Apparel supply chain in the context of Brazil: social sustainability management and comparison analysis with global supply chains

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Abstract

Purpose - This work aims to address the Brazilian apparel supply chain to understand its structure, and then the main characteristics of social dimension management.

Design/methodology/approach - A content analysis was carried out by N-Vivo software on sustainability reports of six major Brazilian companies and the leading sectoral entities. A framework to compare Brazilian and global apparel supply chains**,** as well as the social sustainability management in both environments has been developed.

Findings - Results indicate that the ABVTEX has an essential role in promoting sustainability in Brazilian Apparel Supply Chain. The main differences between global and local SC is the integration, being horizontal in global companies and mainly vertical in the Brazilian context. Regarding social dimension management, in the Brazilian context, social actions are mainly in the internal environment and local communities. In global companies, social actions are developed along the supply chain. Stakeholders are involved in both global and Brazilian supply chains and plays a vital role to increase the control to achieve social sustainability. Transparency is still a gap in Brazilian apparel supply chains and an essential way to mitigate social risk and improve working conditions.

Research limitations/implications – The present work address only the apparel sector and six large focal companies in one developing country. To expand the study to the different industries could help to understand better the SC network and social sustainability management in developing country context.

Practical implications – The understanding of the SC structure and the main characteristics of the social sustainability management in different context (developed and developing countries) may help managers and practitioners to make decisions to increase the social sustainability in the apparel sector.

Originality/value – This study provides the comprehension of the SC structure in the Brazilian context and how social sustainability is managed. Also, a comparison between global and local companies is provided, identifying the similarities and dissimilarities in both realities.

Keywords - Brazilian Apparel supply Chain, Social Sustainability, Apparel in Developing Country

Paper type - Research paper.

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1. Introduction

The textile industry has been the target of harsh criticism for the rapid production, called fast fashion, which has come surrounded by environmental and social problems to privilege mainly the economic gains (Huq *et al.*, 2016). The apparel sector characteristics may represent a problem from the sustainability point of view, especially in the developing countries, since this involves a large chain, being more difficult the control to ensure compliance with the guidelines and codes of conduct on different tiers (Macchion *et al.*, 2015; Engels-Zandén *et al.*, 2015; Huq *et al.*, 2014; Sardar *et al.,* 2016; Wilhelm *et al.*, 2016). Also, on the developing countries, one of the main problems is the environmental impacts that apparel supply chain generates since the process begins both in the cotton production with the pesticide's use as in the leather treatment process with chemical products release and also in synthetic filaments process that causes severe damage to health (GLASA, 2015). Apparel products are one of the major consumers of natural resources, and it has a short life cycle, which increases its negative impacts on a large scale (GLASA, 2015). Additionally, companies still have low investment in transparency along the supply chain, and so there is no clear understanding of how transparency is managed in the sector and what elements should compose the associated information (Zorzini *et al.*, 2015). These factors can influence the sustainability of the supply chain, since the control over the actions is not always taken into consideration, due to missing information across the supply chain, and the distance of the operations (Teng and Jaramillo, 2006).

Although there are initiatives to promote the sustainable development of this industry, with ethical, environmentally safe products (e.g. Better Cotton Initiative and Sustainable Trade Initiative), or socially responsible, there is no defined standard. The collaboration and partnership among entities and external stakeholders of the supply chain have transformed the sector in developing countries, increasing competitiveness at the international level as well (Parente *et al.*, 2017; Jabbour *et al.*, 2017). The footwear sector is one of the most prominent in quality improvement in both design and sustainable production processes, especially in leather treatment (Wang *et al.*, 2014). It is a booming export market, and the industry has made great efforts to maintain growth. The development of sustainable products still faces barriers to the complexity of the sector, but it has expanded its presence in the strategic planning of companies in developing countries (Teixeira and Canciglieri Junior, 2019; Fernandes and Bornia, 2018; Hoque *et al.*, 2016).

Brazil is an example of a developing country with a large activity in the apparel sector, being one of the most important of the world, both in terms of the amount of raw material production and final products production, such as shoes and clothes. However, it remains in the 24th position in terms of exporting products related to the apparel industry, especially cotton (Trading Economics, 2019). Considering its production capacity and the benefits of the raw material large production and low-cost industry process,

common characteristics in developing countries (Lu and Karpova, 2011), it is still not enough to be among leading players of goods producers to the international markets. As a continental country with deficient infrastructure, the logistical complexity is a significant barrier to the supply chain, both inbound and outbound (Wanke and Correa, 2014). For the local market, the apparel chain fragmentation becomes a problem due to the network complexity created. Especially when the domestic market has a continental dimension, the logistic network management becomes a challenge.

The international market openness with import tax incentives has led the domestic market to critical changes, mainly over the last ten years, to preserve competitiveness and avoid losing market share for international groups. These changes have also facilitated local companies to stop producing in the national markets, seeking for international suppliers with lower costs. As a result, small suppliers lost market share, forcing them to reduce prices or even to close down (Pinto and Souza 2013). On the other hand, resilience was also decisive to deal with a global market, minimising risks by process improvements and value-added to the products, increasing the competitiveness (Machado *et al.*, 2019). These factors characterise the Brazilian apparel industry as unique, receiving significant attention from researchers, NGOs and industry professionals, to better understand its structure and reduce gaps, especially on the social dimension of sustainability (Jabbour *et al.*, 2017).

The textile sector in Brazil has become a reference in improving sustainable production, both environmentally and socially, but there are still many irregularities along the chain that need to be addressed (Costa, 2009; Tilly *et al.*, 2013; ILO, 2018; UN, 2016; Francisco and Gonçalves-Dias, 2018). In the environmental sphere, in 2010 the National Solid Waste Policy was sanctioned (Brazil, 2010), which foresees, in addition to proper treatment and waste reduction, non-generation. The Environmental Crimes Law in Brazil dates from 1998 (Brazil, 1998) and has been expanded and improved over the years through various resolutions following international standards. The Effluent Treatment Resolution (CONAMA, 2005) is one of the most important for the industrial sector, which directly affects the apparel sector, both in the textile area and in the leather treatment. It also directly influences the social dimension, since the emission of pollutants directly affects the health and quality of life of local communities, considering the number of toxic products disposed of in soil and water (Conke, 2018).

Recent studies have shown a concern with sustainable innovation in the textile industry in developing countries, especially in the environmental dimension, using recyclable materials. Nevertheless, in developing countries, the collection of recyclables is still related to situations of labour informality and generally carried out by people in socially vulnerable situations, which represents a severe problem from the perspective of social sustainability (Conke, 2018). The lack of public policies and investments are considered important barriers from the environmental and social point of view, which also influence the economic dimension, as they still make processes economically unfeasible (Leal Filho *et al.*, 2019).

Recent literature has indicated growing concerns about the social dimension in developing countries, mainly after international scandals related to the top global brands (Köksal, 2018; Stevenson and Cole, 2018). One of these cases is related to Brazil, where a slave-like labour condition was identified in a local supplier of the global company Zara (Wilhelm *et al.*, 2016). These situations expose the supply chain fragilities to monitor activities and audits carried out by companies in their global operations, especially in developing countries. Under the watchful eye of global companies' exposure, local companies have also been received complaints about degrading working conditions and even slave-like labour conditions, mostly related to South American immigrants, such as Bolivians and Chileans (Parente *et al.*, 2017;). Although it is not new, this issue has been received considerable attention in the past decade. In the face of the critical situation, the Brazilian government has created the Slave Labour Radar at the Under-Secretariat for Labour Inspection, active since 1995. In 2018, according to data from the Brazilian Ministry of Economy, 1745 workers were found in slave-like labour condition, with 522 workers in urban areas. Over the last ten years, 723 foreigners were rescued from slave-like labour conditions in Brazilian business properties, of whom more than 400 worked in the apparel sector (Ministry of Economy, 2019. See Appendix 1 an example of the apparel companies convicted of slave-like labour in Brazil – It is called Dirty List).

The current research area growth shows the importance of the present work since significant efforts to better understand the apparel supply chain have focused on the global chains. Although most of the global chain suppliers are located at the developing countries, it should be considered that countries as India, China, and Brazil are producers as well as consumers of their raw material and consumer goods (Gereffi, 2015). To understand this local chain and its sustainability characteristics it is essential, especially in the social dimension, to get better insights about the apparel supply chain in a developing country, while to identify the main fragility points for effective action. In this context, the following research questions drive this work:

RQ 1. How the apparel supply chain is structured in the Brazilian context?

RQ 2. How is social sustainability managed in the apparel sector in the Brazilian context considering the different stakeholders?

RQ 3. What are the similarities and dissimilarities between Brazil and developed countries in the apparel supply chain structure, and social sustainability management?

Thus, this work aims to describe the apparel supply chain in a developing country and the social sustainability practices established at the different levels. The study will then aim to identify and analyse the similarities and dissimilarities of social aspects treatment compared to the supply chain structure in a developed country (study already carried out by Bubicz *et al.*, 2020), as well as the main factors that can

be perceived as impacting these differences, considering the corporate governance. To answer this question a case study methodology is applied in order to determine the main characteristics of the network structure and the social sustainability management of apparel supply chain in the Brazilian context and then, to propose a comparison with the global apparel supply chain.

The reminder of the article is organised as follows. In the Section 2 we present the Research Approach of this study in detail. In Section 3 we detail the apparel supply chain structure in a developing country, namely the Brazilian context. In the Section 4 a case study with six Brazilian companies is developed to identify the social sustainability management. Finally, with this knowledge, a scenario comparing the apparel supply chain in a developing country with developed countries is presented in the Section 5. The conclusions of this work are in the section 6.

2. Research Approach

To meet the objectives an exploratory case study is developed on six Brazilian companies of the apparel sector, following the methodology developed by Bubicz *et al.*, 2020, with the source of data adapted for the Brazilian context. As the social sustainability analysis in the apparel supply chain in developing countries is still in early stage, a multiple case study approach provides insight into the ways the industry has followed to improve performance and minimise negative impacts. Multi-case research also enables cross-company comparison, which increases external validity by extending evidence based on different data sources (Yin, 2014). Figure 1 identifies the steps of the research, the objectives, methods, and tools used as well as the section where each step is developed. Below the methodology is described in detail.

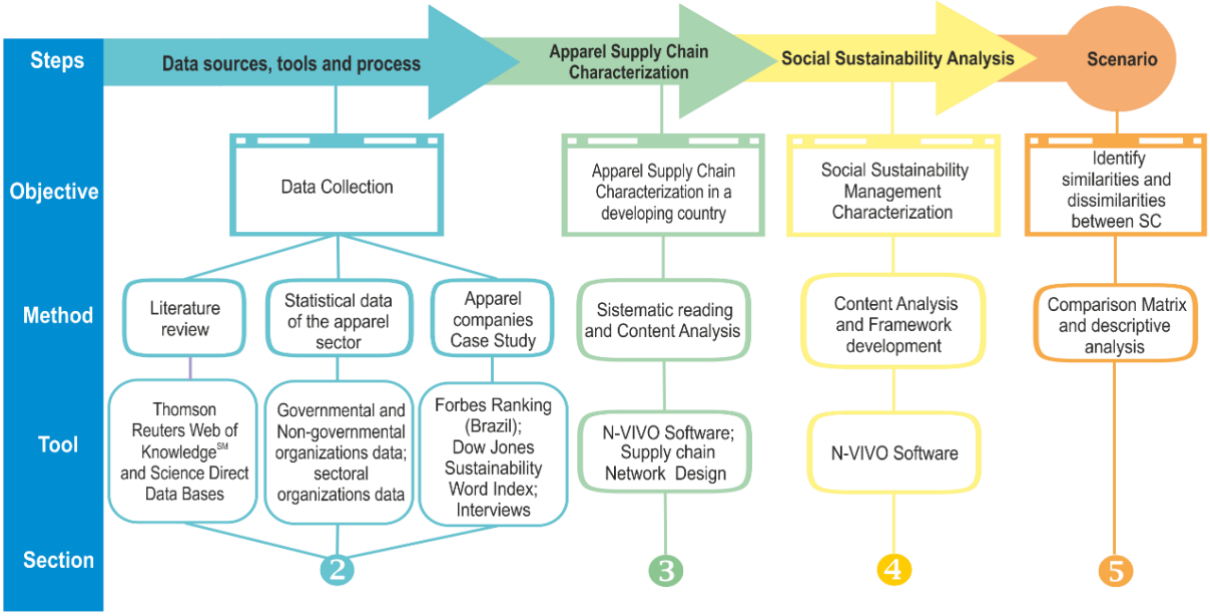

Figure 1 – Structure of the research methodology

2.1. Step 1 – Data sources, tool, and process

The objective of this step is to identify the main data sources and the method employed for the study. The Literature Review is the basis for identifying the supply chain structure of the apparel supply chain in a developing country, namely Brazil. The search was led in Thomson Reuters Web of Knowledge and Science Direct Data Bases, considering articles written in English, published in peer-reviewed journals and proceedings, from the year 2005 to 2019. Additionally, the Scielo database was added to identify articles allowing to access important local research, e.g. Brazil. These articles were identified by using the following keywords combination: (i) to characterise the structure of the apparel supply chain the keyword used were "supply chain" and "apparel", “textile”, “footwear”, "developing", “emerging”, "Brazil", “design”, “network”. As the result 16 articles that fill the criteria to characterise the structure of the supply chain were selected; (ii) to identify the sustainability in supply apparel chain the keyword used were "supply chain" and "sustainab", “sustainable” “sustainability”, "apparel", “textile”, “footwear”, “emerging”, "Brazil". The results considered were those that had the words “supply chain” combined with any of the other words in the title, abstract and keywords. Duplicate articles were discarded, also those that did not have the keyword “supply chain” in the abstract or keywords and those that had no relation to the apparel area.

Subsequently, articles addressing the social dimension of sustainability in the apparel supply chain were identified by combining the keywords “social sustainability and apparel supply chain and Brazil”, "corporate social responsibility and apparel supply chain and Brazil”. As result, 24 articles were selected (See Appendix 2).

Additionally, the statistical data of the apparel industry in Brazil was collected to identify the raw material volume, raw material flow and, also the production process and the structure of the apparel supply chain in Brazil. The source for collecting data were governmental and non-governmental organisations as Textile Exchange, Euratex, FAOSTAT, ILO Reports, Statista, Comtrade, World Economic Forum, World Footwear Yearbook, Better Cotton Initiative, Sustainable Apparel Coalition, ABIT, ABVTEX, ABICALÇADOS, ASSINTEC, MDIC and IBGE.

To identify the main characteristics and understand the Brazilian apparel sector, six large companies were identified. The firms were chosen and meet five criteria: (i) they are national firms, being among the 20 largest apparel Brazilian companies according to Forbes Brazil Ranking; (ii) they have sustainability concerns and practices; (iii) they are a focal company, buyer, with control over all production process; (iv) they provide sustainability or business reports to identify their primary production process characteristics. The companies selected for the case study, as described in the section 3 of Step 1, that fit the criteria are: Bibi, Grendene, Hering, Malwee, Marisa and Renner. The sustainability reports and documents of the companies were collected, as well as the main information of each company. To maintain equity of companies’ information, those that do not have reports in any of the years or have two years integrated into a single report were fully considered in the analysis.

Similarly, in order to maintain a standardisation of the information, missing data was requested directly from company managers or sustainability managers, through a personal visit and/or by videoconference. Also, when visits were not possible, or companies did not respond to interview requests, the contact was made by telephone or e-mail. Semi-structured interviews were conducted, aiming to understand the supply chain structure, identifying the interactions between entities and how the social dimension of sustainability is managed in the company. Also, there is a need in clarifying social aspects reported by companies, as well as to identify the main stakeholders who exert some type of influence on decision making. The contact period was between October and December 2018. Except of the company Bibi, which shared all information requested, the other companies were reluctant to share data that was not disclosed in the reports. Some responses were received in the form of spreadsheets and reports from the companies regarding the years of actions presented and allowed greater access to information and fairness in the treatment and analysis of documents. Three companies mentioned that only public information could be used in the study. In these cases, the annual reports and news from the sectoral entities enabled access to missing data. The answers were crossed with information of the companies and sectoral reports. The interview protocol is in Appendix 3. Based on interviews and content analysis of the sustainability reports and information from the sectoral data, the main characteristics of these six companies are summarised in the Appendix 4.

2.2. Step 2 - Apparel supply chain characterisation

To develop the Brazilian apparel supply chain characterisation the data of the step 1 was collected and organised. The Literature Review was carried out to identify the main process, entities, and links between different tiers, from raw material to the product end of life (see Table 1). Systematic reading of the articles was performed to identify the characteristics of the supply chain and noted manually in charts, using an inductive approach to identify patterns (Hsieh and Shannon, 2005; Gioia *et al.*, 2013). The identified patterns helped to build the apparel supply chain structure in the Brazilian context, which was compared to the previously structured global supply chain (Bubicz *et al.*, 2020). The sectoral information and the sustainability reports of the companies allow to identify the organisation of the sector and their relationship along the supply chain. To complete the analysis and identity the common textual characteristics the content analysis was carried out. N-VIVO 11 Plus software was used to search keywords as “tier”, “echelon”, ”supplier”, “supply”, “network”, and “raw material”, comparing the text results in the paragraphs and their contents with the results reported by the manual codification. These results also made it possible to identify the entities, being included in the drawing and, when referenced, the type of relationship and existing interaction.

Statistical data of the Brazilian apparel sector were identified through economical information obtained from the government and international economic institutions to characterise the size and complexity of the apparel sector in Brazil. The sectoral entities were defined through the websites and sustainability

reports from the six companies in the case-study. The results obtained through the literature review were compared with sectors' information to validate the findings from the research performed.

