Pre-consumption textile waste management in the clothing industry in Teresina/PI

Gerenciamento dos resíduos têxteis pré-consumo da indústria de confecção do vestuário em Teresina/PI

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ABSTRACT

The garment industry stands out as the second-largest employer in the manufacturing industry, but it is singled out for environmentally and socially unsustainable practices. In this study, managers of ten companies in Teresina (Piauí State, Brazil) were interviewed to investigate textile waste management methods and instruments and the difficulties and challenges found in management. Methodologically, it was used bibliographical, exploratory, documental and case study research. The research instruments were the questionnaire, direct observation and interview. Data were assessed through content analysis. The results show that part of the production-related waste is donated to manufacture rugs and fuxico, discarded for everyday collection. The conclusion we came across is that the clothing industry in Teresina lacks better management of its production process to generate less waste. When it is not possible to reuse it, dispose of it properly.

Keywords: Textile Waste Management. Garment Industry. Environment. Disposal Methods. Teresina.

RESUMO

A indústria de confecção do vestuário destaca-se como segundo maior empregador da indústria de transformação, mas é apontada por práticas ambiental e socialmente insustentáveis. Neste estudo, foram realizadas entrevistas com gestores de dez empresas do ramo em Teresina (Piauí), cujo objetivo foi investigar os métodos e instrumentos de gestão dos resíduos têxteis, além das dificuldades e desafios

encontrados nessa gestão. Metodologicamente, utilizou-se a pesquisa bibliográfica, exploratória, documental e o estudo de caso cujos instrumentos de pesquisa foram o questionário, a observação direta e a entrevista. Os dados foram avaliados por meio da análise de conteúdo e os resultados apontam que parte dos resíduos têxteis é doada para a confecção de tapetes e fuxico, enquanto outra parte é descartada para a coleta comum. Conclui-se que a indústria de confecção do vestuário em Teresina carece de um melhor gerenciamento do seu processo produtivo de forma a gerar menos resíduos e, quando não for possível reutilizá-los, descartá-los de forma adequada.

Palavras-chave: Gestão de Resíduos Têxteis. Indústria de Confecção do Vestuário. Meio Ambiente. Métodos de Descarte. Teresina.

1 INTRODUCTION

The Apparel Industry is considered one of the most crucial manufacturing industry sectors because it promotes employment and income worldwide. However, it is part of a linear production and business model based on temporary trends (INDUSTRY OF ALL NATIONS, 2017). Because of this, it is one of the most polluting industries in the world, being responsible for impacts throughout its production chain, from planting (with the extraction of raw materials, use of water, and energy) to manufacturing (with the help of labour, energy, waste), and in the after consumption, with products that are soon discarded by the consumer (ELLEN MACARTHUR FOUNDATION, 2013). Thus, it becomes clear that the clothing industry prioritises the economic sector, not regarding environmental and social issues, going against the Circular Economy and Sustainable Consumption. It is, therefore, the effect that Carson (1969) called human assaults on the environment. Among several factors, this is because this industry globally uses around 98 million tons of non-renewable resources per year and because only 13% of the materials used in clothing production are reused (HERRMANN *et al*., 2017).

Another critical factor is that this sector is dominated by standardised mass production, which uses low-cost material and labour to provide cheap clothes produced in significant volume, and is sensitive to industrialised countries trends (FLETCHER, 2010). Allied to this situation, inadequate working conditions are evident, which constitute a serious problem in the sector as forced labour or labour analogous to slavery and child labour are constant and must be combated (VEIGA; GALHERA, 2017). In that sense, the National Confederation of Industry (in Brazil) (2017) points to the need to monitor labour relations. It emphasises that there must be tools capable of detecting exhausting working hours, forced labour, debt bondage, hiring irregular foreign labour and child labour. In addition, it informs that it is a relevant theme in the manufacturing segment since they are fragmented companies, making the supervision by the public authorities a difficult process.

Given this, the importance of Brazil in this scenario is highlighted, as the country appears as the fourth largest clothing's producer in the world, with the women's fashion segment being the most representative. Additionally, the country has a complete textile chain globally, as it is self-sufficient from the planting and production of fibres to the ready product retail. Worldwide, Brazil is characterised as the fourth largest fashion consumer, the sixth-largest textile industry, the second-largest producer of denim and the third-largest producer of knitwear (ABIT, 2019). It is also considered the second largest employer in the manufacturing industry, generating employment and income and accounting for 16.7% of jobs (ABIT, 2019), with approximately 1.5 million direct jobs and about eight million indirect jobs (ABIT, 2017) however, as it is the second industry that most impacts the environment (INDUSTRY OF ALL NATIONS, 2017), its practices should be reviewed to make them more sustainable over time.

