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The Incorporation of the Sustainable Development Goals into Fashion Companies in South Brazil

Jéssica Alves da Motta (Corresponding author)

Postgraduate Program in Administration, Federal University of Pampa

R. Barão do Triunfo, 1048, Centro, Sant'Ana do Livramento, RS, Brazil

E-mail: jessicaalvesdamotta@gmail.com

Ricardo Ribeiro Alves

Postgraduate Program in Administration, Federal University of Pampa

R. Barão do Triunfo, 1048, Centro, Sant'Ana do Livramento, RS, Brazil

E-mail: ricardoalves@unipampa.edu.br

João Garibaldi Almeida Viana

Postgraduate Program in Administration, Federal University of Pampa

R. Barão do Triunfo, 1048, Centro, Sant'Ana do Livramento, RS, Brazil

E-mail: jgaribaviana@gmail.com

Andressa Hennig Silva

Postgraduate Program in Administration, Federal University of Pampa

R. Barão do Triunfo, 1048, Centro, Sant'Ana do Livramento, RS, Brazil

E-mail: andressasilva@unipampa.edu.br

Ana Júlia Teixeira Senna Sarmento Barata

Postgraduate Program in Administration, Federal University of Pampa

BR-290, 423, Universitário, São Gabriel, RS, Brazil

E-mail: anasenna@unipampa.edu.br

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Abstract

This article checks the performance of the fashion companies in South Brazil relative to the incorporation of actions within the framework of the Sustainable Development Goals (SDGs). The study adopts a quantitative approach of descriptive character, based on the Survey Method, applied to companies in one of the main fashion producing regions in Brazil. It was possible to ensure that the best performance of companies was achieved in gender equality and decent work and economic growth, with good and excellent performance, respectively. However, the performance of the companies in consumption and responsible production (SDG 12) and fight against climate change (SDG 13) were classified within the poor performance category. What demonstrates that the companies act unevenly in the different SDGs surveyed. Therefore, it is necessary to create a more global view of actions to compensate for their weaknesses, and as a consequence improve their sustainability. The negative performance is worrying because changes in production systems are urgent as pollution levels have increased on the planet. This study contributes with a data collection instrument that can be replicated in other fashion companies in different social, economic and cultural contexts.

Keywords: Fashion, Sustainability, SDGs, Gender equality, Decent work, Climate change, Responsible production

1. Introduction

The textile industry is one of the most important sectors in the global economy (Berlim, 2016). In Brazil, the sector has been characterized as a major employer in the processing industry. There are more than 25 thousand companies, which in 2020, represented 1.5 million direct jobs and 8 million indirect jobs (ABIT, 2020). Therefore, according to Fletcher and Grose (2011) the sector's unsustainability center lies in the fashion system itself which, due to its large-scale and anonymity, impacts on ecosystems and workers, without relevant considerations.

More than one-off actions within the supply chain, fashion has been invited to rethink its entire structure. Isolated attitudes in specific periods are not enough to ensure sustainability (Fletcher and Grose, 2011).

According to Kaymaz et al. (2022) tools are needed to make it easier to achieve the environmental, social and economic targets that constitute the Sustainable Development Goals suggested by the United Nations Organization (UNO). The Brazilian Apparel and Textile Industry Association (ABIT) points to the need to incorporate the SDGs as a manner to overcome the challenges stemming from sustainability (CNI and ABIT, 2017). The Fashion Revolution NGO also mentions an approximation with the SDGs, and highlights some of the urgent themes for the sector, such as: gender-based workplace violence, low

salaries and poor remuneration, incorrect waste disposal, poor adhesion to recycling initiatives of textile products, etc (Fashion Revolution, 2019).

Given this scenario, where fashion companies usually display unlimited and isolated attitudes about the sustainability of their businesses, and where there is need to incorporate the SDGs, the following survey question arises: What is the performance of fashion companies in South Brazil, in relation to the incorporation of actions within the framework of the SDGs? Therefore, the present paper seeks to check the performance of the fashion companies in South Brazil in relation to the incorporation of actions within the framework of the SDGs at the United Nations. To this end, the study seeks to identify the existence of actions aimed at achieving gender equality and female empowerment (SDG5), and actions committed to promoting sustainable economic development, full employment and decent work (SDG 8); verify the adoption of actions that ensure responsible production and consumption (SDG 12) and the fight against climate change and its impacts (SDG 13). Finally, check if there are significant differences in the performance of the companies in the different SDGs surveyed.

In practical terms, a study on sustainable fashion turns out to be important in light of the fact that Brazil is the fourth biggest integrated and verticalized supply chain in the world (CNI and ABIT, 2017). In 2018, Brazil's textile production dropped 1.6% and clothing production 3.7% (ABIT, 2018). This drop in production is the result of a series of macroeconomic questions, and that, according to Galatti and Ramos (2019), the solution goes through the development of a higher innovation and differentiation capacity.

Furthermore, holding a debate on sustainable fashion in a country like Brazil, which faces countless social and political challenges, consists in requiring decent conditions for the workers of this industry (Fashion Revolution, 2019).

