASHION

Fashion products are defined as items that combine properties of creation, quality, dressability, appearance and price, following the needs and desires of target consumers (RECH, 2002). The production process of these products begins in the production of raw material and goes through several stages until reaching the final consumer, which, despite guaranteeing employment opportunities for various sectors of the economy, can influence the system to become unsustainable (BERLIM, 2012; FABRI; RODRIGUES, 2015). However, practices and movements gradually emerge in order to minimize the impacts generated by the textile and clothing industry, such as: eco-fashion, ethical fashion and slow fashion.

The concept of eco-fashion presents the use of organic raw materials, that is, produced without the use of pesticides and pesticides. This idea is considered as essential for sustainable practices in the garment industry, since the textile raw material has several impacts such as: "climate change; Adverse effects on water and its cycles; Chemical pollution; Loss of biodiversity; Excessive or inappropriate use of non-renewable resources; creation of waste"; and others (FLETCHER; GROSE 2011, p. 13).

Also in relation to the textile raw material, scientific research is made in order to find solutions that minimize environmental, social and ethical problems. Consequently, several materials are considered as having low environmental impact, biodegradable and recyclable are created (GWILT, 2014). Therefore, the relevance of the use of textile fibers in the making of clothing is emphasized, since the impacts generated by the production of these materials are extremely negative for the environment.

The concept of ethical fashion demonstrates the concern with environmental and social aspects, seeking to ensure the well-being and health of consumers, as well as employees inserted in the production chain (SALCEDO, 2014). Thus, it aims at minimizing environmental impacts and maximizing positive effects for society in general, focusing on reducing poverty, as well as creating a sustainable lifestyle (ETHICAL... 2016). According to Rodrigues and Fabri (2016, p. 7), ethical fashion must influence consumers in such a way that they will obtain a global understanding of the productive chain of the clothing industry, which "can cause great social, environmental, economic, cultural, ecological, educational and spiritual transformation".

Consequently, it is observed that the concept of ethical fashion values reducing negative impacts on the environment by increasing the benefits to society in general and nature supporting sustainable lifestyles. This way, it helps the transformation of the consumer's vision towards the productive chain, from the acquisition of raw materials to the consumption and disposal of clothing products.

The slow fashion movement in its fashion sector represents a perception of sustainability based on values and goals that want to change the structure of production of fashion articles, as well as a reduction in the volume of goods produced. It is also observed how organizations are producing, how they structure supply chains, and the product development process (FLETCHER, 2010; JOHANSSON, 2010).

Therefore more sustainable production processes that respect the environmental conditions and the professionals involved and value local production influence production to occur in a slower and controlled way, valuing the region's manpower and material resources.

2.1. Product development: processes and design stages

The design process involves all stages of a project, from the recognition of the problem, its analysis and creation of alternatives to the solution, the product design, the development, and finally, the viability in the market (FONTOURA, 2002; LÖBACH, 2011). So, in order for all phases of product development to be carried out in an

appropriate manner, it is necessary to use process-related parameters, in example the use of the project methodology (MARTINS, 2004).

Fontoura (2002) points out that in addition to methodology, the design uses methods and techniques both in theoretical production and in the practical development of projects. The method presents the recommendations for solving the problem, the methodology helps the designer to define the sequence of what should be done and in what moments, and the techniques are considered as the specific procedures that should be used.

Löbach (2001) presents a sequence for the design process, which is divided into four phases, which can overlap one another in the process. The initial step is called *analysis of the design problem*, in this stage the problem to be solved is recognized, in order to collect the greatest amount of information about the problem. This information is analyzed so that define the problem and its clear visualization. In the second phase the *generation of alternatives* is performed, that is, ideas are produced based on information already acquired. At this step first the choice of the methods for the solution of the problems is made, and consequently, the alternatives are generated.

The third phase represents the *evaluation of the alternatives*, with the comparison of and selection of the most plausible alternative. In the last stage the materialization of the established alternative occurs, or the combination of the best characteristics of different alternatives, that is, *the problem's solution*. At this step the designer reviews and perfects the idea, elaborating it in the smallest detail (LÖBACH, 2001).

Baxter (2003) presents four stages pertaining to the development of new products. The process begins with a market test presenting the initial ideas, in the form of a drawings presentation, for a portion of potential consumers and sellers. Then, it presents the stage of "specifying the opportunity, specifying the project and then turning to the conceptual project to select the best concept" (BAXTER, 2003, p. 15).

In the third phase a second market test, similar to the initial one, is carried out, which will indicate if the results were satisfactory to start the configuration of the product. If there is a need for a technical change, it will be necessary to take a few steps backwards in order to verify the viability of the product again. With the approval of the product, detailed drawings are made to assist in its manufacture and construction of the prototype and with the final approval of the prototype, the production and commercialization of the product begins (BAXTER, 2003).

Consequently, it is observed the relevance of the methodology for the product development process, since this will lead the designer to follow steps that focus on guaranteeing more clarity in the process, and a reduction of risks and uncertainties.