The fast-fashion production model, with quickly, cheaply, and low-quality manufacturing and marketing, facilitates the disposal and/or replacement of products by the consumer (HIRSCHER, 2018); it is linked to the linear production model, which causes several environmental and social damages (SOUZA, 2017), aggravating the waste problem (NIINIMAKI, 2015). In this industry production process, the most

significant volume of manufacturing waste generation is in the cutting sector (pre-consumption waste), which, in many cases, is carried out without planning as a result of decisions taken in the creation sector. At this stage, several factors related to the acquisition of fabrics deserve to be observed for the manufacturing waste better use and reduction, such as the width, the composition, the structure of the fabric, the print, the design of the pieces and consequently the modelling. This pre-consumer waste (or clean waste) comes from the cutting and sewing step (shavings) as well as from textile samples, end-of-roll textiles, damaged textiles, unsold textiles, clothing waste, sampling yards and clothing sample waste (REDRESS, 2017).

Particular attention should be given to shavings, defined by Cuc and Tripa (2018) as gaps and non-usable areas between the moulds of garments when spread over the layers for scratching and cutting, as approximately 170,000 tons of textile and clothing scraps are generated per year. From this amount, 80% is illegally disposed of in landfills. Regarding clothing items (clothing waste), it is estimated that more than 150 million items/year have no defined destination and end up being stocked, discarded or destined for bazaars (BARUQUE-RAMOS *et al*., 2017). There is also an estimate that 50% to 75% of the pieces are sold from the collections, with the rest destined for promotions, and about 7%, donated, crushed, incinerated or deposited in landfills (IEMI, 2015). Only 1% is recycled into new products after the end of the life cycle (AGENDA MODA BRASIL, 2019).

As the picture presented, the garment manufacturing industry must consider not only the improvement of its production processes with the implementation of clean technology and energy efficiency but also the management of these wastes as an essential condition for the preservation of natural resources and the control of the manufacturing waste to get a cleaner and more efficient production. The control of the production-related waste must be considered throughout the entire chain. Specifically, in the garment manufacturing industry, this control should start since the creative process, including the correct choice of raw material, adequate rest of the fabric to prevent further shrinkage, well-thought-out modelling to avoid excessive use of curves, fitting with the largest possible use, the definition of the grid with suitable combinations in the same fitting plane, among others (DEBASTIANI; MACHADO, 2012).

It is noteworthy that the clothing industry has no control over the disposal of production-related post-consumer waste. These are commonly used as donations to family, friends and needy people or reused in the form of rags for household cleaning (MORGAN; BIRTWISTLE, 2009). However, a large part ends up in municipal solid waste streams, landfilled without the possibility of practical use (NENCKOVÁ; PECAKOVÁ; SAUER, 2019). It is estimated that more than 70% of the valuable life of discarded clothing remains at the time of disposal (SATCOL, 2019). That said, the treatment of these wastes, which are mostly sent to landfills and/or incinerated (TOJO *et al*., 2012), contributing to GHG emissions and soil contamination (HU *et al*., 2018), should be regarded when it comes to discussing the sustainability of the sector. The environmental impacts caused by conventional methods can be reduced by developing new technologies for recovering and reusing textiles to meet circular businesses' current and future needs (BETON *et al*., 2014).

Thereby, some strategies are pointed out in the literature to reduce the volume of these residues as much as possible. Recycling is one of them, although its rate is shallow in this type of industry. The fabric can be transformed into fibres through mechanical or chemical processes (NORUP *et al*., 2019), giving rise to new fabrics, and converted into energy or heat (ÇAY et al., 2018), and is used in the construction industry, in the production of material for acoustic and thermal insulation (ISLAN; BHAT, 2019), among others. El Hagar (2009) points to Reverse Logistics and a circular production chain, characterised as a restorative and regenerative economy to maintain products and components with maximum useful life. However, these methods are complicated to be adapted to the garment manufacturing industry, which are primarily individual microenterprises and individual microenterprises (called MEI) and have no capital to invest in technologies. Thus, proper planning and management are the most viable way to reduce the volume of production-related waste, making it essential to prevent negative impacts on the environment and reduce financial costs. Thus, Nenchková, Pecakovà and Sauer (2019) consider

that consumer disposal behaviours are a critical factor in influencing the impact on the environment. A consumer aware of the environmental cause must consider how they use, care for and dispose of their clothes (RISSANEN, 2013).