In theory, studies that go deep into fashion sustainability are relevant, seeing that, according to some authors, they are recent. According to Nishimura and Gontijo (2016), this is an area whose scientific development started not long ago. Debates are going on timidly and follow different paths in line with the knowledge area to be explored (Fernandes and Castillo, 2018).

Some studies are underway in the area, like the research work by Cai and Choi (2020) which analyzes, through a literature revision, how the textile and clothing supply chains have come up with practices to materialize the SDGs. Emphasis is also given to the study conducted by NGO Fashion Revolution (2019), which added to the supply chain transparency analysis aspects related to United Nations Sustainable Development Goals. This study is directed to huge fashion corporations, disregarding sustainable initiatives adopted by small companies. It represents a research gap to be explored.

That being the case, it turns out to be important to utilize the SDGs as guiding tools of the sustainability insertion process in fashion companies. It is expected that this study will provide theoretical and practical contributions towards the development of sustainable fashion.

2. Theoretical Benchmark

2.1 Sustainable Development and the Future of Fashion

The United Nations came up with the Millennium Development Goals (MDGs), consisting of eight specific goals and eighteen targets to be achieved by the countries, by 2015 (Kettunen and Brink, 2012).

After bringing to a close the MDGs cycle, in 2015, the UN created a set of goals and targets which became known as Sustainable Development Goals (SDGs). They consist of 17 goals and 169 targets to be achieved by 2030 (ONU, 2015).

Just like in other sectors, sustainable development has to be incorporated into fashion and the SDGs play an important role within this context. The National Industry Federation (NIF) and the ABIT devised a report that sought to debate the sustainability challenges of the fashion sector, and it was published in 2017. In this report, the alignment of the actions with the United Nations SDGs is referred to as necessary to overcome the challenges (CNI and ABIT, 2017).

The SDGs are also present in the Fashion Transparency Index, of the NGO Fashion Revolution. These constitute the section “prominent topics”, which comprised four of the seventeen SDGs (Fashion Revolution, 2019).

The aim of SDG 5 is to achieve gender equality and the empowerment of all women and girls. SDG 8 aims to promote sustained, inclusive and sustainable economic growth, productive and full employment and decent work for males and females. SDG 12 aims to make sure production and consumption standards are sustainable. SDG 13 seeks to implement urgent measures to fight climate change and its impacts (ONU, 2015).

The incorporation of the United Nations SDGs into the fashion segment is especially necessary seeing that it is responsible for a series of negative environmental impacts, as displayed hereinafter.

2.2 Adverse Environmental Impacts in the Fashion Sector

With aim to reduce costs, while taking advantage of fragile legislation, companies outsource their manufacturing processes to areas where labor is cheaper (Bick et al., 2018; Nishimura and Gontijo 2016). Such changes in the fashion industry resulted into the predominance of a system focused on the sale of cheap clothes with a production process based on speed, the so-called fast fashion system (Fletcher and Grose, 2011).–

Some exploratory reports have associated fashion production with poor working conditions (Nishimura and Gontijo, 2016). Due to inadequate ventilation, respiratory problems caused by cotton dust and synthetic particles frequently happen. There are also muscle disorders stemming from repetitive efforts caused by the production of hundreds of similar pieces of garments (Bick et al., 2018).

Another remarkable characteristic of the precarious working conditions comes from female work. The percentage of women working in the fashion industry, at global level, ranges from

70% to 80% (Fashion Revolution, 2019). Learning how to sew clothing is normally a skill acquired informally, with no need for professional courses; a fact that reduces the costs for hiring the workers. Therefore, the high fashion brands take advantage of the chance to pay lower wages to female workers (Araújo and Amorin, 2002).

With regard to the race question, the Brazilian Fashion Transparency Index clarifies that only 7% of the brands disclose information relative to the racial diversity of their workers and to the regularization of foreign migrant workers (Fashion Revolution, 2019).

If the negative social impacts are threatening, the ones relative to the environmental dimension are alarming. In 2016, for example, it was estimated that the clothing industry contributed from 5%to 10% towards global pollution (Quantis, 2018).

There is intense use of pesticides in the Brazilian cotton fields, which is a problem when it comes to natural fibers (Pires et al., 2005). In the meantime, the use of synthetic fibers has increased due to the low cost of plastic, which is a cause for concern. In 2016, 65 million tons of plastic were used for fibers of this type (The Fiber Year, 2017).

The use of energy in the fashion sector is intense and is directly related to the negative impacts that cause climate change. According to Karaosman et al. (2017) more than half of the carbon dioxide emissions are generated by transport activities from factories to shops. As a result, besides requiring much production and transport energy, the fashion industry pollutes the air with greenhouse gas emissions (Berlim, 2016).

The textile sector is also responsible for the exploration of huge volumes of water. For dyeing 1 kg of fabric, from 70 to 150 liters of water are needed (Razzaq et al., 2018). Another relevant question is the fixation rate in the dyeing process, which remains at approximately at 65%, that is to say, the remaining 35% is discarded at the end of the dyeing process, polluting residual waters (Fletcher and Grose, 2011).