The result and the characterisation of the apparel supply chain in Brazil are detailed in Section 3.

2.3. Step 3 - Social sustainability analysis

To understand how the social dimension of sustainability, which have been addressed in the apparel supply chain in a developing country, especially in the Brazilian context, a literature review was carried out in the 24 articles selected in the Step 1. Through content analysis, the main apparel supply chain approach of these studies was identified (see Appendix 2). Following, the Content Analysis was carried out with N-VIVO Software in the Companies Reports and documents obtained. This type of analysis is called CATA - Computer-Aided Text Analysis, and allows the automatic information processing, decreasing the subjectivity of the report, and also enable the replicability with more excellent reliability (Neuendorf, 2017; Duriau, 2007). Auto Coding test was developed on each company report to identify errors and failures in the documents, to be sure that all documents could be read. The sustainability reports of the companies were selected considering the years 2014 to 2018. Companies that have no sustainability reports in this period had reports generated from the website's information. Documents were generated in ".pdf" format, thus standardising the information to be analysed. Care was taken to identify that the information had reference to sustainability actions, and it was found that although no sustainability reports were generated the information presents a pattern according to the items referenced by the GRI (Global Report Initiative). A direct content analysis was performed with NVIVO 11 Plus software, following the Hsieh and Shannon' (2005) recommendations. This type of automatic analysis ensures coding speed, increases reliability as it decreases subjectivity, also enabling the replicability with greater accuracy (Jaccard & Jacoby, 2010; Seuring and Gold, 2012). The results generated through automatic coding make it possible to identify the type of relationship between the different entities that make up the supply chain and the companies sustainability strategy, especially in the management of the social dimension. The coding system was followed by Mayring's (2014) recommendation, as follows: 1) the companies' reports were added as a source and the auto-codding was carried out considering sentences and the "nodes" and "sub-nodes" were created (see Appendix 5 and 6); 2) the "sub-nodes" have a set of data, that were individually verified to identify the context (see Appendix 6.c). Those with relevance to the research theme, which is the social dimension of sustainability, were selected. After manually checking the context in paragraphs, new nodes and sets were manually generated; 3) the interrelationships between words were carefully checked to identify connections to the first automatic coding generated. A manual check was made on the results, identifying the context in which it was possible to verify the relationship with different levels of the chain and different stakeholders. These results were then related manually; 4) from the results, the analysis of the information obtained was carried out, identifying the text patterns, clearing

and grouping by categories, discarding those that were not related to the four aspects of the social dimension: Human Rights (HR), Labour Condition (LC), Society (S), and Product Responsibility (PR).

To ensure the validity and reliability, data triangulation with multiple sources of data as reports and statistical data was applied, as recommended by Neuendorf (2017). There was direct contact with managers of the companies to discuss the evidence as well as meetings with researchers to check the coding results. From this discussion, it was possible to review and improve the analysis identifying some gaps or missing information to make it clear.

It should be noted that the reports and documents of the Brazilian companies are mostly available in Portuguese. The coding results were freely translated by the author and are presented in Appendix 5.a. The original results are presented in Appendix 5.b.

The results of the analysis are described in the section 4.

2.4. Step 4 - Scenario

From the results of the analysis we developed a comparison matrix between supply chains in the Brazilian context and developed countries. The similarities and dissimilarities were identified in the structure and the main characteristics of social dimension management that deserved special attention for future research. The results are detailed in the section 5.

3. Apparel supply chain characterisation in the Brazilian context

Taking our previous work as a basis, where six major global companies were analysed to characterise the global apparel supply chain structure, the present study, as stated, aims to identify the apparel supply chain in Brazil, a developing country and distinguished by its similarities and differences. Most of the apparel raw material industry comes from emerging economies as well as many of the clothing and footwear suppliers, in this way different data sources were considered (see Step 1 of the Methodology) to understand and characterise the Brazilian supply chain, a developing country. A literature review (see Table 1) and an analysis of the six major national companies (see Appendix 4) were carried out to better understand the main aspects of this structure.

Table 1 - Literature Review of the Apparel supply chain characterisation in developing country context

Author	Main Focus of Supply Chain Structure				
	Supply Chain Network	**Entities/multitier**	**Relationship and SC Links**	**SC Integration and flow**	**Stakeholders**
Garcia et al., 2019			✓		✓
Gereffi, 2015	✓	✓		✓	
Frazier et al., 2004		✓	✓		
Fontana and Egels-Zandén, 2019	✓	✓	✓	✓	
Choi et al., 2010		✓	✓		
Aggour et al., 2018	✓	✓	✓	✓	✓
Tokatli, 2013	✓	✓	✓		
Teng and Jaramillo, 2006	✓	✓		✓	✓
Posthuma and Bignami, 2014		✓	✓	✓	✓
Pérez et al., 2018	✓	✓			✓
Montalbano and Nenci, 2012	✓	✓			

Libânio and Amaral, 2017	✓	✓	✓	✓	✓
Lambin and Thorlakson, 2018	✓	✓	✓		✓
Lu and Karpova, 2011	✓		✓	✓	
Navas-Alemán, 2011		✓	✓	✓	
Pinto and Souza, 2013	✓	✓	✓	✓	✓

In the apparel sector, the literature review shows that the emerging countries, like Brazil and India, are great raw material producers. At the same time, China e South Korea concentrate most of the industrial production to export and consume a significant volume of raw materials such as cotton and leather from Brazil (Gereffi, 2015; COMTRADE, 2017). Bangladesh and Vietnam have lower raw material production for the apparel industry, but they also have extensive industrial production and clothing exports (WTO, 2018). According to data from Brazilian Textile Industry Association (ABIT, 2018), Brazil is the fourth-largest producer in the world of the apparel industry and the largest textile chain in the West, including all production stages and self-sufficiency in most of the raw materials. The country is the fifth-largest cotton producer in the world and the third-largest exporter as well as the second-largest leather producer and the third-largest exporter in the world (COMTRADE, 2017). The apparel sector is also the second-largest employer in the manufacturing industry and directly creates 1.7 million jobs, accounting for 16.7% of the formal jobs, of whom women compose 75% of the workforce (ABIT, 2019). Estimates show that there will be more than 20,000 formal companies active in the sector, comprising more than 90% by small and medium-sized companies (ABIT, 2018). Furthermore, Brazilian apparel production reached around 900 million pairs of shoes per year (ABI Calçados, 2019) and 8.9 billion of textile pieces (ABIT, 2018).

When analysing the Brazilian apparel supply chain structure, it can be verified that it presents as main characteristics the common entities and processes of a traditional supply chain (Libânio and Amaral, 2017). The main entities of the Brazilian apparel supply chain are suppliers, sub-suppliers, focal firm, sales, and customers. These entities are concentrated in the country and organised in clusters (Choi *et al.*, 2011; Navas-Alemán, 2011; Gereffi, 2014). Especially in the level of suppliers there is many informal suppliers and workers (Frazier and Bruss, 2004; Posthuma and Bignami, 2014). Raw material, Textile/fibre production, Manufacturing, Distribution and Sale are the main process found in the Brazilian generic apparel supply chain network (Libânio and Amaral, 2017). However, there is an additional important component, which has also been reported by Zenker (2018) in countries like Jordan, the Dominican Republic, and Brazil, as joint efforts between the public and private sectors to promote improvements. In Brazil, this component is a legal entity composed by the apparel sector, named ABVTEX (Brazilian Textile Retail Association). In Jordan, a program called BWJ (Better Work Jordan) integrates local government and entities such as ILO (International Labour Organization) and IFC (International Finance Corporation) to monitor practices and provides workers qualification and training, holding factories registration that follows minimum criteria of decent labour conditions. GAP company is one of the BWJ signatories, and it is part of the case-study about the global companies developed by Bubicz *et al.* (2020). In the Dominican

Republic, an apparel sector company has a partnership with government entities (*Secretaria de Estado de Trabajo - SET*) controlling labour conditions with frequent audits to prevent and correct non-compliance in labour practices. According to the content analysis (see Step 2 of the methodology), the ABVTEX is identified as an organisation that aggregates textile clothing and footwear, having an essential role in the Brazilian apparel supply chain.

All six companies analysed in this study integrates the ABVTEX, which, in the Brazilian context, plays an expanded role than just to be a representative association. This characteristic is different to the suppliers' associations and consortia since they are small and associate as intermediary companies, usually like cooperatives, strengthening and improving their competitiveness (ILO, 2018; Hayes *et al.*, 2005).

3.1 - Brazilian apparel supply chain network

Based on the information described in Step 1 of the Methodology, a content analysis was carried out to identify the supply chain structure. Following Step 2 of the Methodology, the entities that compose the chain and type of interactions were identified. It is possible to note that the focal companies (buyers) and a network of first-tier suppliers, and subcontracts characterise the Brazilian apparel supply chain, as presented in Figure 2. This structure follows the same pattern of the global supply chain with strategic control operations from the focal company (1) and their brands' management (Egels-Zandén *et al.*, 2015; Boyson, 2014).

Three main characteristics arise in the Brazilian apparel supply chain. They are: (i) The Brazilian geographical dimension that also presents self-sufficiency in most of the resources, both for raw material and production capacity Montalbano and Nenci, 2012; Gereffi, 2014). This characteristic makes it possible for almost all entities in the supply chain to operate, not depending on international suppliers and resources. ii) Another important factor is the geographical proximity since it determines the production cycle speed and production flow. Also, the main suppliers are in the same country, thus reducing the bureaucratic commercial procedures. This geographical proximity provides greater interaction between entities (Gereffi, 2015; Fontana and Engels-Zandén, 2019), agility in commercial processes and lead times reduction. (iii) The sectoral organisation, with the presence of ABVTEX, an interlocutory entity and also a sectors' certifier, that enables the first and second-tier suppliers centralisation (see Figure 2) (Posthuma and Bignami, 2014). This organisation has a suppliers' database, facilitating and streamlining access to suppliers already developed, which meet the minimum requirements of the sector, in a joint effort to promote sustainability.

The main characteristics and structure of the Brazilian apparel supply chain are described below. These were devised based on the Literature Review (summarised in Table 1) and companies reports (see Appendix 4). The comparison between Brazilian and global supply chain will be further detailed in Section 5.

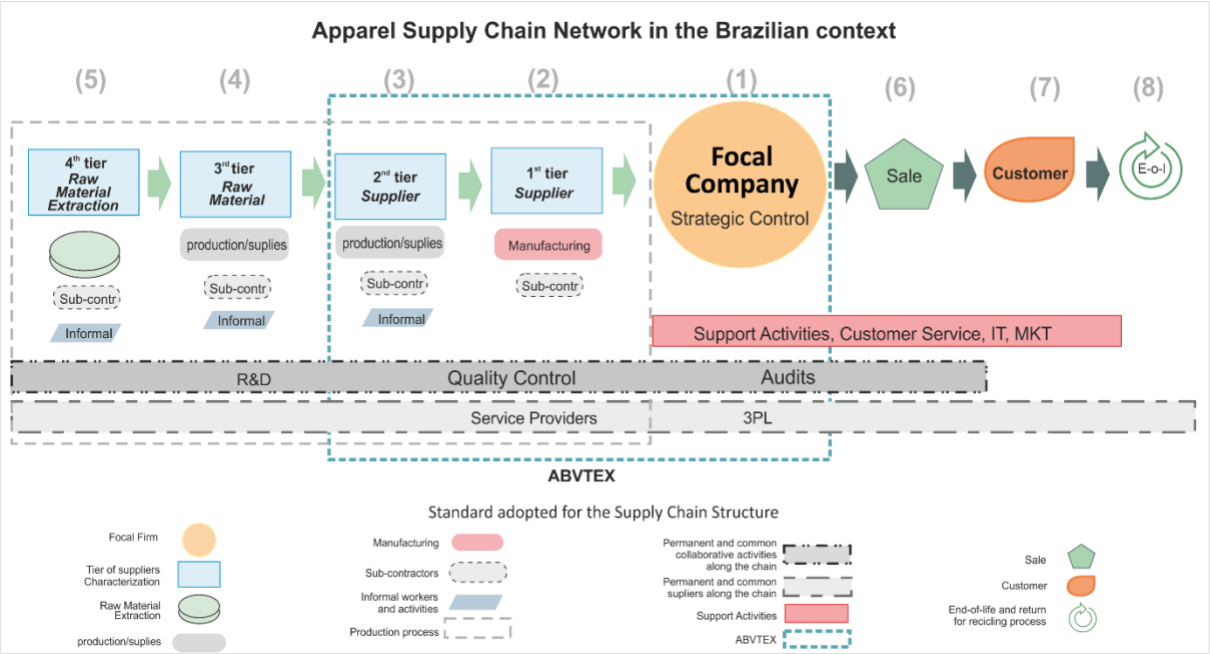

Figure 2 – The structure of the Brazilian Apparel supply chain

ABVTEX - Brazilian Textile Retail Association

In the Brazilian apparel SC a sectoral organisation was observed. This is done through the creation of the ABVTEX. This association proposes *"to be a sectors' correspondent among industry, commerce and services, government, NGOs, associations, press, and society"*, as described on the institutions' website, and it integrates approximately 90 major brands in the Brazilian and international textile and clothing industry operating in Brazil. It also intends to "*promote sustainable fashion, becoming more accessible from the development of fair, responsible, innovative, competitive, and transparent production chain*" (ABVTEX, 2018).

ABVTEX integrates the apparel supply chain sector and connects all entities and different stakeholders, but it does not establish a trade relationship. Its actions aim to promote the sectors' improvement and development with various stakeholders, making it also more internationally competitive. This characteristic differentiates the Brazilian apparel chain from other countries and global chains. The companies integrating the ABVTEX, both in textile and footwear sectors, are committed to buy only from certified suppliers, following the sustainability principles according to Sustainable Development Goals (SDG) and provide transparent operation (ABVTEX, 2018). This association has changed the Brazilian apparel sector on behalf of sustainability, especially for decent work and against informality, in collaboration with several representative entities, government, and NGOs to develop supply chain covering first and second-tier (Pioli and Raupp, 2018; Posthuma and Bignami 2014; Pérez *et al.*, 2018).

This type of association (e.g. ABVTEX, BWJ, and IFC) is a joint effort to improve sector performance and competitiveness, minimising risks and centralising the initial audits in the suppliers' selection, especially

in countries where there are fails in the labour abuse prevention and control (Zenker, 2018; Ramia Munerati, 2018). An associated company, when seeking for suppliers, has already known the minimum quality criteria fulfilled by the prior audit carried out by the institution (Moro *et al.*, 2017). This does not exclude each company control and their own audits, as pointed out by the content analysis of the Brazilian companies reports since there are specific criteria for each company that will be individually evaluated and each company conducts its supplier audits. Many companies establish their specific criteria according to their corporate strategies to obtain raw materials or clothing products and accessories, which are still not included in the audited entity. The institutions' action occurs by committees and workgroups with associated companies, seeking to align practice and manage possible supply chain risks for both internal and international operations. It should also be emphasised that international companies operating in Brazil in the retail sector, as well as suppliers contracts (e.g. Zara, C&A, Kalvin Klein, and Forever 21), are also signatories and entity certified, then it is not exclusive to Brazilian companies, and the membership is voluntary.

It is also important to highlight that Brazilian apparel sector concentrates about 20,000 formal companies (ABIT, 2019) with 7,000 companies registered in the association as regular suppliers and from these, the entity lists only 3,700 as certified companies, which shows there is still a long way to go. According to the reports, the audited and certified companies correspond to approximately 23% of the total companies, and they comply with the code of conduct developed to meet the signatory companies' criteria in a standardised form. As indicated by the entity, the admission of new companies has been constant. The certification audits comprise several items of companies' documentation and regularity, labour conditions, human rights, and environmental aspects. The main audit topics are presented in Appendix 7. Although the literature has little approached the changes in the sector in recent years, it is noted that the presence of ABVTEX in the structure of focal companies plays an important role among the major local players in the development of this supply chain. Its importance is in both national and international operations, as it defines and standardises practices, limiting access to suppliers that are not certified and recommended, being one of ABVTEX's differentials from other sectorial or certifying entities (Zenker, 2018; Pioli and Raupp, 2018; Grüninger, 2019). It integrates the focal company mainly on the first and second-tiers in the clothing, footwear, and accessories segments, and all six companies in this study (Bibi, Hering, Malwee, Grendene, Marisa, and Renner) are signatories or certified. The collaboration among key stakeholders in the Brazilian apparel sector has been emphasised in the literature as a determining factor to promote sustainability along the chain (Laquimia and Eweje, 2014; Lambin and Thorlakson, 2018; Frigelg *et al.*, 2019).

Focal Company – Strategic Control (1) - Brazilian apparel supply chain has the strategic control characterised by the vertical integration (see Appendix 4). Management strategy and corporate decision-making centralisation throughout the supply chain are performed by this main entity in the supply chain,

regardless of how many brands are under its command. For the companies considered in this study, the number of brands varies between one (Bibi Shoes) and nine (Grendene). Interestingly, the companies with the largest number of brands, such as Malwee and Grendene, are the most vertically integrated from the six companies analysed in this study, which has already been noted in non-global chains in developing countries (Teng and Jaramillo, 2006; Aggour *et al.*, 2018). Renner and Marisa's brands do not have their own production, following the global companies' standard of outsourcing production.