In Piauí, the garment manufacturing industry is the fourth fastest economically growing sector in the state, with the capital, Teresina, standing out as the largest producer (SEMDEC, 2017). As we can see in this scenario, and given the importance of this industry for economic development and the preservation and/or conservation of the environment, this work aimed to carry out exploratory research in individual clothing microenterprises (called MEI) and microenterprises in Teresina, to investigate the generation of produced-related textile waste (type of waste, volume and disposal methods), management methods and instruments (practices and investments), in addition to the difficulties and challenges encountered in management and its final destination.

2 MATERIAL AND METHOD

The criterion to select the companies visited was registering their main activity with the Brazilian Federal Revenue. We chose industries registered with CNAE, the National Classification of Economic Activities – 1412-6/01 (manufacture of garments[2], except underwear and tailor-made garments) as they represent the largest number of industries in the city of Teresina. This classification is adopted by the National Statistical System in Brazil (coordinated by the Brazilian Institute of Geography and Statistics[3]) and by federal, state and municipal organs that manage administrative records and other institutions in the country. In addition to the National Classification of Economic Activities, the speed with which the company responded to the request to participate in the survey was considered since there was the possibility of a lockdown in the companies due to the Pandemic caused by the SARS Covid-19, which suspended activities with direct contact between people. The survey was conducted from January to March 2021.

Methodologically, bibliographical, exploratory and documental research was developed, followed by field research with visits to ten companies (individual microenterprise and microenterprise), configuring itself as a case study centred on the clothing manufacturing industry of the city Teresina as the object of study. The data collection instruments were the guided questionnaire (which conducted the interviews and observation), direct observation and interviews with managers and those responsible for each sector (totalling 32 interviews). The data were analysed through content analysis. According to Rúdio (2015), observation as a research instrument is used to obtain specific information from reality, as it is a way of seeing, examining and knowing the phenomena. The interview aims to raise problems and collect initial data for a survey, allowing that the respondent raises questions that have not been considered yet by the researcher (SOMMER; SOMMER, 2002).

The case study was chosen as the method suitable for the investigation of a contemporary phenomenon within its proper context, being able to explore real-life situations whose limits are not clearly defined; preserve the unitary character of the studied object; describe the case of the context in which the investigation is being carried out; formulate hypotheses or develop theories; and explain the causal variables of a given phenomenon in situations that do not allow the use of surveys and experiments (YIN, 2012).

During the visits, all the stages of the production process were monitored. The questionnaire guided the interviews and observation. Its elaboration was based on the bibliographic research carried out in this work and was divided into three parts: the first part was focused on the creative sector to identify if the product was conceived regarding sustainability issues. The second part was aimed at identifying the type and nature of the production-related textile waste (fabric scraps, end-of-roll scraps, finished garments), in addition to the volume and final disposal. And the third part was exclusively oriented towards waste management (sustainability practices and investments, sustainable planning and projects, investments, management difficulties).

This method was applied to deepen the knowledge in production-related waste management in the garment manufacturing industry to develop more effective practices. The activities observed were creative process (product design), acquisition of raw materials (suppliers) and the production process (electricity consumption, water consumption, waste generation - fabric trimmings, fabric scraps, stranded pieces, paper, trim, hardware etc.). The production, management, volume and final disposal of waste were the target of the research. It is noteworthy that the research addresses the pre-consumer production-related waste of the studied industry. Data were evaluated through content analysis and carried out in three stages: pre-analysis, material exploration and treatment of the obtained results, followed by an interpretation (BARDIN, 2015). With the content of the interviews and observation, the findings in the communication process were described.

3 ANALYSIS AND DISCUSSION OF RESULTS

During the process of bibliographical and documental research, it was noticed that the local statistical data referring to the manufacturing centre in Teresina diverge from the data provided by federal agencies organs. Data Sebrae (2020) reports that the state of Piauí has 1,085 companies (registered with Cnae – 1412/6-01), mostly individual micro-enterprises (659) and microenterprises (384) and Teresina represents 67% (727) of this amount: individual micro-enterprises (425), microenterprises (267), EPP (small businesses) (20) and Other (invoicing above 4.8 million/year) (15) confirming data from the Brazilian Federal Revenue, which informs that Teresina has a clothing manufacturer hub formed by 727 companies National Confederation of Industry – 1412/6-01. Field research indicates that many of them are closed. However, remain active with the Federal Revenue, and many are unable to officially terminate their activities due to a lack of financial resources to meet debts, mostly taxes and rates.