3. METHODOLOGY

This study focuses on the perspective of sustainable strategies in the development of clothing products. The delimitation used was the systematized and exploratory review, through bibliographical research. Qualitative methods were used to analyze sustainable strategies and their insertion in the development of clothing products through methodologies, in order to obtain perceptions that favor the understanding of the relevance of sustainable practices for the design of garments, based on literature.

The knowledge of the stages of the design process, methodology and strategies are directed to the development of clothing products, as well as their interrelationship with the consumption of these products, present parameters for theoretical discussion and proposition of actions that optimize the insertion of sustainable strategies. The results and conclusions can contribute to the insertion of sustainable strategies, aiming to optimize the product's life cycle.

With this, it is verified that identifying how sustainable strategies are inserted through methodologies in the development of garments contributes with the research focused on the minimization of environmental impacts occurred with the excessive consumption of clothing.

4. RESULTS AND ARGUMENTS

The implementation of innovative strategies in the apparel industry seeks to minimize the use of resources, the choice of processes and raw materials with low impact, the improvement of production techniques and distribution methods, as well as the product's life span (GWILT, 2014). According to Niinimäki (2011b), sustainable fashion must take into account the phases of design, manufacturing, logistics, sales, use and disposal, implementing strategies that increase the time of use of the product, ensuring that it can be modified, and if the raw material can be recycled, sustainable strategies to product development of clothing will be presented and afterwards these will be related to a product methodology.

The importance of the implementation of strategies that mainly guarantee greater interaction between product and consumer, creating an emotional bond, and thus, influencing the increase of the useful life of the products,

is emphasized. Among them, we highlight Open design and Co-creation, Customization, Upcycling, Modular Design and Sharing. Each of these strategies, among others, is discussed below (Table 1).

Table 1: Sustainable strategies applied to clothing industry

Strategy	**Characteristics**
Open design and co-creation	Interference of stakeholders in product development, with direct involvement of consumers in the creation.
Customization	It seeks to satisfy the needs and desires of the largest number of consumers, guaranteeing the creation of emotional ties between product and customer.
Upcycling	Development of products by means of leftovers of fabrics and objects, through reconstruction or the insertion of decorative flaps.
Modular Design	Creation of products from the combination of small components, ensuring that consumers can modify their products.
Sharing	It aims at the use of a single article by several individuals.

Source: Adapted from: Eichentopf, 2011; Ferronato and Franzato, 2015; Morais et al. 2012; Blecker et al. 2004; Salcedo, 2014; Gwilt, 2014; Ferreira et al. 2012; Martins, 2002; Karell, 2011; Fletcher and Grose, 2011; Gimenez and Carvalhaes, 2016

The concept of open design evidences the co-creation of value to products through the involvement of stakeholders in the product development process, such as suppliers, consumers and commercial partners (FERRONATO; FRANZATO 2015). To Eichentopf (2011), the idea of co-creation arose from the recognition of a role change of consumers who were passive to active individuals. And so, they have influenced the emergence of conception, engaging in various stages of the value creation process. In the face of involvement and satisfaction, consumers use their products for a longer period of time, and become loyal to brands and contribute to the slowdown in consumption and to sustainable business (NIINIMÄKI, 2011a).

Thus, it is observed that the co-creation inserted in the fashion industry brings benefits to consumers, who can help in the design process by inserting their preferences and desires in the products, contributing to the increase of the user's commitment to the product, and to its life span extension.

The customization strategy is associated to the concept of adaptability, allowing the consumer to intervene in the configuration of the product, from which the term Do it Yourself (DIY) is derived, which promotes the self-production of clothing, involving the consumer and the product creation process (MORAIS; CARVALHO and BROEGA 2012). In addition to this strategy, there is the concept of mass customization, which aims to satisfy the individual needs of as many consumers as possible, differing from mass production (BLECKER et al. 2004).

The introduction of mass customization in industries has three main motivations: free and dynamic global markets; market fragmentation; and gradually the shorter product's life cycle. (RUOHONEN; RIIHIMAA and MÄKIPÄÄ, 2003). In this way, it is believed that the main factor that links the strategy to sustainability is the increase in the useful life of the products through the creation of emotional ties between the product and the consumer, which guarantees a greater commitment between both, opposing the conception of programmed obsolescence (SALCEDO, 2014).

In design with sustainable approaches, adaptability is one of the strategies used in order to increase the efficiency of products and consequently their total time of usage, ensuring a greater use of items in different situations. In addition, it can be seen as a motivation to make the consumer more active, taking into account their interaction with the product, by changing their forms (FLETCHER; GROSE, 2011).

Linked to this strategy is the modular design, which is defined as the strategy of building systems or products from the union of small components, which can be developed separately, but which function as an interconnected assembly. When adapted to fashion, the modular design offers pieces of clothing that can be modified by consumers (MARTINS, 2002; KARELL, 2011).