From the content analysis of the six companies reports, it was observed that in the Brazilian context the companies Bibi, Hering, Malwee, and Grendene present vertical integration with their own production in more than one factory (see Appendix 4). Most of the local companies are also producers, which increases the control over the production process stages and centralises the decision-making. In global chains, the strategic control focuses on the buyer decision since most of the brands do not have their own production (Bubicz *et al.*, 2020). On the other hand, in this local chain model, the decision-making strategy is between buying or making, or between how much and what to buy or make, since it still controls a large percentage of its own production, such as Hering (80% in 2018) and Malwee (95% in 2018). It does not influence the chain structure because the process stages are the same. What changes is the amount and type of contracts between the different tiers. However, it is observed that the corporate strategic control over the supply chain in the Grendene, Hering, and Malwee companies is centralised and vertically integrated since they control part of their own raw material processing. Considering the companies studied as focal companies' description we have:

- Grendene that has different manufacturing units and total control on its first and second tiers. The company has only contracts with polymer suppliers and produces its own PVC, the main raw material to produce these shoes, in one of its factories, simplifying the chain. As a result, it requires to manage not only supply and distribution but the whole manufacturing facilities. In addition, although the main raw material is PVC, the company's strategic positioning focus on sustainability, as it is a product 100% recyclable and it does not use heavy metals in its composition, such as lead (Hessel, 2008).

- Hering and Malwee clothing production involve processes from weaving to finishing, packing-out and shipping. Hering company operates its own factories but outsources some production stages, such as sewing and finishing. Part of its products is ordered from international suppliers, but the company's strategy establishes not to exceed the limit of 25%, prioritising the local production. The outsourcing of the production stages, such as fractional sewing, is quite common in the sector (Moro *et al.*, 2017; Libânio and Amaral, 2017).

- Bibi company strategy is zero toxicity in its shoes, mainly because its products focus on children under the age of 9. The focal company controls the entire production stages, especially about the raw materials, to ensure that there are no toxic compounds in their composition (Bibi Sustainability Report, 2018, pp. 9).

It also does not outsource any production stage because it considers that most child labour or labour exploitation cases occur in outsourcing and subcontractors process.

- The other companies analysed, Renner and Marisa, have their own structure of local and international sourcing; however, they also establish a higher percentage of suppliers and products from the local origin as a strategy.

Supplier 1st tier (2) – In this level, it takes place most of the relationships between focal companies and suppliers as well as the majority of the audits are carried out and the supply chain studies are concentrated (Tachizawa and Wong, 2014; Tokatli, 2013). For vertically integrated companies, the number of suppliers is significant and there is still considerable resistance in the disclosure of the suppliers by non-global companies. Considering the companies analysed, only Bibi and Marisa provide information about their local and international suppliers. The other companies only indicate that their suppliers are certified by ABVTEX. Although the list of suppliers certified by ABVTEX is open for public access on the website, the international suppliers are not fully audited or certified. Also, it is not possible to identify the suppliers by companies. Hering and Renner are companies that present information about audits in their international suppliers. Hering (2018) states that keeps local following of the international suppliers with teams located in China, and it audits 48% of its suppliers. Renner company (2018) outsources the international audit and it does not report the numbers of audits carried out. This is an important lack of transparency in the local apparel supply chain and the companies reports indicate that the international suppliers' audits are not fully conducted through in-person interviews. According to Renner (2018), Malwee (2018), and Bibi (2018) reports, in most cases, there is only documentary verification. In suppliers' organisations for export in developing countries, there is a collaborative network through sector institutions to improve competitiveness in the international level (Fontana and Egels-Zandén, 2019; Aggour *et al.*, 2018). In Brazil, this relationship is strengthened especially in the footwear industry, through entities such as ABICALÇADOS and ASSINTECAL (shoes and accessories components). Bibi and Grendene are part of these entities. Although the companies analysed are considered focal, they present global structure characteristics, getting their own stores and brands and being first-tier suppliers to other companies, local or international. It is the case of Malwee, Bibi, Grendene and Hering. This characteristic is also observed in global supplier structures in other developing countries (Navas-Alemán, 2011; Choi *et al.*, 2011).

Although the companies have part of their own production, there are some suppliers of products, even in a low percentage. In Malwee, for example, international outsourcing corresponds to 4.9%, the own production in the entire stages represents 33%, and the sewing outsourcing is about 57%, especially in small ateliers known as sewing workshops or factions (since parts of the garments are distributed for sewing). These factions are also known as sweatshops (a pejorative term) in developing countries, due to their poor labour conditions. According to the company, this operational strategy ensures better quality control on their products at all production stages, seeks to control and audit the workshops frequently,

and it is currently ranked as the highest fashion transparency index among the Brazilian companies (Fashion Transparency Index, 2018, by Fashion Revolution Initiative).

Supplier 2nd tier (3) – These suppliers are a critical group in the supply chain, and they are usually composed by fabric suppliers, fabric pieces cut out, and, in some cases, parts of the final touches and embellishments. From a sustainability point of view, both in the environmental and social dimensions, it is a weakest link in the supply chain, especially in developing countries, where labour informality and sub-contracts is common (Tilly *et al.*, 2013; Fontana and Egels-Zandén, 2019). One of the characteristics of the structure of this tier is that in smaller companies, in addition to the large part of the companies being small, it is observed that the home-based type represents a significant number, which are subcontracted for parts of sewing or production. For many of these cases, the own family members work in the facilities and situations with child labour have been found (Tilly *et al.*, 2013; Moro *et al.*, 2017). This has been strongly countered and the companies analysed do not accept suppliers who employ child labour. In Brazil, the ABVTEX's audits also cover this tier, but to a lesser extent since most of the focal companies' contracts remain to the first-tier. The companies considered in this study do not include information about their second-tier suppliers, either the number of workers in the factories. However, in the reports, they present information about how many employees there are in their own manufacturing units. According to ABVTEX (2019) and IBGE (Brazilian Institute of Geography and Statistics, 2019) forecasts and records, most of these suppliers are SMEs, with no more than 100 employees. Companies that manage their own production processes such as Grendene, Bibi, Hering, and Malwee, have better control in the selection of the second-tier suppliers with audits carried out, as described in the reports.

3rd tier (4) – In this stage, composed by raw material processing, there is an increase in the supply chain fragilities, especially in developing countries like Brazil and for the companies producing to local markets (Libânio and Amaral, 2017). This stage is also responsible for promoting unhealthy working conditions and child labour, receiving report by several international institutions such as the International Labour Organization (ILO) and Human Rights Watch (HRW). Brazil stands out as a producer of two raw material in the apparel sector, cotton and leather. In the country, most of these products are exported, approximately 80% of cotton (data from ABRAPA - Brazilian association of cotton producers, 2019) and 71% of leather (data from CICB - Centre of the Brazilian Tannery Industry, 2015). The exported leather undergoes treatment processes at the source, and this process leads to a great environmental impact, consuming large volumes of water and chemicals. However, in Brazil, there was a significant change in the process to adapt the product to export standards, being well controlled in environmental and social terms. There are around 450 tanneries, with waste treatment monitored continuously by the government and, according to the CICB, more than 94,1% of tanneries follow the legislation. Besides, there is a strong campaign against informality and an effort for buyers to guarantee the sustainable product source. In the treatment of cotton, wool, silk and other raw materials, the control has been increasing, mainly related

to poor working conditions and child labour, but there are still frequent irregularities records (Moro *et al.*, 2017), especially in companies assisting specifically internal markets. Based on the reports, the six companies analysed demonstrate regularity to combat any violation and maintain control over suppliers and raw materials sources.

4th tier (5) – In terms of raw material production, developing countries have demonstrated growing progress towards responsible and sustainable production. Many actions are result of several stakeholders' pressure and stricter laws, especially in countries dependent on products exports to meet global chains. India and China have large production, but it is insufficient to supply the global chains, and at the same time these countries are their main suppliers (Lu and Karpova 2011; Montalbano and Nenci, 2012; Libânio and Amaral, 2017). Although there are many initiatives for sustainable production, severe violations of human rights and working conditions in the production process are still happening in these countries (Walk Free Foundation, 2018). Brazil, one of the highest raw material producers for the apparel industry, has stood out in the effort to fight against slave-like labour as well as irregular and precarious working conditions, and developing production process with lower environmental impacts (ILO, 2018). In cotton production, the country presents one of the best international indexes, being the largest global supplier of sustainable cotton (ABRAPA, 2018), with 80% of the production certified by the Better Cotton Initiative (BCI). According to BCI (2018), only 19% of the cotton produced in the world is licensed as good sustainability practices which include environmental criteria as well as social dimension, with decent work condition as a priority. Leather production follows the Brazilian legislation principles and meets international quality criteria (CICB, 2015). Although the raw material controlled and sustainable is more directed towards export, the domestic market has also changed its strategies, mostly motivated by the new customer profile and the pressure from external stakeholders (Garcia *et al.*, 2019; Montalbano and Nenci, 2012). Renner, Hering, Bibi, and Malwee have incorporated in their strategy an increase in the sustainable raw material; however, the reports are not very clear about the acquisition and controlling criteria of the raw material source. Although Grendene mostly uses PVC, the business strategy has been focused on renewable raw material as well as the company has been slowly integrated recycled material in the footwear production.

Sales (6) – Sales have the focus mainly on internal consumers and there is a high investment in technology like Artificial Intelligence to identify the consumer behaviour (Bibi, 2018; Grendene, 2018; Renner, 2018), digitalisation and tracking (Bibi, 2018; Hering, 2018). Also, there is an effort to customise customer service. However, beyond their own physical and online stores, four companies also distribute their products to multi-brand retailers (Bibi, Grendene, Hering and Malwee). Renner and Marisa companies, in addition to their own brands, also hold multi-brand products in their stores, especially footwear and accessories.

Consumer (7) – As an essential part of the supply chain, since it is the product destination, the consumer also has great importance and influence on the production processes in the local chain. Even in a

developing country, higher visibility has been given to sustainability in the apparel chain, both environmental and social aspects, highlighting the awareness of the sustainable product, although it is still at a lower extent (Huq *et al.*, 2014; Garcia *et al.*, 2019). However, there is a growing release of the companies' actions and all those considered in this study have direct channels to the customer service, to receive questions about their sustainability actions and complaints about supplier non-compliance, providing corrective measures, as reported by Malwee (2018), Grendene (2018), and Renner (2018). Renner and Malwee assume to set out sustainability goals on the business strategy (Filippe, 2017) based on customer profile surveys which show growing consumer interest in sustainable products (Euromonitor, 2017).

End of life (8) – In the textile sector, the end of life is a challenge both in global and local supply chains. The growing concern about post-consumer products reuse is also noticed in emerging countries, and the textile fibres decharacterisation for recycling has been increasing (Garcia *et al.*, 2019). Although in a minimum percentage, the companies in Brazil reported an increase of around 12% (Herings' company) to 15% (Renner's company) in the use of these fibres. Renner has presented the highest growth and volume in the usage of recycled materials in its production chain, especially PET fibre (Polyethylene Terephthalate) and cotton defibration. Malwee is a pioneer using shredded cotton in Brazil, which corresponds to a process of reusing garment or fabric scraps from the production process (cutting and sewing) to weave again and generate new fabric. This process represents 1% of the textile production, around 400,000 pieces, and it is increasing each year, promoting the circular economy, as described in Malwees' Reports in 2018.

The above supply chain described structure has as main characteristic that of being self-sufficiency in resources for most process stages (ABIT, 2013). It does not depend on external raw material resources to achieve its full development. There are many initiatives to promote sustainability, such as circularity in the environmental scope, and decent work conditions as well as local development in the social context (ABVETEX, 2018). These initiatives with several sectorial entities, government, and research centres (ABIT, 2017) have promoted the industry development and higher international openness. The production processes changes are mostly motivated by foreign markets, to meet international quality requirements. Brazil, being one of the major exporters of raw materials and products such as clothing, footwear, and accessories for global supply chains, must also meet international quality requirements to remain competitive.

3.2 – Interactions in Brazilian apparel supply chain

Based on the content analysis of the sustainability reports from the companies analysed and the literature review (see Appendix 4), two types of interactions, intervention (mandatory) and influence (non-mandatory), are also observed in the Brazilian supply chain. These interactions or type of relationships

arise between the entities in the supply chain and with different external stakeholders (Lambin and Thorlakson, 2018), as described by Bubicz *et al.* (2020). Figure 3 represents these interactions.

a) Intervention interaction - A significant intervention interaction is identified in stakeholders such as Better Cotton Initiative, which in Brazil has helped the process change and improvement in the cotton production, mainly for export, but it has also directly affected the production for the local market (Garcia *et al.*, 2019). The ABVTEX, although characterised as an entity to promote the dialogue among several stakeholders in the apparel chain, it is also an essential stakeholder in the chain, presenting a strong intervention relationship. Through working groups, the actions and changes are defined and implemented in all participating companies. In other words, they are mandatory. Being part of the ABVETEX and supply to the major brands require process change and following standards.

Considering this supply chain structure in a developing country like Brazil, it is important to note that government interaction also has a strong intervention relationship along the supply chain. Especially being an emergent economy in the international scenario, the pressure from different stakeholders like the International Labour Organization (ILO) and World Trade Organization (WTO) have been expanded in order to adopt sustainable practices. This pressure is reflected through changes in local laws, which affect the companies both in international and local operations (Lambin and Thorlakson, 2018; Stevenson and Cole, 2018; Frazier *et al.*, 2004; Tokatli, 2013). A solid line identifies intervention interactions in Figure 3.

b) Influence interaction – Over the last years, there was a growth in the institutions and social initiatives to monitor the apparel supply chain and, consequently, major concerns by the companies to publish information about how they have been working along the supply chain. From the report analysis, it can be observed an information growth related to actions with suppliers and the number of audits carried out. It is more evident in the Malwee, Marisa, and Renner reports, where there was a reduction in the number of suppliers between 2014 and 2018 and an increase in the number of audits, especially for critical suppliers, those who presented some non-compliance to be corrected (see Appendix 8). These audits reflect the greater external stakeholders' pressure, like customers, which influences the behaviour changes in the focal companies and, consequently, may generate an intervention interaction with suppliers to adapt to changes. Other examples are the institutions' interactions such as Fashion Revolution Foundation, NGO Brazil Reporter, and Decent Work Institute (free translation from *Instituto Trabalho Digno*). Fashion Revolution Foundation was created in 2013 after the collapse of the Rana Plaza building in Bangladesh; it is a worldwide initiative operating in Brazil and influences companies to control the social dimension through the entire supply chain, starting with raw materials. NGO Brazil Reporter is an initiative involving media to report investigative news about non-compliances, especially in the sewing workshops outsourcing. It denounces and monitors companies for irregular work, illegal immigrants, child labour, slave-like labour condition, among others. Instituto *Trabalho Digno* does not only operate in the apparel sector but also monitors several activities in Brazil, as a scientific entity in the labour world. This factor

directly reflects the interactions' influence of different stakeholders along the supply chain, which pressure companies to control their suppliers throughout the entire chain. They also influence customers awareness about conscious consumption, such as Free Fashion App (free translation from Moda Livre App), developed by Brazil Reporter. The objective is to monitor and evaluates the actions developed by more than 70 brands, mainly against slave-like labour, providing the data to customers. If a company does not answer the assessment questionnaire, it will be automatically included in the red category, to alert for lack of transparency. The dashed line identifies the influence interactions in Figure 3.

These influence and intervention interactions in the Brazilian companies' sustainability are also observed in the developed actions and social dimension sustainability management, both detailed in Section 4.

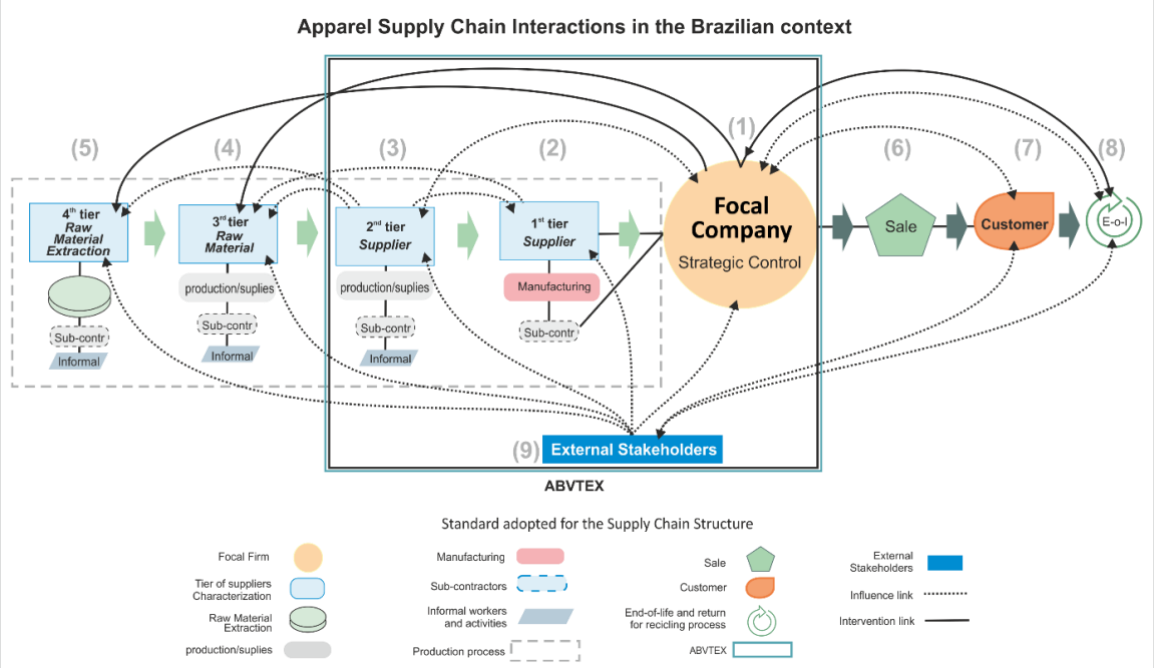

Figure 3 – Interactions between stakeholders and the different entities in the Brazilian apparel supply chain

4. Sustainability Social Dimension analysis

Based on the Bubicz *et al.* (2020) analysis, the social dimension of sustainability in global supply chains has been more widely addressed and discussed in recent years, although not yet exhaustively (Jabbour *et al.*, 2017; Bubicz *et al.*, 2019), with great focus on developing countries, where the most significant weaknesses exist (Köksal *et al.*, 2018; Bubicz *et al.*, 2019). Through content analysis of sustainability reports of Brazilian companies (see Step 3 of the methodology) it was possible to outline the management structure, the components of the sustainability strategy, its hierarchy, and the social dimension approach in the corporate strategy of the six companies (see Appendix 4). The results are in Figure 4.