The fashion industry has a high potential for generating solid waste. A study conducted by Correia et al. (2016) at the industries of the textile hub in Vale do Itajaí, concluded that 59%, of the 22 companies analyzed, produce up to 2000 kg of fabric shreds a month.

The adverse impacts caused by the sector are alarming, but, conversely, new systems have been suggested, as shown in the section that follows.

2.3 Positive Environmental Impacts in the Fashion Sector

In the opposite direction of the predominant speedy production system is the slow fashion system, which gives emphasis to small-scale production, using traditional manufacturing techniques and local resources (Fletcher and Grose, 2011; Fiorin et al., 2017).

Within the context of the factories, some sustainability initiatives are linked with the elimination of child labor, freedom of association, formal employment contracts, which do not exceed maximum working hours, fair salaries, technical capacity and appropriate workplace (Huq et al., 2016).

On the other hand, within the field context it was Fair Trade that emerged – whose aim is to

mitigate the commercial, social and ethical discrepancies between the workers and big corporations (BERLIM, 2016). The Fair Trade label is a certification that seeks to create opportunities for producers and workers marginalized by the traditional trading system (Fair Trade Foundation, 2008; Connect Americas, 2020).

Specifically in Brazil, "the dirty slave labor list" is one of the main instruments in the fight against forced labor. Created by the inter-ministerial decree nº 4, of 11 May 2016 (BRASIL, 2016), it ensures transparency and social control when it gives publicity to, and exposes organizations that exploit labor in situations similar to slave labor (Galatti and Ramos, 2019).

Just like the social dimension, environmental questions lack urgent solutions. In Brazil, as of 2015, the Brazilian Association of Cotton Producers (ABRAPA), began to introduce a series of initiatives that promote organic production, thus encouraging the consumption of organic fiber (Subic et al., 2012).

It is also necessary to take into consideration the reduction in the consumption of energy and non-renewable fuels. According to Karaosman et al. (2017), the reduction of air emissions and the formulation of carbon sequestration projects are getting more and more familiar with production processes.

The innovations in high performance dyes have ensured a fabric fixation rate of 95%, minimizing the amount of chemical residues discarded. More than going in search of low impact dyes there is need to encourage the use of naturally colored wool and fibers (Fletcher and Grose, 2011).

When it comes to solid-waste management, options vary greatly, including from the zero waste generation to reusing alternatives. For the generation of zero waste, the "zero waste" technique is the alternative. In it, the designer needs to develop a modeling so that there is no disposal of surplus remnant fabrics (Firmo, 2014). Therefore, upcycling represents an opportunity for utilizing tons of textile waste otherwise frittered away (Han et al., 2017). There is also need to mention reverse logistics. The use of reverse cycles improves sustainability, reducing waste and adding value (Beh et al., 2016).

Becoming sustainable is a challenge, which, according to CNI and ABIT, overcoming this challenge goes through the alignment of the actions with the SDGs (CNI and ABIT, 2017). It is this alignment that guides the methodology of this study, described in the section that follows.

3. Method

This paper lies on the pillars of the sustainable fashion theme and adopts a quantitative approach of descriptive character.

With regard to the method, the option was for the Survey type, appropriate for obtaining data and information on characteristics, actions or opinions expressed by a specific group of persons, who could represent themselves or institutions to which they belong, and all information pieces are collected by means of a questionnaire (Alyrio, 2009).

The sampling complied with the non-probabilistic criterion by judgment, selecting for the survey companies from one of the main fashion producing regions in Brazil. These companies are located halfway north in the State of Rio Grande do Sul (RS), in South Brazil (BR). The State is one of the main fashion producers in the country due to the straight bar knitting industries and apparel companies (Laschuk and Rüthschilling, 2014). In 2014, more than 80% of the apparel companies in Rio Grande do Sul were located halfway north of the State (SIVERGS, 2013). The option for the non-probabilistic by judgment modeling is justified by the following aforementioned characteristic questions.

In order to guarantee precise data uniformity, 100 companies were selected, all of them affiliated with three institutions located halfway north of Rio Grande do Sul. They are as follows: Clothing Industry Union of the State of Rio Grande do Sul (SIVERGS), Gaucho Sierra Fashion Hub and the Textile Industry and Footwear Union in Northwestern Rio Grande do Sul (SINDIVEST). Of the 100 companies informed on the sites of the institutions, 39 are no longer operating, and are therefore excluded from the sample. Consequently, we reached a number of 61 companies fit to take part in the survey.

The data collection technique that was chosen was a questionnaire. Due to the shortage of studies on the area of sustainable fashion and the inexistence of data collection instruments, a questionnaire was devised, based on literature, with studies by Karaosman et al. (2017), from NGO Fashion Revolution (2019), from the UN Women program (UNO, 2020) and from ILO Conventions (ILO, 1949, 1951, 1977, 1981). The instrument consisted of 26 affirmative questions, split into four blocks, referring to each one of the four SDGs and 5 open questions relative to the profile of the companies.