Regarding data provided by local agencies, these are scarce. The action of the Brazilian Micro and Small Business Support Service in Piauí and the Federation of Industries of the State of Piauí was identified with these companies in promoting consultancy and support for the sector's development, but not provide up-to-date and publicly available statistical data. Teresina's city hall, through the Municipal Planning Secretariat (Semplan) and the Municipal Economic Development Secretariat (Semdec), hired Cluster Consulting Teresina to run a Cluster Competitiveness Program with companies in the city based on the development of health services clusters, apparel, fashion and education services, in addition to promoting the training of the city hall and partner institutions (Sebrae-PI, Fiepi, Banco do Nordeste – BNB) on competitiveness issues and clusters.

Thus, local data provided by Cluster Consulting (2017) point to a cluster formed by 216 companies (data that do not specify the main activity of the establishment), which employ approximately 2.268 people and are distributed in various niches: casual fashion (45%), jeans (30%), activewear and underwear/beachwear (5%), uniforms (10%) and party/tailored fashion (10%), niches which have the production of approximately 6 million pieces in 2018, and sales of R$ 175 million.

Given data obtained through bibliographic and documentary research, the importance of the sector and this research for the local economy was affirmed. Thus, exploratory and field investigation was started, and during the interviews, it was identified right from the start that there is no concern or orientation towards sustainable development. For Desireé (2019), the applicability of the guidelines for sustainable development and social responsibility at all stages of the production chain is of fundamental importance to combat environmental damage caused by the fashion industry.

The results confirm the findings of Prieto-Sandoval *et al.* (2018), who claim that the clothing Industry still follows a linear production model: extraction – transformation – disposal, producing tons of waste and pollutants, ignoring the limits of nature and damage to society. Pinheiro (2018) reports that sustainable development has been a concern for the management of the garment manufacturing industry since the 1960s, in line with the statement of the National Confederation of Industry – CNI

(2017), which informs that in the last five years, the companies in Brazil have shown a more significant concern with sustainability through projects and initiatives that aim to improve the environmental, social and economic aspects of their processes.

The companies visited show a developing knowledge about the subject and even less about the legislation to which they are subject. It was also identified that its target audience is not a conscious consumer. It does not require sustainable attitudes from the company. The inspections to which they are subject are only directed towards the labour sector. This set of components divert the manager from environmental-oriented management. These findings reinforce the data from Sebrae - SP (BRAZILIAN NETWORK OF INTERNATIONAL BUSINESS CENTERS – RBCIN, SEBRAE, CNI, 2016), which states that there is a general lack of knowledge about environmental standards or regulations on behalf of managers that come from the garment manufacturing industry, which, for the most part, think they have no obligations to the environment. This information results from a survey carried out in the state of São Paulo, the largest national clothing centre, which asked questions about Regulations and Norms, Labor Area and Material Disposal. The results of Sebrae - SP also showed that companies are unaware of the fashion sector's environmental regulations. In addition, they declared that they did not have any help from any institution that would inform and point out what is necessary to adapt to the required standards.

During the visits, observing the production process, it was possible to identify that the garment manufacturing industry produces several types of solid waste: paper, cardboard, PVC and cardboard tubes, plastic spools, thread, needles, plastic and cardboard packaging and textile waste (splits and scraps at the end of the roll), whose destination must be adequate due to its volume, composition and degradation time. Among the listed residues, textile wastes are highlighted for their volume and final disposal. The results agree with what Alencar and Assis (2012) cite as solid production-related wastes from the garment industry: scraps, trimmings, defective garments, powder from the overlock machine, plastic spools, cardboard and PVC tubes, needles, lines, lamps, lubricating oil containers, drums of liquid chemicals and dirty tows. Based on this, it can be inferred that it is necessary to have control and inspection in the production and destination of these residues.

Some local companies are already concerned about the control of chips produced in the cutting sector, even though they are more focused on saving raw material due to financial and non-environmental terms and focusing more on the slotting industry (use of software), with no planning in the creative sector that aims to reduce the amount of waste produced at the end of the process. Nikolau, Tsalis and Evangelinos (2019) explain that the sustainable practices of the companies must be directed towards the economic investment in a practical way while at the same time setting environmental and social goals that guarantee the protection of the natural environment and justice.