Figure 4 - Overview of the strategic structure and social sustainability management based on sustainability reports of the six companies analysed.

What it is observed is that sustainability concerns are present in the companies' management strategy, in the form of Policies and Commitments, however, with different intensity and visibility in each company. Policies and Commitments are in the SDG Compass (2015), a guide developed by GRI, UN Global Compact and WBCSD to the practical application of the SDGs in companies. According to the guide, Policy is the SDG definition and how it will be addressed by the company, due to the impact in its value chain. Commitment is the definition of priorities for each defined SDG, through actions, with respective goal and target, to promote positive impacts along the supply chain. The Content Analysis shows that in the Brazilian context still has a greater focus on the internal environment of companies and on the brand reputation, with growing actions along the supply chain. This result is in line with studies by Segovia-San-Juan *et al.* (2017) and Jabbour *et al.* (2017). As an example, the company Marisa, although they have actions and sustainability concerns, this is not clear in their strategy and their disclosure. However, it is the only one of the six companies that discloses all its suppliers, both national and international. It started to disclose the names of its suppliers in a reactive way after having the brand name related to the slave labour in one of its suppliers. The brand has intensified audits of suppliers, joined the ABVTEX program and made some changes to the supplier's code of conduct. Although the company provide information, business and institutional reports on the website, the lack of sustainability reports is a lack of transparency in this company because it is not possible to identify actions developed and stakeholders' involvement along the Supply Chain. The management reports show that the focus is mainly on financial results. However, it is essential to highlight that all suppliers are ABVTEX certified, thus being a prior guarantee of code of conduct compliance and with the own audits it seeks to ensure compliance.

The other five companies present sustainability in evidence in the corporate strategy and disclosing and detailing their actions and projects clearly. The sustainability commitments and policies are based on the mission and values of the companies, and they are directly related to the codes of conduct and stakeholders' relationship. All six companies have the conduct codes and ethic, and the company Marisa has, in addition, a Supplier Compliance Policy, specifically designed to mitigate social impacts. Out of six, four companies follow the standard GRI (Bibi, Hering, Malwee and Renner) and four companies identify their practices related to the SDGs (Bibi, Grendene, Malwee e Renner). It should be noted that the ABVTEX Program presupposes actions related to SDGs. It is also important to note that the Brazilian companies analysed indicate to which objective (SDG) their practices and projects contribute. It is not clear whether the actions were motivated by the SDGs. The exception is Renner, which has some actions explicitly guided by the SDGs. In this company, in the first pages of the sustainability report, the "*commitment to the United Nations Global Compact (UN), Sustainable Development Goals (SDGs) and Women Empowerment Principles (UN Women)*" is highlighted (Renner Sustainability Report, 2018, pp. 6). All companies have proximity and joint action with several external stakeholders, working on projects that promote sustainability. Social sustainability actions are developed on all six companies through working groups, whether internal or external, such as employee benefits, professional qualification, job and income generation, support for institutional projects and donations to national NGOs. Many of the actions have an environmental focus, but also reflected in local communities, such as Parque Malwee, a protected ecological area of 1.5 million m², of free public access, and a protected private area focused on scientific research. Based on the company's sustainability management structure identification, content analysis reveals, through automatic coding performed with the N-VIVO software, (see Appendix 5 and an example in Appendix 6), the main topics addressed by the companies in sustainability management, mainly in the social dimension. Figure 5 shows these actions developed by companies and their scope throughout the supply chain. The type of actions follows the standard adopted in the companies' reports. This means that are adapted for the Brazilian context and presents some differences when compared with actions of global companies. Different actions are distinguished in the Figure by red colour.

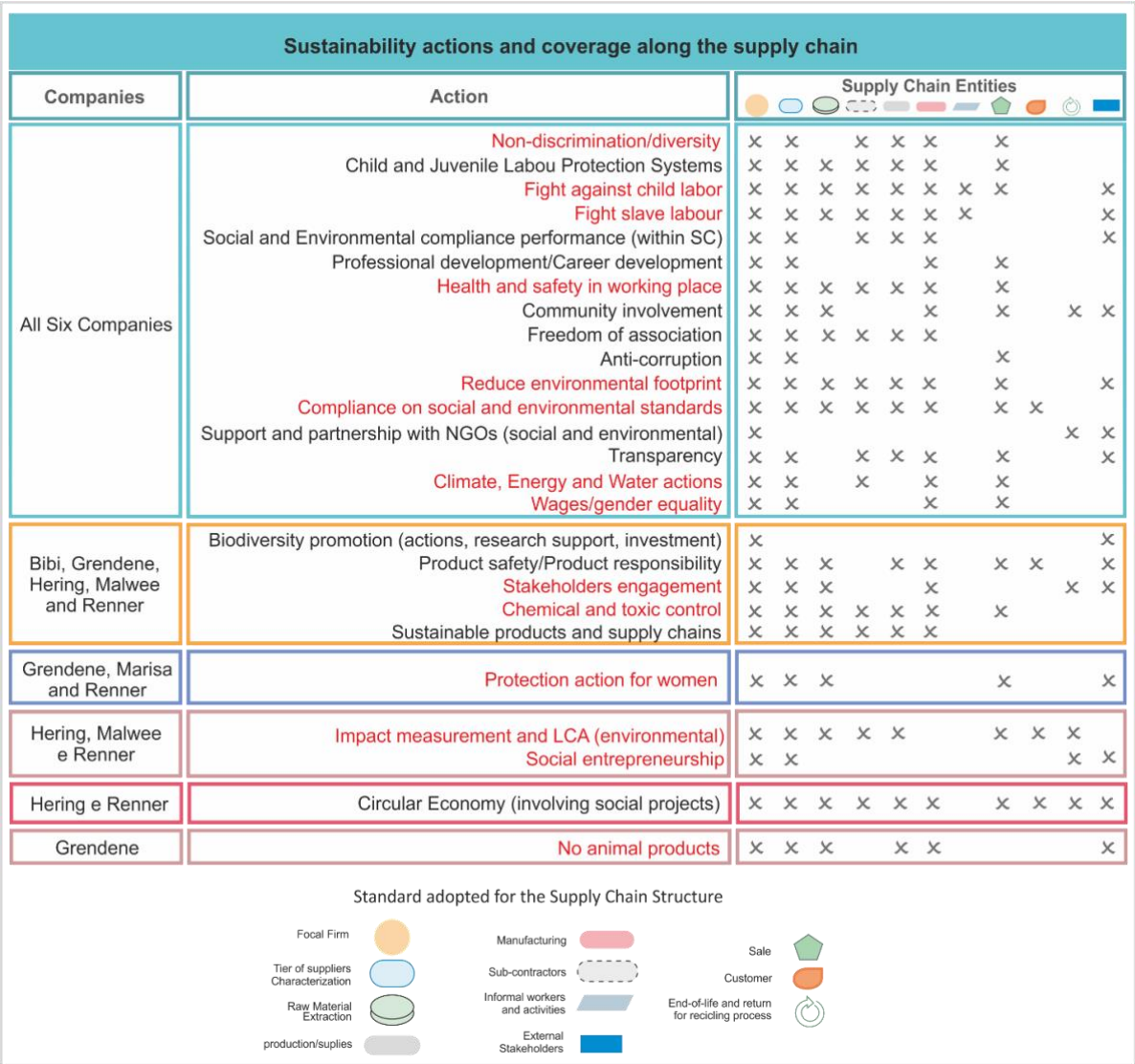

Figure 5 – Sustainability actions identified in the content analysis

The four aspects of social sustainability dimension (HR, LC, S and PR) are identified in the companies' actions. Many actions cover the internal environment of companies. This orientation has also been observed in other supply chains in developing countries (Köksal *et al.*, 2017), which can be justified by the fact that it is an emerging country, and still has many issues to be resolved, such as low professional qualifications and low wages. All companies have internal policies of adequate working conditions, with specific actions to comply with workers' health and safety standards, such as providing wages not lower than the national minimum and health insurance and benefits like food and transport aids. The projects and actions with communities are developed mainly with external stakeholders' collaboration, such as NGOs or governmental entities that support companies. A significant part of these actions are related to female empowerment (e.g. Hering, Malwee and Renner) and actions to generate jobs and income, but many projects that involve children and *teens* (e.g. Bibi, Renner, Hering and Malwee), especially in social vulnerability situations.

Several actions have the environmental focus but present a strong relation with social issues according to the companies' reports. As an example, "circular economy", or "sustainable products", that are related to some action with communities, such as the one from the Renner company, with the project that qualifies organic cotton producers, the company's raw material. This qualification also has a social character, which aims at empowering women in a *quilombola* rural area (*Quilombos* are Brazilian settlements created by people of African origin, mostly enslaved during the period of colonial Brazil and many of their descendants live in these areas). Although the actions have, in many cases, coverage throughout the supply chain, the proportion compared to companies in a global chain is smaller. Another important fact in terms of frequency and intensity is that the companies detail their internal actions and projects with community involvement, such as participation in social campaigns or voluntary actions. However, regarding compliance policies and audits, there is a lack of transparency and little information about what is done. For example, there is information on slave labour and informality fights, but there is no detail on what and how the actions take place. There is also no detail on how the audits are carried out.

Marisa does not have a sustainability strategy, and the company's focus is mainly on repositioning and expanding market share, as well as a greater focus on the financial area. In sustainability practices, it focuses on reducing water consumption, especially in the jeans production process. There are few external social actions, but all its suppliers must have decent work practices following the code of conduct, which covers the supply chain. One of the actions that stand out, even if internally, is to raise awareness about domestic violence, with a direct channel so that employees can request help, in confidence. Also, there is an action to donate the profits of a product line for the reconstruction of the dental arch of women victims of domestic violence, in partnership with the NGO *Turma do Bem*. Most of the company's employees, more than 80%, are women (see Appendix 3).

Social sustainability is related to the internal and external aspects. What can be noted is that in the Brazilian context, there is still high orientation towards internal actions. A study developed by Jabbour *et al.* (2017) in Brazilian companies indicated the potential to promote social justice throughout the supply chain. In other words, the actions are not adopted in the intensity or effectiveness that they could be to achieve sustainability, covering all supply chain tiers. Most actions are within the focal companies or for them. What can also be observed is that the external stakeholders, especially international, have considerable influence in the supply chain in the companies with international activities. In these cases, the company's reports point out global actions along the supply chain, as the greater control over the raw material (e.g. Grendene PVC free of lead and heavy metals), as well as "sustainable origin" certificates (e.g. Bibi Shoes company Toxic Free and Sustainable Leather). These characteristics also impact the internal supply chain, as in the Grendene case, that uses the same production process to the internal and external market, delivering an international quality product for the local consumer. Since the export criteria are stringent, the pressure to control all levels of the supply chain is also higher. However, in the

local operations reduce the stakeholder's pressure, both internal and external. This can be noted in social sustainability actions, that are more focused on the internal environment, with employees, and actions in the communities where the companies are based (e.g. Hering, Malwee, Marisa e Renner). When the actions involve suppliers, usually it is mainly in the first-tier.

Codes of conduct are designed to meet the legislation requirements, but they are not effective if there is no collaboration between all entities in the chain and government (Köksal *et al.*, 2018). In countries where the law is more comprehensive, with greater protection for workers, codes of conduct tend to be more detailed. However, when there is no control or rigour in inspection, the tendency is non-compliance (Feasley, 2015; Köksal *et al.*, 2017). In Brazilian international companies, the codes of conduct meet the requirements of international buyers. And these, in turn, are in line with the guidelines of international entities or buyer countries, with more rigorous control and inspection. The lesser control and rigour throughout the local supply chain, naturally make working conditions more precarious (Zenker, 2018; Tilly *et al.*, 2013). The EU has a standard, but companies have some more specific criteria depending on the country of origin. For companies like Bibi and Grendene, which export to Europe and the USA, the codes of conduct have stricter and broader characteristics than companies that operate in the local market only. And that includes control over the entire chain from raw material. For example, global companies such as Inditex, Adidas, Nike, Patagonia and Gap, which operate in Brazil, have their codes of conduct with more stringent characteristics in the supply of raw material. These characteristics are not found in companies with local operations such as Malwee and Hering, especially because they have control in the purchase of raw material for their own weaving. The Renner company presents a Code of Conduct with more detailed rules, the definition of supply criteria and audit process for its suppliers throughout the supply chain.

This also demonstrates a weakness in the chain, which lacks more control and more effective actions by companies. What can be observed through the analysis is an increasing number of actions over the years and greater coverage along the supply chain. Multi-stakeholder initiatives that exert even more pressure on brands, "push" companies in a reactive way to social responsibility (Köksal *et al.*, 2018) and greater commitment to sustainability involving more and more all the entities in the supply chain, as can be seen in Figure 5. Preserving the brand image and reputation is one of the great motivators, but also the changes in consumption profile are gradually promoting changes toward social sustainability in both global and local companies (Garcia *et al.*, 2019).

4.1- Social aspects analysis in the Brazilian context

Considering the four aspects of the social sustainability dimension (HR, LC, S, PR), a semantic analysis was carried out in sustainability reports. The results are in Figure 6. What can be observed is that there is a great concern with Working Conditions in all companies, between 33% (Marisa) and 61% (Hering). As most of them have their own production process, this concern is justified, as textile and footwear production are usually known for unsanitary conditions. The company Marisa, which does not have its own factories,

is the one with the lowest frequency (33%). Impacts on society were cited 11 times, 5 of which in the Malwee company. Although the “society” context has been cited 60 times, which demonstrates an integration of companies with the local community, 24 citations are directly related to this relationship and collaborative performance, such as “for the society benefit” (Malwee, 2017), “society engagement” (Hering, Malwee Renner e Bibi) and “positive and transforming impacts on society” (Hering). The analysis also shows that the risk is more focused on the focal company and its internal aspects. Regarding risk, is mainly related to financial and environmental issues. The mention of social risk assessment is especially related to labour issues, in the companies Hering, Malwee, Marisa and Renner. The companies with the highest rate of outsourcing are those with the highest social risk assessment and monitoring (Marisa and Renner), especially for child labour and the violation of human and labour rights.

Regarding the LC aspect, there are 186 citations and most of them related to fight child and forced labour, slavery condition and also related to job security and the protection of immigrants (not legalised and consequently informal in small suppliers). Marisa highlights itself in the Society aspect (55%) and the reports reinforce that the commitment is laws compliance and payment of all taxes that must be converted into social benefits through government actions. Although this is the attitude of all companies, it is quite evident in the documents of the company Marisa, but it does not present actions, social projects or partnership and NGOs support.

The remaining aspects, HR and PR, have a relatively uniform frequency distribution across all companies. Bibi shows more the PR aspect, as it is in the company's strategy to be more careful with products because it is aimed at child consumption, and its strategy is to achieve zero toxicity, being a safe product for child use. These actions demonstrate the concerns with the social dimension of sustainability and companies have invested collaboratively with different stakeholders to improve performance.

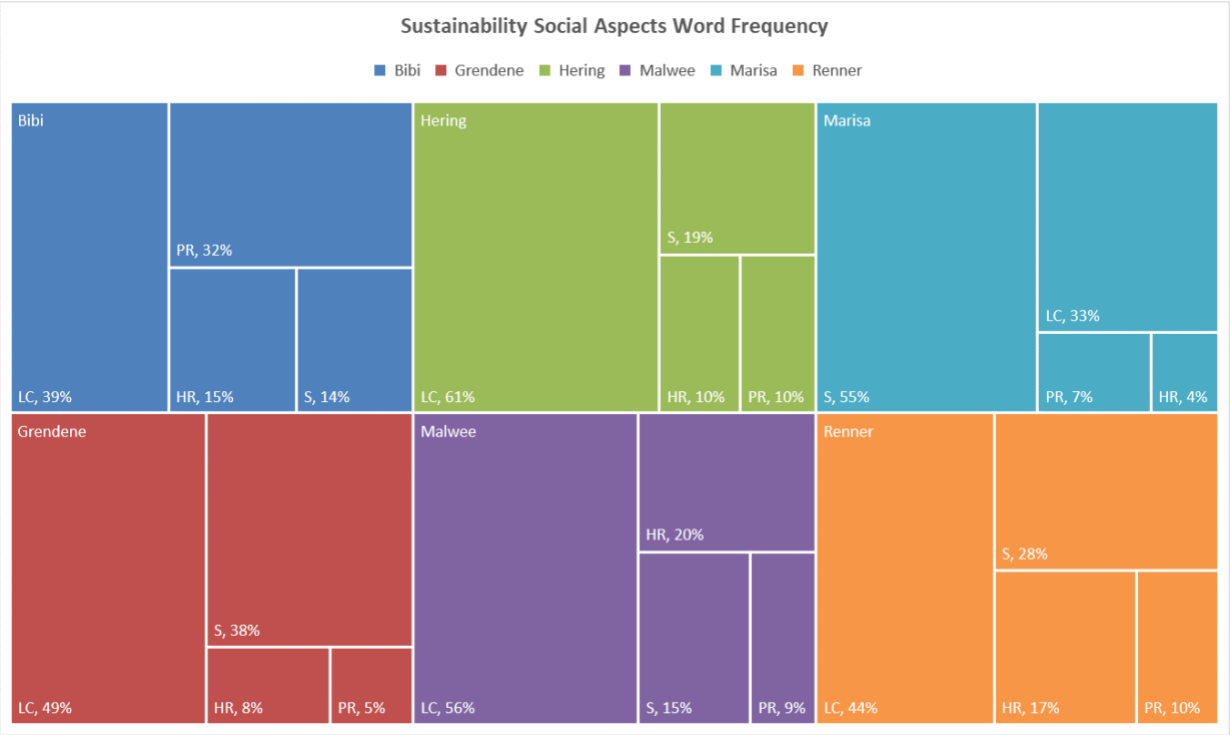

Figure 6 – Frequency of the social aspects in the sustainability reports

5. Comparing the Global Apparel Supply Chains and the Brazilian Apparel Supply Chain

From the previous analyses it is possible to compare the global apparel supply chains based in developed countries (Bubicz *et al.*, 2020), and the Brazilian apparel supply chains, a developing country (as discussed above in this chapter). The main characteristics that differentiate these supply chains are represented in Figure 7. The eight items described in the characterisation of these supply chains are identified. The main characteristics of the structure, and the relationship with stakeholders, are then compared.