For the construction of the scale, seven constructs were taken into consideration: gender equality and female empowerment (SDG 5), full employment and decent work (SDG8), sustainable production and consumption (SDG 12) and climate change (SDG 13). As can be observed on Table 1.

Table 1. Synthesis of the construction of affirmatives for data collection

ODS	Specific goals	Construct	Theoretical foundation	Affirmative
5	Identify the existence of actions aimed at achieving gender equality and female empowerment	Gender equality	Karaosman et al. (2017); Fashion Revolution (2019); Convention 100 (OIT, 1951)	06
		Female empowerment	Karaosman et al. (2017); ONU (2020)	
8	Identify the existence of actions committed to promoting sustainable economic growth, full employment and decent work	Full employment	Karaosman et al. (2017); Fashion Revolution (2019); Convention 95 (OIT, 1949)	07
		Decent work	Karaosman et al. (2017); Convention 148 (OIT, 1977); Convention 155 (OIT, 1981)	
12	Verify the adoption of actions that ensure responsible consumption and production	Sustainable consumption	Karaosman, Alonso and Brun (2017)	07
13	verify the adoption of actions that guarantee the fight against climate change and its impacts	Climate changes	Karaosman et al. (2017)	06

Source: Prepared by the authors (2023).

All affirmatives are measured by a 5-Point Likert Scale (Table 2).

Table 2. 5-Point Likert Scale

1	2	3	4	5
Never	A few times	Sometimes	Always	Everytime

Source: Prepared by the authors (2021).

The aim of the scale is to identify how frequently each action is developed. After the instrument construction stage, it was forwarded to the validation stage, which occurred in two phases. In the first phase, it was sent to three academic research experts, all of them PhD professors of a Federal University in Brazil. During this phase, some corrections were made to the syntax and semantics of the affirmatives. After the opinion of the experts, the instrument progressed to the second phase, when it was applied to seven companies based in the Gaucho Sierra Fashion Hub, which accounts for a bit more than 10% of the total population.

The data collection instrument, both for the pre-test and for research, was constructed in the Google Forms Platform and sent to all companies via email and social networks. Of the 61 companies that were contacted, 28 completed questionnaires were obtained.

All data collected through the aforementioned instrument were in the Microsoft Office Excel 2007® and IBM SPSS Statistics20® and treated through descriptive statistics and hypothesis testing. The descriptive analysis resorted to measures of central tendency (mean, median and mode), in order to characterize what is typical to the group, and dispersion measures (standard deviation and coefficient of variation (CV)) to indicate the variability of the elements of the group. Tables and graphic representations were also used.

A hypothesis testing was developed to verify if there are significant differences in the performance of the companies in the different SDGs studied. To this end, the null hypothesis (HO) and the alternative hypothesis (HI) were defined:

H0: There is no significant difference in the performance of the companies among the different SDGs studied.

HI: There is at least one SDG at which the companies show better performance compared with the other companies.

After this, the statistical test to be utilized was defined. Considering the non-probabilistic judgmental sampling, the small statistical sampling ($n < 30$) and the possibility for a non-normal distribution, it was determined that the statistical testing was to be nonparametric, the test in case is for independent samples K, Kruskal-Wallis. The test was executed in the software IBM SPSS Statistics20®, with a 5-percent significance level 5%.

Later, a sustainability indicator was constructed to inform about the compliance with the SDGs. This indicator was created taking into consideration the calculation of the score to the respondents' answers to the questionnaire, which utilized the Likert scale. The calculation for devising the categories took into consideration the possible minimum and maximum scores on the collection instrument, according to the following formula:

$$IS = \frac{n.p}{n.p2} \quad (1)$$

Where:

IS = sustainability indicator

n = quantity of affirmatives contained in the questionnaire (26)

p = average score of affirmatives defined on the basis of the 5-Point Likert Scale (1 to 5)

p2 = maximum average score affirmatives could have (5)

This formula was utilized to estimate the minimum and maximum values that could be achieved by the sustainability indicator, considering the minimum average equal to 1 and the maximum average equal to 5.

Minimum value of the indicator:

$$\text{IS} = \frac{26.1}{26.5} = 0.20 \quad (2)$$

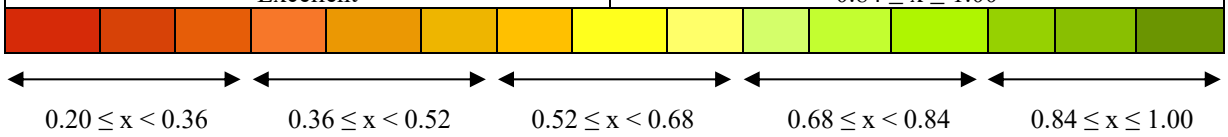
Maximum value of the indicator:

$$IS = \frac{26.5}{26.5} = 1.00 \quad (3)$$

Therefore, the minimum value for the sustainability indicator was determined (0.20) and the maximum value (1.00), with a variation of 0.80. Such scale was divided by 5, and a value of 0.16 was achieved in each one of the five category intervals (terrible, bad, moderate, and good, excellent, as shown on Table 3.