One company interviewed mentioned concern with the modelling of the piece still in the creation sector, even though it was more aimed at the economic (time and amount of raw material) than sustainable factor, but which contributes to the reduction of waste in the cutting sector going in the same direction proposed by the conscious modelling method: a way to adapt the mould so that the result has the lowest possible waste rate (BINELLI, 2020). The more curved shapes and irregularities in the part modelling, the more residue it will generate (WONG *et al.*, 2013). Alencar *et al.* (2015) report that, due to the shape of the moulds that do not provide a perfect fit, waste can reach up to 30% of the fabric. It is already proven that conscious modelling results in a superior use of the fabric (BINELLI, 2020). Still, the designer must have a good knowledge of modelling and creativity to attract its customer. In practice, not all designers have this vision of modelling in the creative process, as this practice is not built in most fashion design courses, which can be observed in the curriculum.

The selection of raw materials and trims is essential for the sustainability of the processes as for recycling. It should always be the first choice for managers and professionals responsible for the creative sector, which, consequently, will interfere in the final volume of production-related waste. It is essential to consider that biodegradable raw material, with biopolymers, organic, certified, recycled,

regenerated, compostable and/or traceability will always be the first choice. In none of the companies visited in Teresina was there an option for biodegradable raw material, as managers consider its cost to be between 20% and 30% higher than the cost of standard raw material, and the result is an increase in the final cost of their product, making its commercialisation unfeasible due to the competition. Bastian and Rocco (2009) point out that when this type of raw material cannot be used, adopting those whose suppliers offer information about the kinds of substances applied to their products is always the next choice. However, this concern with its suppliers' ethics has not been observed in the companies visited.

It is noteworthy that the way the fabric is constructed deserves to be considered, as it can limit the positioning of the moulds due to the fabric weft, leading to a more significant generation of chips and waste. The width of the fabric directly interferes with the volume of waste produced in the cutting sector. And certain types of prints also present themselves as limiting factors for the positioning of the moulds. It was observed that most of the companies visited do not do previous planning and do not consider the structure of the fabric construction. However, some avoid using fabrics with certain prints that may limit the positioning of the patterns, especially fabrics with shine, stripes and vertical stripes. Still, the fact is essentially due to economic factors. Others, however, don't use it often but do not avoid its use if the print is within the trends or the collection's theme.

As for the choice of accessories and trim, one must keep in mind their composition and be aware that they make it difficult or impossible to recycle parts after their disposal. It is suggested that the designer, before starting any collection, check the available material in the stock to include its use in the new pieces and, in addition, it is recommended that planning be carried out to avoid unnecessary purchases, which would generate waste in addition to economic and environmental damage.

It was found that, during the pandemic caused by Sars Cov-19, the companies started to consider the use of raw material and supplies available in stock due to the difficulty of finding raw material available on the market and to the high prices charged, awakening to the need to control your warehouse so that leftovers are avoided and/or reused. They started to apply tinting techniques for trims to achieve the trend colour used in new collections. But, again, one can see the predominance of the economic factor in detriment of the sustainable one, but somehow it contributes to the sustainability of the process. In more than 50% of the companies, inventories ran out and stocked finished parts, which led the management to rethink how to buy and use the raw material.

Regarding the composition of trims, the research did not find any report that demonstrated knowledge and/or interest in its composition, nor in the use of ornaments of different designs in the same piece that could somehow hinder the post product recycling.

Considering the importance of the layering sector, an operation in which the fabric is placed in layers on the cutting table and the moulds, manual and mechanical layers were identified during the visits. In the industries visited in Teresina, the use of manual spread, with support and a manual trolley with selvedge aligner can be seen, the most common being the spread with a selvedge aligner, indicated in this work as the most suitable for the size of the companies visited.

As it is common for industries to make the same model in the same fabric, varying only the colour, we find many variations in the width of the same fabric from the same manufacturer in the layering sector. It is noticed that certain manufacturers do not have this quality control. Different colours have different widths for the same product, which compromises production yield and generates a waste that could be minimised. In the deposit and risk sector, the companies visited already use computerised deposits in their entirety. This method increases precision, maximises fabric use, reduces risk realisation time, minimises waste, calculates fabric use efficiency simultaneously, and increases profit (PURANIK; JAIN, 2017).