Starting with the focal companies (1), these differ on the strategic supply chain control, with global chains being horizontally integrated while in Brazil a vertical integration predominates. The relationship with stakeholders is present in both environments. In the Brazilian supply chain a growing involvement of different external stakeholders and effective collaboration between companies, government, and different entities along the chain to promote sustainability is observed, but this is mainly promoted through an association in the sector, named ABVTEX. Over the five years of analysis, it was observed an increase in the number and effectiveness of actions along the supply chain, as well as on the performance of external stakeholders that have expanded its role in several global actions, also in developing countries and local supply chains such as in Brazil. There is greater proximity between focal companies and NGOs and different entities to promote sustainability, also for product development. Research & design for sustainability and circularity promotion in fashion is in evidence in sustainability reports, with external stakeholders' involvement such as the case of Adidas and Parley Ocean, H&M with Ellen MacArthur Foundation and Stockholm Resilience Centre in Stockholm University, being in line with studies developed

(Silva *et al.*, 2019). A high focus on sustainability in the internal environment of the companies, mainly to guarantee social and labour rights is observed in the Brazilian context. However, there is a growing involvement of the local community and also extending actions along the chain.

In the different tiers of suppliers (see Figure 5, items 2, 3, 4 and 5), what is most noticeable is the scope. In global chains, control is at all levels, with audits in different tiers of suppliers (2, 3 and 4), until raw materials (5). In the Brazilian context, it is mainly in the first-tier (2), increasing the audits and control in the third-tier when it operates internationally (e.g. Bibi with sustainable leather). Large global suppliers, long term contracts and list of suppliers' disclosures are the main characteristics in global companies. In Brazilian companies, what is noticeable is that the suppliers are mainly local SMEs, *factions* and small ateliers, non-disclosure of the list of suppliers and the audits are internal, being mainly in the first-tier. Only the company Marisa discloses its national and international first and second tiers of suppliers (items 2 and 3) on its website. Disclosure is an appeal in both environments, and it comes from different external stakeholders, like trade unions, Fashion Revolution Movement and NGOs, and it is an important gap in transparency, addressed and highlighted in scientific research (Wilhelm *et al.*, 2016; Ma *et al.*, 2016; Köksal *et al.*, 2018). Compared to global companies, this is an essential difference since all the six global companies analysed disclose their suppliers and the number of factories, the number of workers per supplier and subcontracts. On the other hand, H&M goes further and details until the third-tier, thus increasing the supply chain transparency. In the third and fourth-tier of suppliers (4 and 5), in the raw material extraction and first treatment, the main characteristics remain, but the difference is the use of sustainable fibres. In global companies, sustainable fibres use is more than 70%, and in Brazilian companies is less than 50%. The raw material control and external pressure are high in global companies from developed countries. In Brazilian companies, raw material control is high when it operates internationally (e.g. Bibi and Grendene).

In sales actions (6), the main difference is also in the scope. Global supply chains have high international visibility. Local supply chains have their sales concentrated primarily in the company home country, and few companies have international operations, which represents, in the majority, a small percentage in the volume of business. Therefore, brand visibility is also lower.

Consumer (7) also has specific characteristics, with communication and brand positioning focusing internationally on global brands, and in the Brazilian chain focusing on local consumers. Both environments have tools for pressure (e.g. Mobile Apps "*Moda Livre"* and "*Good on You"*) This not only influences the production process and product characteristics but also the type of consumer influence and pressure, being more significant in the global brands.

Finally, about the end of life (8), both supply chains have differences in positioning and responsibility. The global apparel chain presents more initiatives and a higher volume of products collection after use and insertion of recycled materials and fibres in the production process of clothing and accessories, which can

also be explained by the higher external pressure received. In Brazil, these initiatives have also grown, but there is still a presence of a second-hand product market, which can be explained by the local socio-economic condition. In this item, there are not only differences but also essential similarities. The first is the low involvement of the consumer, who does not answer the calls for returning clothes after use, and the treatment or recycling has very low rates in both realities. Moreover, the second common characteristic is the involvement of external stakeholders in a collaborative way for the collection in the stores and appropriate destination of the products, especially to promote the circularity of fashion. Circular fashion is also gaining space, but the actions are still concentrated in the first and second tiers of the supply chain. Entities like ABVTEX have been fundamental to promote the social sustainability dimension along the supply chain in the Brazilian context. Also have gradually expanded their operations to the various tiers of suppliers.

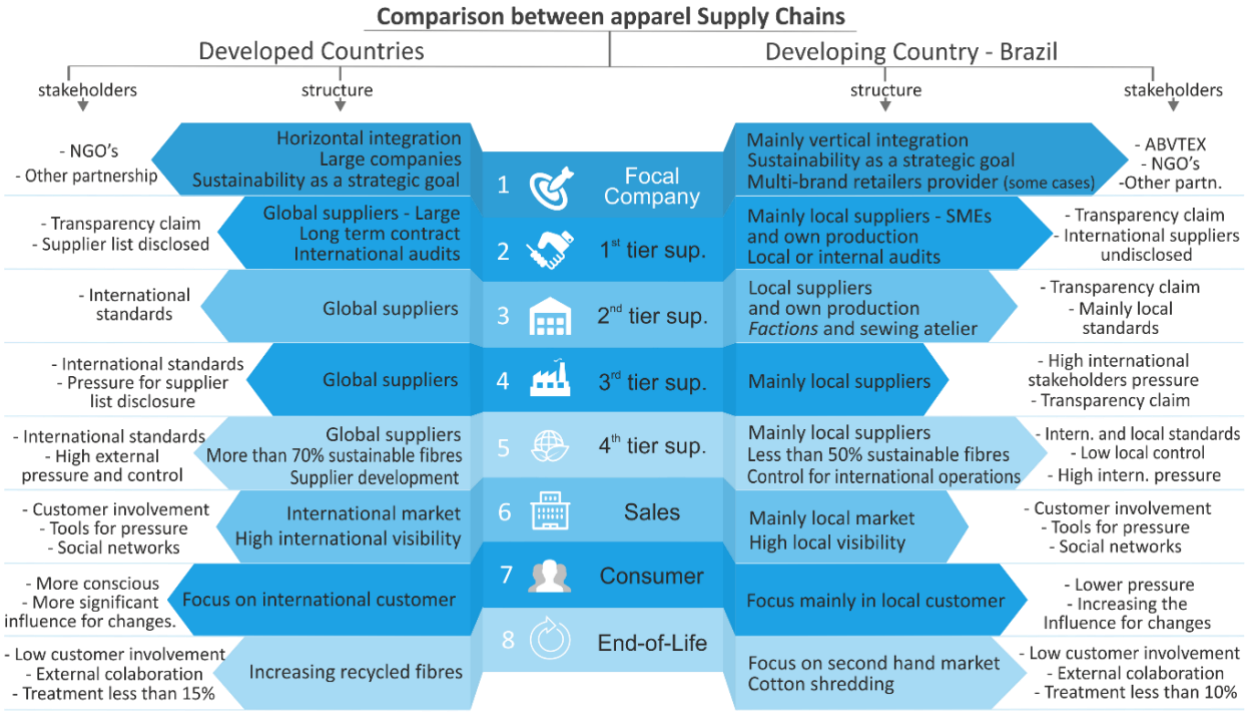

Figure 7 – Difference between supply chain structure and stakeholder's interaction in the apparel supply chain

When comparing social dimension management, in Figure 8, the main differences are compared at the strategical level, considering the results presented in Figure 4 and the study developed by Bubicz *et al.* (2020).

(i) Strategic Goals – Sustainability in both cases is observed in the company's strategy. However, global companies have SDGs at the top of the strategy, with high visibility and guiding actions. Typically, these follow the GRI standard. This is not noticed with the same intensity in the Brazilian context, one of them presents the SDGs at the top of the corporate strategy (Renner), another three inform their actions and

the respective contribution related to one or more SDGs. Five companies follow the GRI standard, not only being identified in the company Marisa.

(ii) Social Sustainability Policies and Commitments are treated differently in both cases, where SDGs are a common concern. While in global supply chains these policies are evidenced in direct actions and audits throughout the different tiers, in the Brazilian supply chains, they are more focused on the first and second-tier of suppliers. However, the common feature is the strong presence of partner entities, such as NGOs, to monitor and combat irregularities. The commitments are made through projects and actions to fulfil the proposed objectives. Many actions are developed based on the SDGs in strategic partnerships with NGOs, involving the different tiers of suppliers and communities, to promote social and environmental sustainability. In the Brazilian supply chain, these commitments are more at the internal level of companies with scope in local communities. At the supplier level, there are many projects across the different tiers, but the involvement is higher in the first-tier, where most contracts are.

(iii) The relationship with stakeholders is intense and close to meet sustainability objectives, and it takes the form of partnerships and financial support for joint actions in both global and local supply chains. The scope of actions in global supply chains is closely related to the countries in which their suppliers are located, with higher intensity from some companies such as GAP and H&M, in countries considered critical. These critical countries have a high-risk index (e.g., Gap Sustainability Report, 2018, pp. 50; H&M Sustainability Report, 2018, pp 81). There is intense pressure from external stakeholders to increase control over working conditions and human rights in the raw material level. In the Brazilian supply chain, external pressure on the raw material is more focused on companies that have international sales, where control is also more rigorous in terms of the laws of the buyer's country. In local operations, there are movements and pressure to increase the control along the supply chain, but the actions are less intense. Control is most effective in the first and second tiers of suppliers.

(iv) The codes of conduct are in both supply chains, and in global supply chains, there are different Codes (e.g., conduct, ethics). All international companies analysed have specific codes of conduct for suppliers with clear rules and a high level of detail at the strategic level for rigour in compliance. In the Brazilian context, codes of conduct are more generic, not detailed, and in most cases, code of conduct and ethics. Although there is mention of code of conduct compliance, it is not highlighted in the reports and websites with the same institutional visibility as in global companies.

(v) Social actions, Projects and Working groups are related mainly to Society and Community but also integrates Human Rights actions and are evidenced in different activities to promote social sustainability in the context of local communities. While global companies operate internationally, especially with the communities in which their suppliers are, Brazilian companies have their projects focused on local communities, in close relationship and involvement. Although the actions differ by proportion and scope

along the supply chain, they are very similar in the type of projects developed, which are support for immigrants and refugees, female empowerment, education and projects for generating jobs and income.

Figure 8 - Social dimension management of the apparel supply chain – comparison between developed counties and a developing country (Brazil)

Regarding social sustainability actions and their scope throughout the supply chain, the main elements that characterise these actions and the way they are treated in the context of global and Brazilian supply chains are in Figure 9.

(i) Social projects are differentiated by the coverage along the global supply chains, in the different tiers of suppliers, also contemplating a greater control in the sustainable origin of raw material. Although Brazilian supply chains have, in some cases, coverage in all tiers, projects and actions are still more frequent in the first and second tiers. The aim focus has been on the fight against slave labour for both type of SC.

(ii) In the Society aspect and Community, it is shown that the companies analysed have developed projects involving communities, especially in locations where they have operations. Global companies have a broader scope, with operations until the level of raw materials, in all companies analysed. Brazilian companies concentrate their actions with a more significant presence in the locations of their plants and the first-tier of suppliers, take care of reputation, invest in internal and external actions, and seek to minimise the risks of negative impacts to the brand. What the analysis has shown is that both global and Brazilian companies have intensified their actions along the supply chain, motivated mainly by pressure from external stakeholders and also by customers pressure.

(iii) The coverage of actions along the supply chain has a strong presence of different external stakeholders, especially NGOs working together in global companies, where suppliers are mostly on

different continents. These activities are carried out in the form of strategic partnerships and agreements with local entities for joint activities and demonstrate that they are developed according to the most significant weaknesses identified in the communities. In the Brazilian context, the actions are concentrated in the first and second tiers. Companies also define projects based on the identification of the main local weaknesses.

(iv) The SDGs are present in global and Brazilian chains. Only two Brazilian companies (Marisa and Hering) do not present their projects and actions related to the 17 objectives. However, it is essential to remember that as signatories to ABVTEX, they must have actions related to the SDGs, as it is one of the premises of the institution. Human rights and working conditions are the most frequent aspects of actions and cover all levels of production, starting in raw materials. The difference is that global companies identify the SDGs that are most in need of attention along the supply chain and develop projects to serve them. According to the reports, this identification also takes place with the participation of different external stakeholders, while in the Brazilian companies, actions are developed based on the needs of both the company and the local communities. The actions are not motivated by SDGs, although the actions and projects show the contribution to one or more of them.

(v) Finally, how the four aspects of the sustainability social dimension are treated (LC, HR, S, PR), was also compared. The results indicate that in the global apparel supply chains, there is high care in Product Responsibility (PR), which involves reducing levels of toxicity and increasing of sustainable materials. According to the reports, it is possible to note that this aspect (PR) is also related to the Labour Condition (LC). When reducing the toxicity of products and increase the use of sustainable materials, it improves the working condition with less exposure to risk, being the production process is where the most significant toxicity is. Furthermore, it improves the social environment, with the reduction of soil pollution, air, and water in the communities where the factories are. In the Brazilian supply chain, the focus is mainly on decent working conditions and the guarantee of human rights (LC and HR). Being a developing country and still having these concerns in evidence, it is in line with the literature when social sustainability and the weaknesses and fragilities along the supply chain are addressed (Stevenson and Cole, 2018; Köksal *et al.*, 2018).

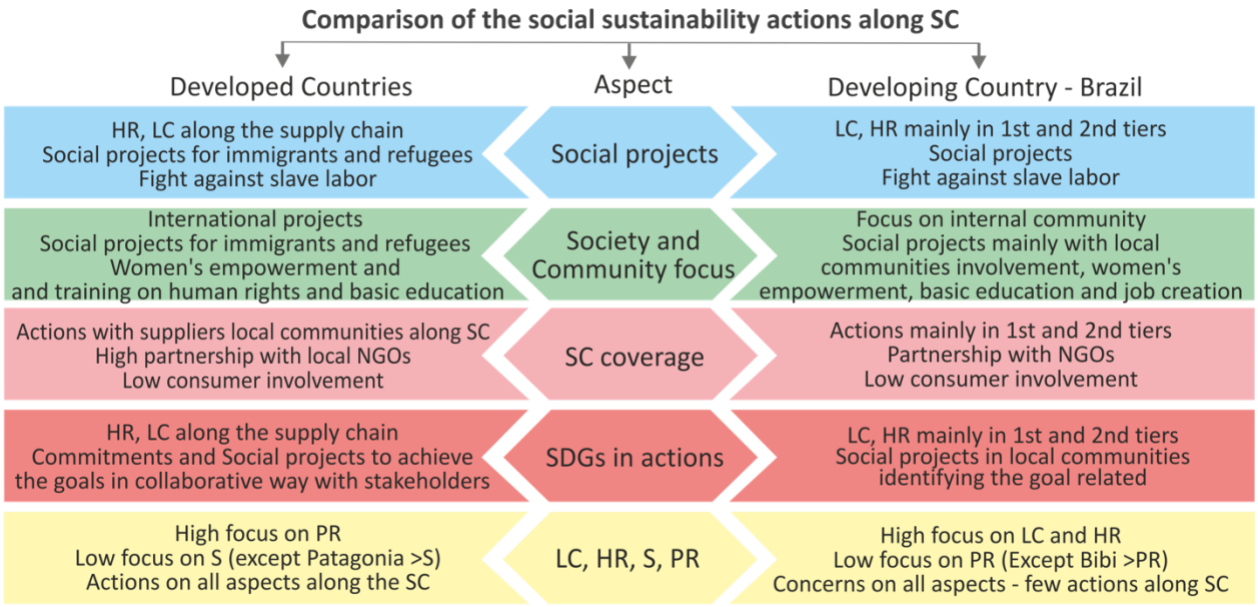

Figure 9 - Social dimension actions along the apparel supply chain – comparison between developed and a developing country (Brazil)

The above analysis identified the main differences/commonness amongst global and the Brazilian SC provide a scenario to identify the main weaknesses and opportunities to promote sustainability throughout the supply chains. There are essential differences between the global supply chain and the Brazilian one. However, both have the same type of weaknesses in the social dimension, which are primarily the violation of human rights and inadequate working conditions. Acting transparently and with greater traceability of actions and processes can be one of the ways to minimise problems.