Table 3. Category intervals for sustainability indicator

Category	Interval
Terrible	$0.20 \leq x < 0.36$
Bad	$0.36 \leq x < 0.52$
Moderate	$0.52 \leq x < 0.68$
Good	$0.68 \leq x < 0.84$
Excellent	$0.84 \leq x \leq 1.00$



Source: Prepared by the authors (2021).

Therefore, the companies will present their level on the indicator in accordance with the average score achieved on the Likert scale.

4. Results

The respondents were asked about the size of their companies, including workers, partners, owners and outsourced workers. The highlights were small companies, and they represented 64% of the sample. Microcompanies account for 32%, and the mid-sized companies were the least representative, with only 4%. There were no big companies among the ones that were consulted. The classification was based on the Sebrae and Dieese (2013) criteria. According to Scherer and Campos (1996) and Piccinini et al. (2006) the Rio Grande do Sul companies created as of 1980 were small-sized, and the majority of them had from 20 to 50 employees. This corroborates the previously found data, seeing that small-sized companies predominate in the sample, of which 56% have from 20 to 50 employees.

With regard to the time in operation, 72% of the consulted companies have been operating for 20 or 30 years. While the less representative companies in the sample (7%) have been in operation for 10 or 20 years. The 21% remaining companies have been operating for up to 10 years.

The companies were questioned about the relation between the gender of their workers. In most of them (79%) the female gender represents at least 75% of the total number of workers. Which is similar to the Brazilian parameter for the fashion sector, where 75% of the workforce is female (ABIT, 2020).

It is worth noting that 29% of the workforce of the surveyed companies is composed of only women. However, according to Fashion Revolution (2019), although the majority of the sector is structured by women, there is a shortage of information about the actions implemented by the companies to ensure rights, empower women and achieve gender equality in the sector.

As a result, the first six affirmative questions analyzed the constructs gender equality and women empowerment, as can be observed on Table 4.

Table 4. Descriptive analysis of the SDG 5 affirmatives

Nº	Affirmatives	Mean	Mode	Standard deviation	CV
A01	My business provides employment for young women.	4.32	5	0,2	19%
A02	My business takes action against gender discrimination.	3.64	5	1.66	46%
A03	In my business women occupy leadership positions.	4.54	5	0.64	14%
A04	My business provides professional development training for female workers.	3.86	4	0.97	25%
A05	In my business, women receive salaries compatible with those of men who occupy the same positions.	4.39	5	0.96	22%
A06	In my business, women find channels/means to report possible harassment.	3.43	5	1.79	52%

Source: results of the research (2021).

The highest average (4.54) was achieved by affirmative A03, which is about the occupation of leadership positions. Although being a good result, it could be chained to the fact that the female gender predominates in the sector, making it more likely for this group to occupy leadership positions. The second highest average (4.39) was achieved at affirmative A05, on pay equality. Remuneration equality refers to fixed remuneration rates, without any sex-based discrimination, in line with Art. 1, paragraph b, of Convention Number 100 –ILO - International Labor Organization (1951).Nowadays there is a certain progress when it comes to giving publicity to equal pay policies through annual promotions of executive positions and equal pay policies among the employees of the Brazilian fashion companies (Fashion Revolution, 2019).

In the meantime, the lowest average (3.43) was achieved by affirmative A06, which corresponds to the existence of channels or means for reporting tentative harassment. The low frequency in this affirmative is cause for concern, seeing that, according to the report by Care International (2017), sexual harassment cases frequently happen in the fashion sector. In a period of approximately twelve months, one in every three female workers faces sexual harassment attempts in the workplace, according to the report.

Another important action with an average lower than 4, was affirmative A04, which refers to qualification. Qualification turns out to be important when it comes to opportunities for women to assume leadership roles, obtain better salaries, thus getting stronger against discrimination and gender-related violence (Fashion Revolution, 2019).

It is worth highlighting that the measure of central tendency at fashion, that is to say, the number that came up most frequently as answer of companies, was 5 in practically all the

affirmatives, with the exception of affirmative A04, which achieved mode 4. It means that most of the analyzed companies show good performance, achieving high scores on the frequency scale.

The general average of the SDG 5 was 4.03, mode 5 and median 5, a fact that attests that the companies are implementing actions in the framework of female empowerment and gender equality (SDG 5). However, there is need to mention that, considering the affirmatives in joint manner, a standard deviation of 1.27 was obtained and coefficient of variation of 31%, pointing to dispersed data in relation to the average. Or else, there was variability in the sample, demonstrating that, while some companies implement actions within the framework of the SDGs, frequently, other companies move in the opposite direction.