The literature points to the cutting sector as the responsible for the largest volume of waste related-production in companies. However, it is noteworthy that the fact occurs due to the decisions taken by the creation sector. The reduction of waste related-production must be considered already in that

sector with differentiated strategies in developing collections. When this is not possible, the focus can be directed towards reusing and recycling this waste. Also noteworthy is the waste that reaches the cutting sector both in environmental ethics and economic perspectives. Thus, one must meet the waste management strategies to avoid waste. However, what is observed is that in the companies visited, there is no planning of the creation sector aimed at reducing the volume of garbage that is concentrated in the cutting industry, corroborating with Enez and Kipoz (2020), who pointed out that 36.7% of the companies do not make efforts to eliminate waste in the cutting and sewing sector.

The textile residues found in the research were shavings in the cutting sector, fabric scraps that remain in the rolls, parts with defects, parts that were not well accepted and that, even so, remain in stock. Part of the shavings is destined for donation to charities or everyday individuals to promote the making of rugs and gossip. Another part, the smaller ones, is discarded for everyday municipal collection, having the sanitary landfill as the destination. The recycling of this waste was not identified at the time of the survey by the interviewed companies. Still, some reported that there was a time when a large mattress industry in the city received and/or collected this waste, which went through different processes and was used as a filling for mattresses, but that, at the time of the research, they were no longer carrying out this collection. For Leal Filho *et al.* (2019) and Islam and Bhat (2019), the clothing sector is a significant generator of the waste and a producer of raw material losses due to excess production, and they, in turn, suggest that recycling and reuse are necessary as they bring numerous benefits to the environment.

It is noteworthy that the research did not identify the amount of waste produced per collection nor the amount destined for the landfill, as the visit time did not allow for this observation because several days are needed to make a collection. The visit was limited to a shift due to the short period available by the manager to monitor the researchers and the increase in Sars-Covid cases during the period of the survey. The scraps that are characterised as end-of-roll scraps are, for the most part, sold to the employees themselves. Defective parts and those that were not well accepted are sold at the end of the year at promotional fairs at cost price. It is recognised that it is difficult to correctly dispose of textile waste, especially shavings since the city does not have a specific collection for this type of waste or cooperatives that can recycle or reuse them.

Most of the companies visited use outsourcing in search of increasingly reduced and competitive prices in the assembly sector and outsourced between 50% and 70% of the assembly of their parts. Outsourcing occurs with seamstresses, mostly former employees of a company, who work from home, where they are divided between sewing work and household chores, in line with the information provided by Agenda Moda Brasil (2019), which claims to have an impact on outsourcing in the sector (subcontracting) where the risk of severe violations of human and labour rights is high. Leite, Silva and Guimarães (2017) complement by informing that the assembly of the pieces is almost no longer carried out in Europe and North America, and it is being restricted to Latin American and South Asian countries.

4 FINAL CONSIDERATIONS

Clothing industry individual micro-enterprises (MEI) and micro-enterprises (ME) visited in Teresina recognise the production-related waste as environmental damage but do not promote any intervention in the production process that could reduce the amount of waste produced.

Some types of residues were identified and, among them, the emphasis in volume is on shavings. Part of these shavings are donated to make rugs, gossip, and charities, and another is discarded for everyday collection. One of the research limitations was the impossibility of quantifying the volume produced monthly and the volume that is donated or discarded. Also noteworthy are the limitations and difficulties found imposed by the Covid-19 Pandemic, which limited the number of visits necessary for the research.

Based on the results, it can be deduced that the companies' managers visited do not commit to environmental protection practices. The vast majority recognises sustainability only in the control of waste in the cutting sector. They recognise the need for a professional specialising in the subject but do not have financial reserves for this purpose. For them, sustainability is a market niche that does not attract its target audience. Therefore, it is not within their mission.

The individual microenterprises and microenterprises represent the reality in Teresina and the Brazilian context, pointing out the need for new studies that indicate effective ways to implement environmental and social sustainability practices at low costs suitable to the reality of these companies.

NOTES

1 | The work will be part of the annals of X Enanppas.

2 | Refers to tracksuits, shorts, blazers, blouses, sports and social shirts, long pants, t-shirts, capes, coats, costumes, jackets, suits, skirts, dresses, sets, overcoats, clothes for practice sports and beachwear (CNAE, 2010). Available at: https://concla.ibge.gov.br/busca-online-cnae.html?subclasse=1412601&tipo=cnae&view=subclasse.   Accessed on: nov. 2021.

3 | Brazilian legislation (law 6183, of 12/11/74) gives IBGE the responsibility for coordinating the national statistical system.

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