Shared responsibility in promoting sustainability throughout the supply chain is essential and must be considered, with investments by the focal companies and joint efforts along the different tiers. The search for lower production costs in developing countries aims to provide better financial performance for companies. However, the pressure for environmental and social sustainability is more intense for suppliers at the level of production and treatment of raw materials, mainly in the second, third and fourth tiers.

Therefore, in order to achieve sustainability, investment is necessary, raising production costs for fair remuneration of all involved. The promotion of fair trade combined with environmental management (Dargusch and Ward, 2010; Sehnem *et al.*, 2016; Nakamba *et al.*, 2017), as the company Patagonia proposes to act (Bubicz *et al.*, 2020), is also one of the ways to improve the performance of the social dimension sustainability throughout the apparel supply chain. Another fact, already noted in the literature, is that as countries improve their development performance, raising the standard of living and consumption, people also become more aware and change their consumption behaviour, being more sustainable (Choi *et al.*, 2011). One of the ways to improve sustainability performance is the investment

in communication and information technologies, enabling the crossing of data from different stakeholders, to improve and expand audits, making them more effective. Still, the pressure to change local laws, greater access to information, training for workers and greater rigour in the inspection are essential to manage and minimise risks and negative impacts, thus promoting effective collaboration between all stakeholders.

6. Conclusion

In this study, six Brazilian focal companies were analysed in a developing country context. The main characteristics of the apparel supply chain were analysed, both in the structure and in the social dimension of sustainability management. What the analyses show is that the Brazilian apparel supply chain has similar characteristics to the global supply chains in the structure, but it has two differentiating elements. The first one is the predominance of vertical integration, and the second one, the presence of ABVTEX. This entity brings together all retailers in the clothing sector, being an interlocutor between the different stakeholders, with a substantial role in sustainability promotion. The interactions of influence and intervention among the supply chain entities and external stakeholders are also present in the Brazilian context. The social sustainability management has specific characteristics where the performance in projects and actions have a focus on the internal environment and mainly in the first-tier of suppliers. However, when companies have international activities, they have strong control to guarantee sustainable raw materials. These characteristics have been compared with the global supply chain, which provides some ways for sustainability promotion as well as the more significant equity in the social sustainability treatment.

The audits coverage and production processes control are the most significant gaps in the Brazilian Supply Chain, that just extends the high-intensity control to the raw material level when having global operations. The products lack of traceability and lack of transparency in the production process are a few of the significant gaps identified. It was also observed that in the Brazilian companies, besides sustainability being in the corporate strategy and that the social dimension is highlighted, the actions are still focused inwards for the focal companies, with few actions involving suppliers and other entities throughout the supply chain.

The study limitation is that it does not cover multi-brand retailers and SMEs. This is one of the matters for further research. They cover a smaller supply chain that does not have the same visibility and must be included in the analysis to evaluate the type of control and the sold products origin. Many companies that buy from small factories that do not have sustainable processes and do not have control over their suppliers. The big companies, due to their visibility, find protection and control mechanisms, as the ABVTEX case. In smaller companies, such control should also happen and has been occurring by own initiative of some brands that intend to be sustainable. There is also control through joint efforts by civil

society, government actions supervising companies and reports to Public Prosecution Service, but still at a smaller scale. Such companies do not supply large brands and therefore are not ABVTEX certified, that has been having important results in human traffic and slave labour fighting, as well as improving working conditions. The use of technological tools and databases from different entities is one of the paths to take to promote transparency and minimising social risks throughout the apparel supply chain. The collaborative actions of different entities throughout the supply chain, government and external stakeholders, has been proving to be effective in reducing the non-compliances and promoting sustainable fashion.

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Appendix 1 – Sample of the Employers register who have subjected workers to slave labour conditions in the apparel sector – Ministry of Economy – 2019*

Year	Employer	Establishment	Total workers
2016	Blackpool Indústria e Comércio Ltda	Sewing Workshops - Cajamar/SP	16

2016	Confecções Delícia EIRELI	Sewing Workshops - São Paulo/SP	6
2017	Confecções Ukil Ltda	Sewing Workshops - Brás, São Paulo/SP	15
2017	Fábula Confecção e Comércio de Roupas Ltda	Sewing Workshops (Animale e A. Brand), São Paulo/SP	10
2014	Cooperativa dos Beneficiadores de Algodão de Mineiros Ltda	Comfibra Cotton - Mineiros/GO	52
2016	Mektrefe Jeans Comércio de Roupas Ltda	Sewing Workshops - Cajamar/SP	5
2017	Raje Ivoli - Comércio de Modas Ltda	Sewing Workshops - Vila Medeiros, São Paulo/SP	4
2017	Eliane Bandeira de Amorim Mourão Confecções	Sewing Workshops - Catumbi, São Pualo/SP	7

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*Unfortunately, the Brazilian government removed the list of the website. It may represent a lack of transparency in government actions to fight modern slavery in Brazil. Access on February 20, 2020.

Appendix 2 – Literature Review – Social Sustainability in the apparel supply chain in Brazil and developing countries

Author	*Year*	*Journal*	*Main approach*
Baruque-Ramos et al.	*2017*	*IOP Conference Series: Materials Science and Engineering*	*textile reuse and recycling*
Cazeri et al.	*2018*	*Journal of Cleaner Production*	*Integration of the CSR practices and management systems*
Conke, L.	*2018*	*Resources, Conservation & Recycling*	*The main barriers to expanding recycling*
Feasley, A.	*2015*	*Anti-Trafficking Review*	*Ways to increase transparency in order to mitigate forced labor in the supply chain*
Frigelg et al.	*2019*	*In Corporate Social Responsibility in Brazil (Book Chapter)*	*Sustainable innovations in the Brazilian textile industry*
Garcia et al.	*2019*	*Journal of Cleaner Production*	*Consumer behaviour and Ecological Footprint classification*
Jabbour et al.	*2017*	*Annals of Operations Research*	*An analysis of sustainable social practices in Brazilian companies*
Köksal et al.	*2018*	*Sustainability*	*The social sustainability and the Role of the Sourcing Intermediary*
Köksal et al.	*2017*	*Sustainability*	*Analysis of the Social Sustainable Supply Chain Management*
Leal Filho et al.	*2019*	*Journal of Cleaner Production*	*Socio-economic advantages of textile recycling*
Ma et al	*2016*	*Corporate Social Responsibility and Environmental Management*	*Transparency and disclosures in the supply chain*
Machado, et al.	*2019*	*Systemic Practice and Action Research*	*An analysis of the dynamics of the footwear industry in the south of Brazil*
Moro et al.	*2017*	*Contemporary Case Studies on Fashion Production, Marketing and Operations (Book Chapter)*	*The fashion industry and sustainable development considering sustainability for supplier selection*
Parente et al.	*2017*	*Mackenzie Management Review*	*Contemporary slavery and prevention actions*
Ramia Munerati, L.	*2018*	*SSRN Library*	*Juridical effectiveness of soft law measures concerning decent work in global supply chains*
Sehnem et al.	*2016*	*International Journal of Innovation*	*Sustainable practices and eco-innovation*
Silva et al.	*2019*	*Revista de Gestão*	*Circular economy implementation*
Soundararajan and Brammer	*2018*	*Journal of Operations Management*	*Sub-supplier responses to social sustainability requirements of intermediaries*
Stevenson and Cole	*2018*	*Supply Chain Management: An International Journal*	*Modern slavery in supply chains*
Tilly et al.	*2013*	*UCLA – Institute for Research on Labor and Employment*	*Informality and Subcontracted Work*
Tura et al.	*2019*	*Industrial Marketing Management*	*Tensions from sustainable business practices in business networks*
Wilhelm et al.	*2016*	*International Journal of Production Economics*	*Implementing sustainability in multi-tier supply chains - sub-suppliers management*
Wilhelm et al.	*2016*	*Journal of Operations Management*	*Sustainability in multi-tier supply chains - first-tier role*
Zenker, J.	*2018*	*Vanderbilt Journal of Transnational Law*	*Supply chain labour compliance*

Appendix 3 - Interview guide

Company name:
First Contact Date:
Interviewee(s) (Managing, Director, or CEO):
Second Contact Date:
Interviewee(s) (Managing, Director, or CEO):
Questions:

1.Management chart:
2.Main product and dominant process:
3.Total employees:
4.Certifications of the company:
5.Quality awards and others:
6.Number of workers in production:
7.Market share:
8.Market growth rate:
9.Annual investment rate:
10. More significant consumption profile change:
11. Competitive strategy - where and how?
12. Level of product customization:
13. Production strategy - % Own production and finished product outsourcing:
14. Product routes - production process/main process flow:
15. What are the main stakeholders:
16. Technical improvement level - How many technicians? How many with higher education?
17. Training level compared to the sector:
18. Direct outsourced in production?
19. Function and quality organization, how many works? What is the most common problem? Indicators?
20. Quality management history - when did it start and main action?
21. Turnover rate:
22. Employee participation in improvement processes - incentives, groups etc. (indicators?)
23. Policy for the chemicals use and waste management of these products:
24. Suppliers - list with name, location, and product you supply - For production only:
25. Supplier selection process - main criteria:
26. Relationship type - how long contracts?
27. Is there a policy for valuing local/regional suppliers?
28. Supplier selection process - main criteria:
29. Relationship type - how long contracts?
30. Is there a policy for valuing local/regional suppliers?
31. Type of main materials used in production:
32. Logistical cooperation (Standardization, communication, data exchange, inventory agreement, shared inventory management, frequency of deliveries, receipt inspection):
33. Is there cooperation in the product design with suppliers?
34. Supplier compliance management - how is it done?
35. % of non-compliance:
36. Are audits informed in advance? If yes, why?
37. How are the audits carried out? Which tiers?
38. How are the international audits done?
39. Are there codes of conduct?
40. Exclusive supply agreements?

Social sustainability policies

1.Human rights policies and actions:
2.Working conditions - special conditions:
3.Social development - contribution, policies, actions that promote in the community:
4.Environmental management – is there any project or actions with community involvement?
5.Sustainability reports:
6.Product responsibility:
7.Gender policies? Number of women in production/Number of women in management positions:
8. Quotas for some type of worker (People with disabilities, women, Young apprentices)?
41. Is there any social projects with the raw material suppliers? How is it done (Company, external entity, how is the monitoring done?)
42. How is social risk managed?
43. Did the company changes in the production process by external pressure? Which kind of changes?
44. How is the relationship with external stakeholders? (e.g. NGO's; Government; Local Community)
45. Did you have any situation of intervention in the company caused by external or internal stakeholder pressure?
46. Did you have any situation of influence to make changes in the company by internal or external stakeholder pressu

Appendix 4 - Brazilian companies' characterisation for Case Study, based on company reports and interviews

Company	Main characteristics	SC Strategy	Audits	SC network - entities and control	Qt suppliers	Qt sub-suppliers	Suppliers from	% of suppliers*
Bibi	From Brazil – since 1949 *One Brand – Bibi* Sales around € 26 million in 2018 Employ over 1174 people (51%male, 49% female) 2 *industrial* locations 2,3 million pair of shoes per year *Present* in 65 *countries* *3,000 sales point in Brazil* *Shoes for kids - from o to 9 years* "Diamond certification" in the Sustainable Origin Program - Changes in production process by international standards requirements (mandatory)	*Vertical Integration* - ABVTEX certified - Sustainability strategy - SDG - GRI Standard - *"Bibi Non-Toxic Protection" for kids safety* - Sustainable leather and 100% tracked - Focus on child safety - Changes in production process by international standards requirements (mandatory) - Code of Conduct and Ethics	- Information of the own audits only in the company report - International suppliers only document control	- Focal company - Supplier 1st tier - raw material - local and international - No subcontracts - Sustainable raw material - Own physical stores - Online stores - Franchising - Consumer service structure - *AI for consumer service* - End-of-life – recycled raw material - Changes on sustainability actions and control by stakeholders' influence (not mandatory) and law (mandatory)	364	0	South America Asia	80% 20%
Grendene	From Brazil – since 1971 *Nine Brands: Melissa, Grendha, Cartago, Ipanema, Rider, Grendene Kids, Zaxi, Pega Forte, Zizou* Sales around € 625 million in 2018 Employ over 22.100 people (50% male, 50% female) 5 *industrial* locations – with a total of *11* footwear factories, components in EVA production, one mold-producing plant, PVC production, one Distribution Center 100 million pairs of shoes per year *Present* in over 90 *countries* 65,000 sales point in Brazil and 20,000 sales point abroad Gender bender fashion concept *PVC free of lead and heavy metals* *(*international buyer requirements and pressure - mandatory)	*Vertical Integration* - ABVTEX certified - Sustainability strategy - SDG - *30% recycled material and the raw material is from renewable origin* - *Own raw material production* - *"Green Product" - No animal component (strategy influenced by customer interest – not mandatory)* - Code of conduct	- No information of the audits	- Focal company - Suppliers 1st tier – raw material - Own physical stores - Online stores - Franchising - Omnichannel structure - Consumer service structure integrated - AI for consumer service - End of life with eco - Changes in production process by international standards requirements (mandatory)	20	2	South America Asia	95% 5%
Hering	From Brazil – since 1880 *Four Brands: Hering, PUC, Hering Kids, Dzarm* Sales around € 287 million in 2018 18 million pieces produced per year Employ over 6,319 people (66% female, 34% male) 11 *industrial* locations *Present* in 3 Latin-American *countries* chemical control 100% of the water used in jeans production is treated and 70% reused Design Projects for raw material reduction.	- *Hybrid SC – Mainly Vertical Integration* - Sustainability strategy - GRI Standard - *100% of the local suppliers are ABVTEX certified* - *Code of Conduct* - Omnichannel structure	- Information of the own audits only in the company report - 100% of audits are not announced in local suppliers - International suppliers – only document control	- Focal company - Suppliers 1st tier – raw material and manufacturing - local and international - Suppliers 2nd tier – ateliers and factions - Own physical stores - Online stores - Franchising - Consumer service - *AI for consumer service* - Changes in production process by external stakeholders' pressure (not mandatory)	2.896	46	South America Asia	97,5 2,5%

Malwee	From Brazil – since 1968 Eight brands: Malwee, Scene, Enfim, Wee!, Malwee Kids, Carinhoso, Zig Zig Zaa, Malwee Liberta 35 million pieces produced per year Employ over 5,500 people (32%male, 68% female) 6 *industrial* locations Suppliers in 6 countries *24,000 sales point in Brazil* chemical control First Brazilian fashion brand to sign the climate commitment by UN Water reuse in the production process LCA in 100% of the products Most transparent national fashion brand in Brazil**	- *Hybrid SC – Mainly Vertical Integration* - Sustainability strategy - SDG - GRI Standard - *60% of the local suppliers are ABVTEX certified* - *Code of Ethics*	- Information of the own audits only in the company report - Audits on 1st tier, factions - Raw material suppliers audit by monthly control but not clear how - International suppliers – only document control	- Focal company - Suppliers 1st tier - local and international - Suppliers 2nd tier - ateliers and factions - Sub-suppliers – factions - Own physical stores - Consumer service - End of life - Pioneer in the use of shredded cotton, produced from the waste of cutting fabric. - Changes in production process by external stakeholders' pressure (not mandatory)	1740	163	South America Asia	83% 17%
Marisa	From Brazil – since 1948 One brand: Marisa Sales around € 770,360 million in 2018 Employ 12.344 people (80% female, 20%male) 371 stores in Brazil (5 Dist. Centers) Suppliers in 10 countries Water reduction policy Own financial services (credit) *First large Brazilian fashion retailer to introduce online stores (1999)* *The store's concept "for family"*	- Horizontal integration - *100% of the local suppliers are ABVTEX certified* - Water reduction policy - Code of Conduct	- Information of the own audits only in the company report - Not clear how it is done - Audits increased by external stakeholders' pressure	- Focal company - Suppliers 1st tier – local and international - Suppliers 2nd tier - Sub-suppliers - Own physical stores - Online store - Consumer service structure - No actions identified in end-of-life - Changes in production process by external stakeholders' pressure (not mandatory)	243	1154	South America Asia North America Europe	82% 17,2% 0,4% 0,4%
Renner	From Brazil – since 1922 Four brands: Renner, Camicado, Youcom, Ashua Sales around € 1,647 billion in 2018 Employ over 22,334 people (65%female, 35% male) Suppliers in 16 countries *556 stores in Brazil (4 Dist. Centers)* *7 stores in Uruguay* Own financial services (credit) *Responsible fashion business concept (less impact)* *Chemical control* *Project "Innovation for sustainability"*	- Horizontal integration - Sustainability strategy - SDG - GRI Standard - *100% of the local suppliers are ABVTEX certified* - *80% sustainable cotton* - Water reduction policy - *Blockchain for supply chain traceability* - *Changes made by AI use – influenced by consumer behaviour changes* -*Code of Conduct*	- Information of the own audits only in the company report - 48% international suppliers audited but it is not clear how (by 2 international auditor companies)	- Focal company - Suppliers 1st tier - local and international - Suppliers 2nd tier - ateliers and factions - Sub-suppliers – factions - Own physical stores - Online stores - Consumer service - *AI for consumer service* - *End of life - projects with consumer and stakeholders' involvement.* - Changes in production process by external stakeholders' pressure (not mandatory)	525	985	South America Asia	80% 20%

The main relevant data and characteristics of these companies were obtained from interviews, companies websites and reports – related to the year 2018.