Within the framework of the SDG 8, full employment and decent work, the companies were questioned about the relationship between their own workers and outsourced employees. Seven companies did not disclose any information about the relationship between these workers, as a result, they were discarded from the percentage calculations. Of the companies that informed about this relationship, the majority of them (52%) have an employment relationship with 75% of them (non-outsourced). And 19% do not have any outsourced employee. Nonetheless, in a considerable number of companies (24%), more than half of the workers are outsourced employees. The importance of prioritizing the non-outsourced employees in the companies lies in the fact that it is easier to ensure decent workplace conditions to the employees. Subcontracting turns the employees invisible in the supply chain, leading to risks of labor rights violations (Fashion Revolution, 2019).

Other questions to the companies are relative to the relationship between the ethnic groups of the employees. In most of them (86%) the white race represents at least 75%of the total number of the workers in the companies.

Furthermore, in an expressive number of companies (36%) there are no blacks, browns and/or indigenous persons in their workforce. Initiatives focused on the promotion of racial equity among the employees should be considered by the fashion companies (Fashion Revolution, 2019).

The following results refer to the constructs full employment and decent work, as can be observed on Table 5.

Table 5. Descriptive analysis of the SDGs 8 affirmatives

Nº	Affirmatives	Mean	Mode	Standard deviation	CV
A07	The hired employees have a fixed employment relationship with my business.	4.50	5	0.75	17%
A08	In my business, employees work up to 44 hours a week.	4.21	4	0.79	19%
A09	In its workforce, my business has blacks, browns and/or indigenous people.	3.39	3	1.20	35%
A10	Employees at my company receive a fixed monthly salary.	4.71	5	0.53	11%
A11	In my business, employees work in a light and airy environment	4.82	5	0.55	11%
A12	My business offers conditions to minimize accidents and/or occupation aldisease (example: tables or machines that ensure correct posture).	4.54	5	0.88	19%
A13	My business makes donations or other social actions for the community where it operates.	3.89	5	0.99	26%

Source: results of the research (2021).

The highest average (4.82) was achieved by affirmative A11, relative to the good conditions in the work environment. According to Bick et al. (2018), occupational risks in the fashion sector include respiratory problems caused by cotton dust and synthetic particles. This is why a well-lit environment is an assurance of decent work. The second highest average (4.71) at affirmative A10, is related to the fixed pay received by the workers. In accordance with Art. 12 of ILO Convention 95 (1949), salaries should be paid at regular intervals. Fixed pay turns out to be important because it prevents the workers from suffering from the variable demands of the fashion sector and, consequently, from their salaries, if they are paid per item of work completed. NGO Fashion Revolution (2019) observes that more than fixed pay, what really matters is fair pay, capable of covering the basic living expenses, whilst providing decent living standards to the workers and their families. According to Mair et al. (2016),hiring a minimum wage worker in Brazil costs twice as much as hiring a minimum wage worker in India, for example.

The lowest average (3.39) was achieved by affirmative A09, and is about the inclusion of blacks, browns and/or indigenous people in the workforce. A performance that coincides with the data relative to the percentage of ethnic groups, presented by the companies, where whites predominate. It is important to create a culture that supports ethnic diversity and the inclusion of black workers (Fashion Revolution, 2019). It is also stressed that fixed-term employment contract, limited to 44 hours a week and minimum workplace accident risk achieved averages of above four points, attesting to the good performance of the companies in the block.

The measure of central tendency fashion scored 5 in most affirmatives, with the exception of affirmatives A08 and A09, which achieved mode 4 and 3, respectively. It means that most analyzed companies show good performance, achieving high scores on the frequency scale. On the other hand, the mode of affirmative A09, relative to the presence of blacks, browns and/or indigenous people in the workforce, attests that most companies only hire them sometimes.

The general average in the SDG 8 was 4.30, mode 5 and median 5, indicating that the companies are engaged in actions in the framework of full employment and decent work. According to studies by Cai and Choi (2020), actions intended to guarantee decent work and economic growth are useful in that they generate more benefits for the companies. It is also stressed that, considering the affirmatives as a whole, a standard deviation lower than 1 (0.95) was achieved and a 22-percent coefficient of variation, indicating that this is a sample of certain homogeneity. Or else, the data are scarcely dispersed, attesting that the companies are trying to develop actions in the framework of the SDGs with similar frequencies. According to Karaosman et al. (2017) the aspect of labor practices and decent work reflects an area of ever-increasing concern of the companies, a fact that could explain the performance of the companies in the SDGs.

Considering those aspects is as important as the social aspects, as will be attested by the sustainable production and consumption constructs, according to Table 6.

Table 6. Descriptive analysis of the SDG 12 affirmatives

Nº	Affirmatives	Mean	Mode	Standard deviation	CV
A14	My business has reduced the use of chemicals or toxic materials in its processes/products.	2.50	1	1.67	67%
A15	My business reuses water in its production processes.	1.54	1	1.17	76%
A16	My business uses clean energy in its production processes (example: solar or wind energy).	2.07	1	1.74	84%
A17	My business reuses its own waste as raw material, or sends it to recycling.	3.79	5	1.26	33%
A18	My business performs the reverse logistics of its products.	1.96	1	1.29	66%
A19	My business uses eco-friendly materials in its products (example: organic cotton, biodegradable nylon and recycled polyester).	2.82	2	1.02	36%
A20	My business reuses textile waste and/or waste from other sectors in its products.	2.00	1	1.36	68%

Source: results of the research (2021).