Through its fickle characteristics, modular clothing provides users with a vision of clothing renewal, without the exchange of parts, ensuring an increase in the time of use of the product (KARELL, 2011). Thus, modularity allows consumer's participation using their creativity, their desires and needs to change the different pieces of clothing, which can help generate durable satisfaction (FLETCHER; GROSE, 2011).

Therefore, modular clothing can be understood as a strategy of adaptability in clothing, in addition to offering an interaction with its users, increase their ways of use and time of usage, thus ensuring benefits to the environment and influencing the possibility of new ways of consumption.

The upcycling concept refers to the technique of extending the value of a product that would be discarded. Articles produced through upcycling improve the use of materials, or of the product itself, differing from recycling, which may promote the devaluation of articles (GWILT, 2014).

Upcycling can be applied through the development of new pieces of clothing using fabric leftovers or objects, fixtures, and by means of reforms or insertion of decorative flaps into existing articles. The entire process, from the separation and choice of materials to be reused, through preparation for use, until it becomes a new raw material, demands a long period of time, which consequently increases the cost of the products (GWILT, 2014). Despite of the high cost, pieces produced by this technique provide a "new integration into the daily life of different individuals based on one's lifestyle" (FERREIRA; BROEGA and PROVIDÊNCIA 2012, p. 4).

In this way, it is noticed that the upcycling aims at increasing the lifespan of materials, giving them greater value, taking into account that the waste from various industries, especially the textile sector, receive a new utility and contribute to sustainability in fashion industry.

Sharing strategy emerged with the Great Recession of the United States in 2008 that was seen as an alternative to the economic crisis that promoted new forms of consumption that guaranteed extra income to those who offered the services and lower prices to those who purchased them. The concept of sharing emphasizes the idea of a correlation between users, that is, a collective action, which influences the dialogue "against hyperconsumption, accumulation of possessions and irresponsible disposal of products" (GIMENEZ; CARVALHAES, 2016, p. 4).

The sharing strategy is also seen as a way to increase the lifespan of products as well as their use, since a single item can be used several times by different people, considered as such, a practice favorable to sustainability (MANZINI; VEZZOLI, 2005). Sharing is considered then as a sustainable strategy for the sector of the garment industry, since the concept seeks to combat the exaggerated consumption of clothes through the collective use. It is also worth mentioning the need for the practice to be popularized among consumers so that they are aware of its advantages in relation to cost and sustainable issues.

In regards to the application of the presented sustainable strategies it is imperative that a methodology for the development of products is used, since the viability of the insertion of these tools must be evaluated from the beginning of the creation process.

Combining the methodology presented by Löbach (2001), divided into problem analysis, generation of alternatives, evaluation and solution of the problem, with the strategy of open design and co-creation, it is observed the relevance of the use of the methodology from the initial phase to the product development, since consumers are involved in all stages of creation, and thus, with the use of a sequence of what must be done, the process becomes clearer and safer.

In order to introduce the customization strategy, it is understood that consumers' opinions, needs and desires must be taken into account throughout the creation process, thus, the evaluation phase proposed by Löbach (2001) and market tests presented by Baxter (2003) are significant for the development process, since evaluations can be made based on the response to consumer expectations.

In regards to the upcycling strategy, the methodology evidences its relevance from the initial moment of the design process, since the products made from the reutilization of materials must be designed according to the available raw materials of reutilization, trying to avoid wasting materials to the maximum. Therefore, the designer must analyze the problem with these restrictions.

For products with modular design, the importance of the methodology is also present from the beginning of the creation process, aiming to apply modularity as one of the solutions for the product. In addition, it is observed that the test phases proposed by Baxter (2003), guarantee the adaptability for the interaction between consumers and products.

As for the sharing strategy, the product design's methodology implementation will help the designer, in order to meet the expectations of several publics and in the initial phase, to think about the use of durable raw materials, so that the greatest number of individuals can use the product.

5. CONCLUSION

The current study sought to identify how sustainable strategies combined with methodologies favor the development of clothing products that reduce environmental impacts. The importance of the methodology was taken into consideration so that the designer can carry out his activities with clarity, reducing the risks and uncertainties for the company. In case of fashion products, the methodology will aid production processes in order to reconcile the creation, quality, dress, appearance and price to the desires of the target consumers.

It was noted that the fashion industry can contribute considerably to an unsustainable production system, generating negative impacts on nature and society in general.

Nonetheless, new concepts gradually aim to minimize the harm caused to the environment by the textile and clothing industries, such as Eco-fashion, which seeks to use raw materials that are not as harmful to the environment, Ethical Fashion, which takes into account mainly the well-being and health of producers and consumers, and Slow Fashion, which seeks productions with local communities, to a lesser extent, in a less accelerated manner.

In regards to the sustainable strategies applied in the garment industry, there is a need for them to be employed covering all product phases, thus favoring the controlled use of resources, the choice of low impact raw materials, changes in distribution systems, as well as increasing the life of the product. It is considered relevant that consumers become more active in the production processes, ensuring greater commitment of the user to the product, as presented in the strategies of Open design and Co-creation, Modular Design, Customization, Upcycling and Sharing.

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