** Fashion Transparency Index, 2018, by Fashion Revolution Initiative

* The percentage of suppliers per continent does not necessarily represent the same percentage in the volume of products purchased. This means that a supplier may represent more than one factory or even have a larger production volume than several small suppliers. Similarly, a contracted supplier may have more than one factory. The xxx group represents this difference as it has more than 50% of its production in the, being this a strategy of the company.

Appendix 5 - Results of content analysis by N-VIVO

5.a - Autocoded themes “nodes” and “sub-nodes” (translated). Sustainability reports of the Brazilian companies (32 data sources)

Node	Example of Sub-Nodes	Total Sources	Total References
management		**22**	**226**
	environmental management	5	10
	integrated management	8	10
	efficient management	5	8
	sustainability management	5	7
	eco-efficient management	3	7
	social management	3	6
	preventive management	5	5
	proper management	4	4
	sustainable management	3	4
	management control	3	3
	compliance management	3	3
company		**25**	**224**
	specialized company hired	3	6
	private company	5	5
	company continuity	4	4
	company performance	4	4
	Brazilian company	3	4
	Big company	2	4
	company sustainability	4	4
	company growth	2	3
	specialized company hired	3	6
higher		**23**	**207**
	largest network	7	14
	higher number	4	9
	greater volume	5	8
	greater efficiency	6	7
	greater power	6	6
	greatest potential	4	6
	greater control	5	5
	greater risk	3	3
of the company		**18**	**205**
	company employees	4	7
	company suppliers	4	6
	company values	5	6
	company supply	4	4
	company stores	3	4
	company value	3	4
	company performance	1	3
	company strategy	4	5
	company governance	3	3
	company materiality	3	3
	company goals	3	3
stores		**18**	**195**
	Child labor	14	27
	forced labour	13	20
	safety at work	11	12
	back to work	6	8
	safe job	7	8
	slavery	5	6
	audited work	4	5
	irregular foreign work	4	4
	slavery-like work	3	3
	decent work	2	2
	includes child labor	1	1
	medicine at work	1	1
	creative work	1	1
	degrading work	1	1
	irregular work	1	1
	free work	1	1
	dangerous work	1	1
	permanent work	1	1
	healthy work	1	1
Chain		**26**	**190**
	productive chain	11	21
	textile chain	7	9
	chain monitoring	5	7
	fashion chain	4	6
	chain description	5	5
	chain development	3	4
	efficient chain	3	3
	international chain	3	3
	disqualification of the chain	3	3
	chain links	3	3
	chain step	5	6
	impacts on the chain	2	3

Node	Example of Sub-Nodes	Total Sources	Total References
	local production chain	1	2
	reverse chain	2	2
	compliance in the chain	2	2
	chain suppliers	2	2
	chain integration	1	2
	chain traceability	1	2
	risks in the chain	2	2
	sustainability in the chain	2	2
	chain management	1	1
way		**26**	**144**
	sustainable way	7	9
	responsible way	6	6
	collaborative way	1	1
brand		**21**	**144**
	impactful brand	4	4
	brand positioning	3	4
	brand communication	3	3
	brand concept	2	3
suppliers		**19**	**136**
	new suppliers	4	7
	company suppliers	4	6
	main suppliers	2	3
	chain suppliers	2	2
	suppliers by abvtex	2	2
	supplier audits	1	1
development		**25**	**129**
	sustainable development	13	30
	Social development	9	11
	healthy development	5	5
	chain development	3	4
	focus on development	3	3
	community development	2	2
	local social development	1	2
important		**22**	**127**
	important operational	7	11
	important entities	3	3
	strategic importance	2	2
value		**20**	**126**
	sustainable value	7	9
	generating value	4	6
	customer value	3	3
	corporate value	3	3
process		**22**	**119**
	productive process	8	14
	industrial process	5	5
mean		**23**	**119**
	environment	10	16
	impacts to the environment	2	2
market		**21**	**112**
	National market	9	11
	international market	6	9
	free market	6	8
	Brazilian market	6	6
	informal market	1	1
environmental		**21**	**110**
	environmental impact	9	11
	environmental management	5	10
	environmental Protection	6	7
	environmental performance	5	6
	environmental legislation	3	5
	environmentally friendly	4	4
	direct environmental impact	2	3
	socio-environmental program	2	2
fashion		**17**	**110**
	fashion chain	4	6
	responsible fashion	2	6
	sustainable fashion	3	5
	fashion in Brazil	3	4
	fashionable sustainability	3	4
sustainability		**15**	**110**
	disclosed sustainability	3	9
	sustainability management	5	7
	relevance of sustainability	7	7
	sustainability principles	5	5
	sustainability theme	4	6
	operation sustainability	2	3
	aspects of sustainability	2	2
	focus on sustainability	2	2
	pillars of sustainability	2	2
	promoting sustainability	2	2
	sustainability in the chain	2	2
	sustainability values	2	2
	sustainability assessment	1	1
	sustainability dimension	1	1
of the company		**23**	**107**
	company continuity	4	4
	company performance	4	4

Node	Example of Sub-Nodes	Total Sources	Total References
	company sustainability	4	4
	company strategy	3	4
	company management	2	2
	company values	1	2
	company vision	2	2
store		**16**	**107**
	sustainable store	2	4
	specialized store	2	3
	online store	3	3
chain		**14**	**106**
	large network	4	16
	chain stores	4	5
	network supply	1	2
	connected network	2	2
	network influencers	1	1
sustainable		**20**	**105**
	sustainable development	13	30
	sustainable way	7	9
	sustainable value	7	9
	sustainable fashion	3	5
	sustainable growth	4	4
	sustainable management	3	4
	sustainable performance	2	3
	sustainable production	3	3
	sustainable chain	1	1
total		**22**	**104**
	total consumption	4	4
	total number layout	2	4
	total production	1	2
organization		**25**	**157**
	organization behavior	8	8
	multibrand organization	3	5
	organization performance	2	2
	organization's suppliers	1	2
	organization policies	1	1
performance		**18**	**98**
	economic performance	10	13
	environmental performance	5	6
	financial performance	5	5
	socio-environmental performance	3	3
	sustainable performance	2	3
	social performance	1	1

Node	Example of Sub-Nodes	Total Sources	Total References
of Renner		**5**	**98**
	renner value	1	2
report		**22**	**97**
	information in this report	1	2
publication		**20**	**94**
	female public	5	9
	internal audience	4	9
	public commitment	1	4
	interested audiences	3	3
	public interest	2	2
economic		**19**	**94**
	economic performance	10	13
	economic growth	2	3
	sustained economic growth	3	3
water		**22**	**93**
	captured water	6	8
	potable water	4	5
	recycled water	5	7
	water management	3	3
relation		**22**	**91**
	good relationship	3	3
	improving this relationship	1	1
	narrowing of the relationship	1	1
	suppliers in the relationship	1	1
employees		**19**	**88**
	thousand employees	9	13
	company employees	4	7
others		**19**	**87**
	other companies	9	12
	other initiatives	8	8
	other parts	4	6
part		**20**	**87**
	third part	4	6
	part of society	2	2
energy		**19**	**87**
	electricity	10	13
	clean electricity	4	6
growt		**18**	**86**
	showed growth	9	17
	company growth	3	4
	sustainable growth	4	4
	company growth	5	6

Node	Example of Sub-Nodes	Total Sources	Total References
New		**18**	**85**
	new structure	4	7
	new policy	3	3
	new review	2	2
	new strategy	2	2
significant		**17**	**84**
	significant risk	10	16
	significant changes	6	6
	significant advance	3	4
	significant environmental impact	2	3
	significant negative impact	2	3
strategic		**18**	**83**
	strategic planning	12	22
	strategic guidelines	8	11
	strategic plan	3	5
	strategic performance	2	3
	strategic vision	2	3
	strategic committees	1	2
practices		**17**	**82**
	Good practices	7	17
	labor practices	7	9
	sustainable practices	5	7
	corporate practices	4	5
	anti-corruption practices	3	4
	environmental practices	2	3
	transparent practices	2	2
impact		**21**	**80**
	environmental impact	9	11
	positive impact	4	7
	low impact	2	5
	socio-environmental impact	4	4
	direct environmental impact	2	3
	significant environmental impact	2	3
	significant negative impact	4	6
	negative environmental impact	1	2
	positive socio-environmental impact	1	2
	team	16	80
	internal team	6	8
	specialized team	5	7
	multifunctional team	2	3
corporative		**18**	**78**
	corporate governance	11	17
	corporative education	4	5

Node	Example of Sub-Nodes	Total Sources	Total References
	corporate practices	4	5
	corporate team	3	3
	corporative image	3	3
	corporate value	3	3
	corporate commitment	1	2
	corporate responsibility	2	2
efficiency		**20**	**76**
	energy efficiency	11	16
	efficient management	5	8
	logistics efficiency	4	5
	efficient chain	3	3
area		**24**	**152**
	Commercial area	4	4
	green area	4	4
	native green area	1	2
new		**20**	**74**
	new stores	8	19
	new collections	4	7
	new operations	4	4
	new opportunities	3	4
	new technologies	1	2
productive		**17**	**74**
	productive chain	11	21
	productive process	11	19
	productive capacity	8	10
	local production chain	1	2
	recyclable production process	2	2
	responsible production process	1	1
companies		**19**	**73**
	other companies	9	12
	supplier companies	2	3
	Small business	3	3
companies		**19**	**73**
	other companies	9	12
	supplier companies	2	3
	Small business	3	3
	contracted companies	2	2
relevant		**17**	**72**
	relevant human	5	6
	relevance of sustainability	6	6
	relevant aspect	2	4
	high relevance	4	5

Node	Example of Sub-Nodes	Total Sources	Total References
	relevant operations	2	2
	relevant operating	2	2
	profound relevance	2	2
operation		**16**	**70**
	company operation	2	4
	logistics operation	2	4
	operation sustainability	2	3
	improved operation	2	2
	verticalization of the operation	1	1
acting		**18**	**70**
	company performance	2	4
	vertical performance	2	4
	strategic performance	2	3
	ethical performance	3	3
focus		**21**	**68**
	consumer focus	4	7
	focus on development	3	3
	focus on sustainability	2	2
	customer focus	2	2
areas		**18**	**67**
	different areas	9	19
	several areas	7	9
	large areas	3	3
	company areas	4	4
	main areas	2	2
textile		**16**	**67**
	textile sector	8	11
	textile industry	8	10
	textile chain	7	9
impacts		**16**	**66**
	main impacts	8	14
	impacts on society	8	9
	potential impacts	3	4
	human impacts	3	3
	impacts on the chain	2	3
guidelines		**17**	**66**
	strategic guidelines	8	11
	established guidelines	7	10
	gri guidelines	2	3
	policy guidelines	2	3
	socioenvironmental guidelines	3	3

Node	Example of Sub-Nodes	Total Sources	Total References
of the brand		**18**	**66**
	brand stores	6	6
	brand positioning	3	4
of the stores		**5**	**66**
	store sustainability	4	7
	store performance	3	4
retail		**19**	**65**
	Brazilian retail	4	7
	retail industry	4	6
environment		**21**	**65**
	environment	10	16
	pleasant environment	2	2
	built environment	1	2
	digital environment	1	2
child		**20**	**65**
	Child labor	14	27
	children's brand	7	7
	child sexual exploitation	2	5
	includes child labor	1	1
initiatives		**19**	**65**
	other initiatives	8	8
	several initiatives	3	3
	important initiative	2	2
	worldwide initiative	2	2
actions		**25**	**64**
	several actions	9	9
	main actions	8	9
	joint actions	1	1
	sustainable actions	1	1
page		**8**	**64**
	data page	2	2
	page management	1	2
policies		**18**	**63**
	political parties	8	12
	institutional policies	5	6
	internal policies	3	4
	policy guidelines	2	3
	policy oriented	2	2
	applied policies	2	2
	organization policies	1	1
	public policy	1	1
year		**17**	**62**
	last years	10	17

Node	Example of Sub-Nodes	Total Sources	Total References
	next years	10	11
these		**15**	**62**
	of these suppliers	4	5
	management of these	2	4
	of these partners	2	3
	development of these	2	2
new		**15**	**58**
	new challenges	4	10
	new suppliers	4	7
	new processes	4	4
investments		**17**	**58**
	private social investment	5	9
	investments made	7	8
	social investment	2	2
of the chain		**16**	**58**
	chain monitoring	5	7
	chain description	5	5
	chain development	3	4
	disqualification of the chain	3	3
	chain suppliers	2	2
	chain integration	1	2
	chain traceability	1	2
responsibility		**24**	**57**
	social responsibility	17	23
	socio-environmental responsibility	6	7
	corporate responsibility	2	2
	social responsibility in that	1	2
	shared responsibility	1	1
	chain responsibility	1	1
society		**16**	**57**
	impacts on society	8	9
	suppliers in society	5	6
	civil society	2	5
	development of society	3	3
	part of society	2	2
	for society	2	2
	society day	1	1
project		**12**	**56**
	social project	1	2
life		**20**	**55**
	present in life	6	6
	sustainable living	5	5
	healthy life	3	3

Node	Example of Sub-Nodes	Total Sources	Total References
international		**19**	**55**
	international market	6	9
	international law	5	7
	international standard	6	6
	sourcing internacional	3	4
	international chain	3	3
	international outsourcing	3	3
	international certification	2	2
	international organization	1	1
	international standard	1	1
results		**17**	**55**
	results obtained	4	6
	positive results	3	4
safety		**18**	**54**
	safety at work	11	12
	occupational safety	4	8
	information security	3	6
own		**19**	**54**
	own store	5	8
	own production	4	7
	own operation	3	3
this		**20**	**54**
	audit of this type	4	4
	construction of this report	2	2
production		**21**	**54**
	own production	4	7
	in-house production	3	3
	sustainable production	3	3
	clean production	2	2
evaluation		**14**	**54**
	self-evaluation	1	3
	adequacy assessment	3	3
	formal assessment	3	3
	environmental assessment	2	4
	documentary evaluation	2	2
	sustainability assessment	1	1
consume		**18**	**53**
	conscious consumption	10	16
	consumption efficiency	2	2
in Brazil		**17**	**53**
	stores in brazil	5	6
	reforestation in brazil	3	3
	clothing in brazil	3	3
	legislation in Brazil	2	2

Node	Example of Sub-Nodes	Total Sources	Total References
several		**23**	**51**
	several actions	9	9
	several initiatives	3	3
	various laws	2	3
	diverse social	1	1
quality		**16**	**50**
	better quality	5	7
	quality management	3	3
	company quality	3	3
	quality of care	3	3
people		**15**	**50**
	One thousand people	11	18
	best people	4	4
processess		**20**	**49**
	textile processes	5	10
	productive processes	3	5
	new processes	4	4
	industrial processes	2	4
	sustainable processes	2	2
structure		**15**	**48**
	new structure	4	7
	organizational structure	5	6
	multidisciplinary structure	2	2
specific		**14**	**48**
	specific management	4	4
	specific program	2	2
	specific training	1	1
yearly		**15**	**48**
	annual review	4	4
	annual meeting	2	2
environmental		**14**	**48**
	negative environmental	9	11
	environmental criteria	6	7
	environmental practices	2	3
	environmental laws	2	2
	environmental licenses	1	2
program		**16**	**47**
	Brazilian program	3	3
	socio-environmental program	2	2
	adherence to the program	1	1
	certification in the program	1	1
wage		**11**	**44**
	Variable salary	6	13
	fixed remuneration	6	8
category		**15**	**43**
	functional category	7	11
risk		**11**	**42**
	significant risk	10	16
	greater risk	3	3
	medium risk	1	2
	risk	2	2
	chain risk	1	1
	precariousness risk	1	1
	social risk	1	1
	socio-environmental risk	1	1

Appendix 5.b - Results of content analysis by N-VIVO – Original results of autocoded themes "nodes". Sustainability reports of the Brazilian companies (32 data sources).

Word	Total Source	Total References
gestão	22	226
empresa	25	224
maior	23	207
da companhia	18	205
lojas	18	195
trabalho	21	173
cadeia	19	156
forma	26	144
marca	21	141
fornecedores	19	136
desenvolvimento	25	129
importante	22	127
valor	20	126
processo	22	119
meio	23	119
mercado	21	112
ambiental	21	110
moda	17	110
sustentabilidade	15	110
da empresa	23	107
loja	16	107
rede	14	106
sustentável	20	105
total	22	104
organização	16	100
desempenho	18	98
da renner	5	98
relatório	22	97
público	20	94
econômico	19	94
água	22	93
relação	22	91
colaboradores	19	88
outras	19	87
parte	20	87
energia	19	87
crescimento	18	86
nova	19	85
significativo	17	84
estratégico	18	83
práticas	17	82
impacto	21	80
equipe	16	80
corporativa	18	78
eficiência	19	77
área	20	76
novas	20	74
produtiva	17	74
empresas	19	73

Word	Total Source	Total References
relevância	17	72
operação	16	70
atuação	18	70
foco	21	68
áreas	18	67
têxtil	16	67
impactos	16	66
diretrizes	17	66
da marca	18	66
da lojas	5	66
varejo	19	65
ambiente	21	65
infantil	20	65
iniciativas	19	65
ações	25	64
página	8	64
política	18	63
anos	17	62
desses	15	62
novos	15	58
investimentos	17	58
da cadeia	16	58
responsabilidade	24	57
sociedade	16	57
projeto	12	56
neste	21	55
vida	20	55
internacional	19	55
resultados	17	55
segurança	18	54
própria	19	54
deste	20	54
produção	21	54
avaliação	14	54
consumo	18	53
no brasil	17	53
dessa	14	52
diversas	23	51
qualidade	16	50
pessoas	15	50
processos	20	49
estrutura	15	48
específico	14	48
anual	15	48
ambientais	14	48
programa	16	47
remuneração	11	44
categoria	15	43
risco	11	42

Appendix 5 - Results of content analysis by N-VIVO

5.a - Autocoded themes “nodes” and “sub-nodes” (translated). Sustainability reports of the Brazilian companies (32 data sources).