The highest average (3.79) was achieved by affirmative A17, relative to the reutilization of its own waste or recycling it. The best average in the SDGs could be explained by the National Policy on Solid Waste (Law 12.305/2010) which outlines the management and responsibilities of the generators of several types of waste, including textile waste (BRAZIL, 2010). The policy has urged the companies to correctly dispose of their waste.

Alternatives that make sure waste is reused frequently go through the creation of a reverse logistics chain, which intercepts pieces that would otherwise be discarded and relocates them again in the productive cycle, in the form of raw material. According to Beh et al. (2016) the costs of reverse logistics remain below 5% of the total costs of the supply chain. Thus it becomes an alternative considering the responsibility of the companies for their products. However, amid the consulted companies, the frequency of reverse logistics is very low. Affirmative A18, relative to this process achieved the second lowest average, with 1.96.

On the other hand, the lowest average (1.54) was achieved by affirmative A15 relative to the

reutilization of water in the productive processes of the companies. This low average is cause for concern, considering that water is one of the most improperly explored resources by the sector (BERLIM, 2016), and its non-reutilization is responsible for the waste of big volumes of water. According to Cai and Choi (2020) the use of recycled cellulose fiber is an alternative for reducing the consumption of water. It is worth noting that the results that attest to the scarce reutilization of water in the surveyed companies is in line with the literature. According to Karaosman et al. (2017) water alternatives, like rainwater collection and the reuse of wastewater appear as trends for future sustainable fashion. Phenomenon that does not show up in the studied sample.

The general average in the SDG 12was 2.38, mode 1 and also median 1, a fact that suggests that the companies are not carrying out actions within the framework of responsible production and consumption (SDG 12). The measures of central tendency attest to the low performance of the companies in terms of responsible production and consumption. There is also need to stress that, considering the affirmatives as a whole, a 1.52 standard deviation was achieved and a 64% coefficient of variation, indicating that the data are dispersed relating to the average, in other words, there was high variability in the sample, demonstrating that while some companies frequently carry out actions within the SDG 12 framework, others are moving in the opposite direction.

On the other hand, the performance of the companies in the fight against climate change comprise a construct, climate change, according to Table 7.

Table 7. Descriptive analysis of the SDG 13 affirmatives

Nº	Affirmatives	Mean	Mode	Standard deviation	CV
A21	My business performs carbon offsetting (example: planting trees).	1.43	1	1.14	80%
A22	My business uses locally source draw material in its products.	2.89	2	1.07	37%
A23	My business uses alternative transport to deliver its products (example: bicycle).	1.64	1	0.91	55%
A24	My business uses eco-efficient equipment.	1.89	1	0.99	53%
A25	The installations of my business generate little emission of gases.	3.32	5	1.89	57%
A26	My business sells most of its products in the state where it is located.	3.75	4	0.80	21%

Source: results of the research (2021).

The highest average (3.75), at affirmative A26, is related to locally sold products, in the cases in the same State where the company operates. The manufacture of a product near its place of the sale and consumption minimizes the carbon footprint due to reduced transport distances (Mckinsey and Company, 2018). According to Galatti and Ramos (2019) localism is one of the sustainability themes, and has been growing in fashion companies. In the view of Cai and Choi (2020) energetic efficiency also plays a fundamental role in the decrease of emissions, however, the companies surveyed in this study achieved only an average of 1.89 for the affirmative relative to the efficiency of the equipment used.

The lowest average (1.43), at affirmative A21, is related to emission offsetting, which could be through the planting of trees. However, this was the smallest average in all four SDGs studied. Hence, it became evident that emission offsetting is not an action frequently carried out by the companies. The second lowest average (1.64) was achieved by affirmative A23, regarding alternative transport. According to Sundarakani et al. (2010) the carbon footprint depends on the manner transport is carried out, on the fuel used and the distance covered.

The general average on SDG 13 was 2.49, mode 1 and median 2.5, which indicates that the companies are not developing action within the framework of the fight against climate change (SDG 13). The central tendency measures attest to the low performance of the companies regarding the question of the fight against climate change. Cai and Choi (2020) point to the need to charge fees on emissions in order to reduce the carbon footprint of the companies. There is also need to note that, considering the affirmatives as a whole, a standard deviation of 1.46 was achieved and coefficient of variation of 59%, suggesting that the data are dispersed in relation to the average, that is to say, there was variability in the sample, demonstrating that while some companies frequently carry out actions within the framework of the SDG, others move to the opposite direction.

Besides the measures of central tendency and dispersion, a hypothesis test was performed. The test verified if there is at least one SDG in which the companies show better performance compared with the other companies, and this is the alternative hypothesis (H1).