Node	Example of Sub-Nodes	Total Sources	Total References
management		**22**	**226**
	environmental management	5	10
	integrated management	8	10
	efficient management	5	8
	sustainability management	5	7
	eco-efficient management	3	7
	social management	3	6
	preventive management	5	5
	proper management	4	4
	sustainable management	3	4
	management control	3	3
	compliance management	3	3
company		**25**	**224**
	specialized company hired	3	6
	private company	5	5
	company continuity	4	4
	company performance	4	4
	Brazilian company	3	4
	Big company	2	4
	company sustainability	4	4
	company growth	2	3
	specialized company hired	3	6
higher		**23**	**207**
	largest network	7	14
	higher number	4	9
	greater volume	5	8
	greater efficiency	6	7
	greater power	6	6
	greatest potential	4	6
	greater control	5	5
	greater risk	3	3
of the company		**18**	**205**
	company employees	4	7
	company suppliers	4	6
	company values	5	6
	company supply	4	4
	company stores	3	4
	company value	3	4
	company performance	1	3
	company strategy	4	5
	company governance	3	3
	company materiality	3	3
	company goals	3	3
stores		**18**	**195**
	Child labor	14	27
	forced labour	13	20
	safety at work	11	12
	back to work	6	8
	safe job	7	8
	slavery	5	6
	audited work	4	5
	irregular foreign work	4	4
	slavery-like work	3	3
	decent work	2	2
	includes child labor	1	1
	medicine at work	1	1
	creative work	1	1
	degrading work	1	1
	irregular work	1	1
	free work	1	1
	dangerous work	1	1
	permanent work	1	1
	healthy work	1	1
Chain		**26**	**190**
	productive chain	11	21
	textile chain	7	9
	chain monitoring	5	7
	fashion chain	4	6
	chain description	5	5
	chain development	3	4
	efficient chain	3	3
	international chain	3	3
	disqualification of the chain	3	3
	chain links	3	3
	chain step	5	6
	impacts on the chain	2	3
	local production chain	1	2
	reverse chain	2	2

Node	Example of Sub-Nodes	Total Sources	Total References
	compliance in the chain	2	2
	chain suppliers	2	2
	chain integration	1	2
	chain traceability	1	2
	risks in the chain	2	2
	sustainability in the chain	2	2
	chain management	1	1
way		**26**	**144**
	sustainable way	7	9
	responsible way	6	6
	collaborative way	1	1
brand		**21**	**144**
	impactful brand	4	4
	brand positioning	3	4
	brand communication	3	3
	brand concept	2	3
suppliers		**19**	**136**
	new suppliers	4	7
	company suppliers	4	6
	main suppliers	2	3
	chain suppliers	2	2
	suppliers by abvtex	2	2
	supplier audits	1	1
development		**25**	**129**
	sustainable development	13	30
	Social development	9	11
	healthy development	5	5
	chain development	3	4
	focus on development	3	3
	community development	2	2
	local social development	1	2
important		**22**	**127**
	important operational	7	11
	important entities	3	3
	strategic importance	2	2
value		**20**	**126**
	sustainable value	7	9
	generating value	4	6
	customer value	3	3
	corporate value	3	3
process		**22**	**119**
	productive process	8	14
	industrial process	5	5

Node	Example of Sub-Nodes	Total Sources	Total References
mean		**23**	**119**
	environment	10	16
	impacts to the environment	2	2
market		**21**	**112**
	National market	9	11
	international market	6	9
	free market	6	8
	Brazilian market	6	6
	informal market	1	1
environmental		**21**	**110**
	environmental impact	9	11
	environmental management	5	10
	environmental Protection	6	7
	environmental performance	5	6
	environmental legislation	3	5
	environmentally friendly	4	4
	direct environmental impact	2	3
	socio-environmental program	2	2
fashion		**17**	**110**
	fashion chain	4	6
	responsible fashion	2	6
	sustainable fashion	3	5
	fashion in Brazil	3	4
	fashionable sustainability	3	4
sustainability		**15**	**110**
	disclosed sustainability	3	9
	sustainability management	5	7
	relevance of sustainability	7	7
	sustainability principles	5	5
	sustainability theme	4	6
	operation sustainability	2	3
	aspects of sustainability	2	2
	focus on sustainability	2	2
	pillars of sustainability	2	2
	promoting sustainability	2	2
	sustainability in the chain	2	2
	sustainability values	2	2
	sustainability assessment	1	1
	sustainability dimension	1	1
of the company		**23**	**107**
	company continuity	4	4
	company performance	4	4

Node	Example of Sub-Nodes	Total Sources	Total References
	company sustainability	4	4
	company strategy	3	4
	company management	2	2
	company values	1	2
	company vision	2	2
store		**16**	**107**
	sustainable store	2	4
	specialized store	2	3
	online store	3	3
chain		**14**	**106**
	large network	4	16
	chain stores	4	5
	network supply	1	2
	connected network	2	2
	network influencers	1	1
sustainable		**20**	**105**
	sustainable development	13	30
	sustainable way	7	9
	sustainable value	7	9
	sustainable fashion	3	5
	sustainable growth	4	4
	sustainable management	3	4
	sustainable performance	2	3
	sustainable production	3	3
	sustainable chain	1	1
total		**22**	**104**
	total consumption	4	4
	total number layout	2	4
	total production	1	2
organization		**25**	**157**
	organization behavior	8	8
	multibrand organization	3	5
	organization performance	2	2
	organization's suppliers	1	2
	organization policies	1	1
performance		**18**	**98**
	economic performance	10	13
	environmental performance	5	6
	financial performance	5	5
	socio-environmental performance	3	3
	sustainable performance	2	3
	social performance	1	1

Node	Example of Sub-Nodes	Total Sources	Total References
of Renner		**5**	**98**
	renner value	1	2
report		**22**	**97**
	information in this report	1	2
publication		**20**	**94**
	female public	5	9
	internal audience	4	9
	public commitment	1	4
	interested audiences	3	3
	public interest	2	2
economic		**19**	**94**
	economic performance	10	13
	economic growth	2	3
	sustained economic growth	3	3
water		**22**	**93**
	captured water	6	8
	potable water	4	5
	recycled water	5	7
	water management	3	3
relation		**22**	**91**
	good relationship	3	3
	improving this relationship	1	1
	narrowing of the relationship	1	1
	suppliers in the relationship	1	1
employees		**19**	**88**
	thousand employees	9	13
	company employees	4	7
others		**19**	**87**
	other companies	9	12
	other initiatives	8	8
	other parts	4	6
part		**20**	**87**
	third part	4	6
	part of society	2	2
energy		**19**	**87**
	electricity	10	13
	clean electricity	4	6
growt		**18**	**86**
	showed growth	9	17
	company growth	3	4
	sustainable growth	4	4
	company growth	5	6

Node	Example of Sub-Nodes	Total Sources	Total References
New		**18**	**85**
	new structure	4	7
	new policy	3	3
	new review	2	2
	new strategy	2	2
significant		**17**	**84**
	significant risk	10	16
	significant changes	6	6
	significant advance	3	4
	significant environmental impact	2	3
	significant negative impact	2	3
strategic		**18**	**83**
	strategic planning	12	22
	strategic guidelines	8	11
	strategic plan	3	5
	strategic performance	2	3
	strategic vision	2	3
	strategic committees	1	2
practices		**17**	**82**
	Good practices	7	17
	labor practices	7	9
	sustainable practices	5	7
	corporate practices	4	5
	anti-corruption practices	3	4
	environmental practices	2	3
	transparent practices	2	2
impact		**21**	**80**
	environmental impact	9	11
	positive impact	4	7
	low impact	2	5
	socio-environmental impact	4	4
	direct environmental impact	2	3
	significant environmental impact	2	3
	significant negative impact	4	6
	negative environmental impact	1	2
	positive socio-environmental impact	1	2
	team	16	80
	internal team	6	8
	specialized team	5	7
	multifunctional team	2	3
corporative		**18**	**78**
	corporate governance	11	17
	corporative education	4	5

Node	Example of Sub-Nodes	Total Sources	Total References
	corporate practices	4	5
	corporate team	3	3
	corporative image	3	3
	corporate value	3	3
	corporate commitment	1	2
	corporate responsibility	2	2
efficiency		**20**	**76**
	energy efficiency	11	16
	efficient management	5	8
	logistics efficiency	4	5
	efficient chain	3	3
area		**24**	**152**
	Commercial area	4	4
	green area	4	4
	native green area	1	2
new		**20**	**74**
	new stores	8	19
	new collections	4	7
	new operations	4	4
	new opportunities	3	4
	new technologies	1	2
productive		**17**	**74**
	productive chain	11	21
	productive process	11	19
	productive capacity	8	10
	local production chain	1	2
	recyclable production process	2	2
	responsible production process	1	1
companies		**19**	**73**
	other companies	9	12
	supplier companies	2	3
	Small business	3	3
companies		**19**	**73**
	other companies	9	12
	supplier companies	2	3
	Small business	3	3
	contracted companies	2	2
relevant		**17**	**72**
	relevant human	5	6
	relevance of sustainability	6	6
	relevant aspect	2	4
	high relevance	4	5

Node	Example of Sub-Nodes	Total Sources	Total References
	relevant operations	2	2
	relevant operating	2	2
	profound relevance	2	2
operation		**16**	**70**
	company operation	2	4
	logistics operation	2	4
	operation sustainability	2	3
	improved operation	2	2
	verticalization of the operation	1	1
acting		**18**	**70**
	company performance	2	4
	vertical performance	2	4
	strategic performance	2	3
	ethical performance	3	3
focus		**21**	**68**
	consumer focus	4	7
	focus on development	3	3
	focus on sustainability	2	2
	customer focus	2	2
areas		**18**	**67**
	different areas	9	19
	several areas	7	9
	large areas	3	3
	company areas	4	4
	main areas	2	2
textile		**16**	**67**
	textile sector	8	11
	textile industry	8	10
	textile chain	7	9
impacts		**16**	**66**
	main impacts	8	14
	impacts on society	8	9
	potential impacts	3	4
	human impacts	3	3
	impacts on the chain	2	3
guidelines		**17**	**66**
	strategic guidelines	8	11
	established guidelines	7	10
	gri guidelines	2	3
	policy guidelines	2	3
	socioenvironmental guidelines	3	3

Node	Example of Sub-Nodes	Total Sources	Total References
of the brand		**18**	**66**
	brand stores	6	6
	brand positioning	3	4
of the stores		**5**	**66**
	store sustainability	4	7
	store performance	3	4
retail		**19**	**65**
	Brazilian retail	4	7
	retail industry	4	6
environment		**21**	**65**
	environment	10	16
	pleasant environment	2	2
	built environment	1	2
	digital environment	1	2
child		**20**	**65**
	Child labor	14	27
	children's brand	7	7
	child sexual exploitation	2	5
	includes child labor	1	1
initiatives		**19**	**65**
	other initiatives	8	8
	several initiatives	3	3
	important initiative	2	2
	worldwide initiative	2	2
actions		**25**	**64**
	several actions	9	9
	main actions	8	9
	joint actions	1	1
	sustainable actions	1	1
page		**8**	**64**
	data page	2	2
	page management	1	2
policies		**18**	**63**
	political parties	8	12
	institutional policies	5	6
	internal policies	3	4
	policy guidelines	2	3
	policy oriented	2	2
	applied policies	2	2
	organization policies	1	1
	public policy	1	1
year		**17**	**62**
	last years	10	17

Node	Example of Sub-Nodes	Total Sources	Total References
	next years	10	11
these		**15**	**62**
	of these suppliers	4	5
	management of these	2	4
	of these partners	2	3
	development of these	2	2
new		**15**	**58**
	new challenges	4	10
	new suppliers	4	7
	new processes	4	4
investments		**17**	**58**
	private social investment	5	9
	investments made	7	8
	social investment	2	2
of the chain		**16**	**58**
	chain monitoring	5	7
	chain description	5	5
	chain development	3	4
	disqualification of the chain	3	3
	chain suppliers	2	2
	chain integration	1	2
	chain traceability	1	2
responsibility		**24**	**57**
	social responsibility	17	23
	socio-environmental responsibility	6	7
	corporate responsibility	2	2
	social responsibility in that	1	2
	shared responsibility	1	1
	chain responsibility	1	1
society		**16**	**57**
	impacts on society	8	9
	suppliers in society	5	6
	civil society	2	5
	development of society	3	3
	part of society	2	2
	for society	2	2
	society day	1	1
project		**12**	**56**
	social project	1	2
life		**20**	**55**
	present in life	6	6
	sustainable living	5	5
	healthy life	3	3

Node	Example of Sub-Nodes	Total Sources	Total References
international		**19**	**55**
	international market	6	9
	international law	5	7
	international standard	6	6
	sourcing internacional	3	4
	international chain	3	3
	international outsourcing	3	3
	international certification	2	2
	international organization	1	1
	international standard	1	1
results		**17**	**55**
	results obtained	4	6
	positive results	3	4
safety		**18**	**54**
	safety at work	11	12
	occupational safety	4	8
	information security	3	6
own		**19**	**54**
	own store	5	8
	own production	4	7
	own operation	3	3
this		**20**	**54**
	audit of this type	4	4
	construction of this report	2	2
production		**21**	**54**
	own production	4	7
	in-house production	3	3
	sustainable production	3	3
	clean production	2	2
evaluation		**14**	**54**
	self-evaluation	1	3
	adequacy assessment	3	3
	formal assessment	3	3
	environmental assessment	2	4
	documentary evaluation	2	2
	sustainability assessment	1	1
consume		**18**	**53**
	conscious consumption	10	16
	consumption efficiency	2	2
in Brazil		**17**	**53**
	stores in brazil	5	6
	reforestation in brazil	3	3
	clothing in brazil	3	3
	legislation in Brazil	2	2

Node	Example of Sub-Nodes	Total Sources	Total References
several		**23**	**51**
	several actions	9	9
	several initiatives	3	3
	various laws	2	3
	diverse social	1	1
quality		**16**	**50**
	better quality	5	7
	quality management	3	3
	company quality	3	3
	quality of care	3	3
people		**15**	**50**
	One thousand people	11	18
	best people	4	4
processess		**20**	**49**
	textile processes	5	10
	productive processes	3	5
	new processes	4	4
	industrial processes	2	4
	sustainable processes	2	2
structure		**15**	**48**
	new structure	4	7
	organizational structure	5	6
	multidisciplinary structure	2	2
specific		**14**	**48**
	specific management	4	4
	specific program	2	2
	specific training	1	1
yearly		**15**	**48**
	annual review	4	4
	annual meeting	2	2
environmental		**14**	**48**
	negative environmental	9	11
	environmental criteria	6	7
	environmental practices	2	3
	environmental laws	2	2
	environmental licenses	1	2
program		**16**	**47**
	Brazilian program	3	3
	socio-environmental program	2	2
	adherence to the program	1	1
	certification in the program	1	1
wage		**11**	**44**
	Variable salary	6	13
	fixed remuneration	6	8
category		**15**	**43**
	functional category	7	11
risk		**11**	**42**
	significant risk	10	16
	greater risk	3	3
	medium risk	1	2
	risk	2	2
	chain risk	1	1
	precariousness risk	1	1
	social risk	1	1
	socio-environmental risk	1	1

Appendix 7 - Verification items for supplier certification – retrieved from ABVTEX audit guide, 2019 (https://www.abvtex.org.br/manual-de-auditoria/) Access on December 02, 2019.

i. companies' documentation, assuring formalizing, regularity, and law compliance.
ii. Labour condition – child labour (between 14 and 18 years old, 4 hours activity is allowed under apprenticeship condition with work contract and school frequency in the opposite shift).
iii. Labour condition – forced labour and/or like slavery.
iv. Working condition – irregular foreigner (migrants and immigrants).
v. Working condition – hiring processes.
vi. Working condition – accommodation, when applicable.
vii. Working condition – freedom of association.
viii. Working condition – discrimination.
ix. Working condition – abuse and sexual harassment.
x. Working condition – wage and compensation.
xi. Working condition – worked hours.
xii. Health and Work Safety – working condition and infrastructure.
xiii. Health and Work Safety – locker rooms and Sanitary Facilities.
xiv. Health and Work Safety – canteen.
xv. Health and Work Safety – Regulatory Standards.
xvi. Health and Work Safety – Individual Protection Equipment.
xvii. Health and Work Safety – Handling of Chemical Products.
xviii. Emergency Response – Electrical Installation.
xix. Emergency Response – Firefight and prevention.
xx. Production Chain Validation – Invoices.
xxi. Production Chain Validation – Production Chain Monitoring (suppliers and/or subcontractors)
xxii. Production Chain Validation – Subcontractors list validation.
xxiii. Production Chain Validation – Service Subcontracting.
xxiv. Transparency and Management Practices.
xxv. Environment (Controlled Products, Hazardous Waste, Chemical Products, Water Catchment, Industrial Effluent, Atmospheric Polluters, Solid Waste, Environmental Management in the Company).