After running the data in *SPSS*, at a 5% significance level, it was ascertained that the null hypothesis should be rejected, considering that the P-value (0.001) is lower than the significance level (0.05). In other words, there is at least one SDG in which the companies show better performance.

The Kruskal-Wallis test attested there is a SDG effect over the performance of the companies [$X2(3) = 16.024$; $p < 0.05$], the same presented a chi-square of 16.024 and 3 degrees of liberty. Knowing that there is a difference in performance depending on the SDG, an attempt was made to discover where these differences are. To this end, a post hoc test was used, where multiple comparisons of the "on the same level" type were made. So, it was ascertained that the companies have a better performance in the SDGs 5 and 8, compared with the SDG 12. That is to say, all actions within the framework of gender equality, decent work and economic growth are given priority by the companies in relation to responsible production and consumption (TABLE 8).

Table 8. Performance ranking

Sustainable Development Goals (SDGs)	Performance ranking
Gender Equality (SDG 5)	20.00[a]
Decent employment and economic growth (SDG 8)	18.57[a]
Responsible consumption and production (SDG 12)	6.64[b]
Combating climate change (SDG 13)	9.08[a]

*Different letters indicate significant differences in the post hoc considering $p < 0.05$.

Source: results of the research (2021).

It is not possible to state statistically that SDG 5 can perform significantly better than SDG 13, although it is attested by the ranking.

Besides the hypothesis testing, a performance indicator was created in order to classify the companies according to their performance in terms of the incorporation of actions within the four SDGs framework. The frequency with which the companies carry out actions within the framework of the four SDGs determines the performance of the same companies in the indicator developed. Figure 1 demonstrates the general performance of the companies per SDG studied.

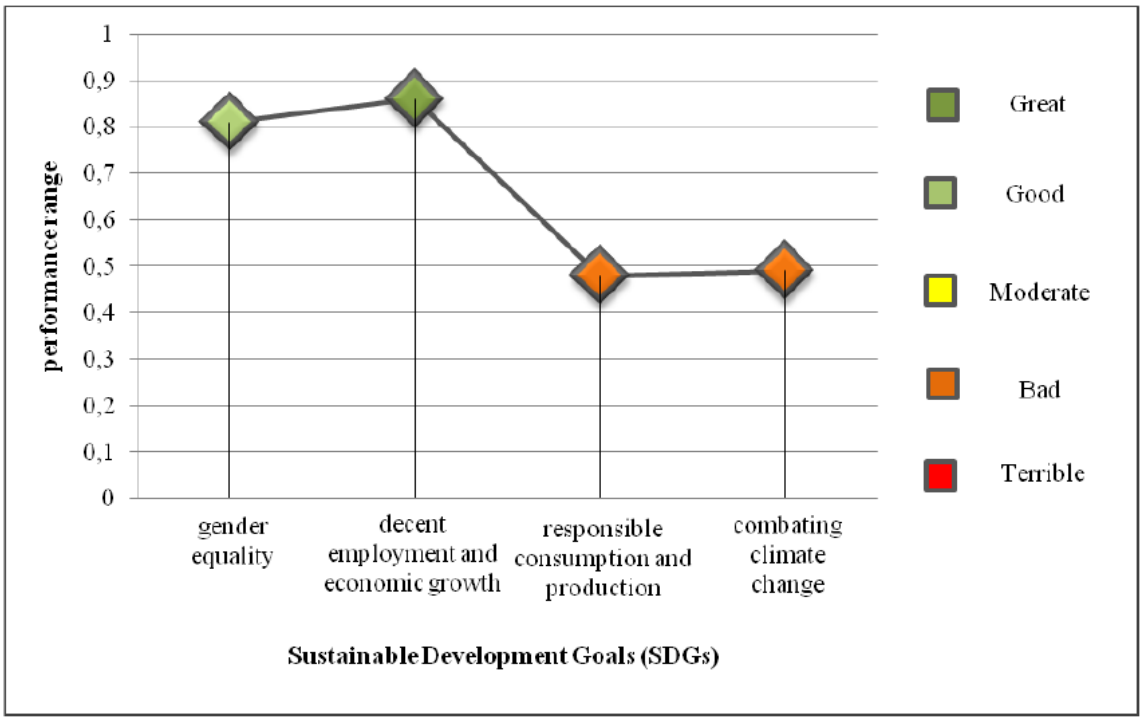


Figure 1. Performance of the companies in the indicator by SDG

Source: Prepared by the authors, 2021.

It turns out that the best performances of the companies were as follows: gender equality (SDG 5), decent employment and economic growth (SDG 8), with good and excellent performance, respectively. However, it is ascertained that the performance of the companies in responsible production and consumption (SDG 12) and the fight against climate change (SDG 13) is not satisfactory, and both of them are classified as bad performers.

The results attested that the companies act unevenly in the different SDGs studied. The results that corroborate the studies by Cai and Choi (2020), according to these authors, sustainable operations in the textile and apparel supply chain contribute in an uneven manner towards the environmental, social and economic development.

5. Discussion

This paper investigated the performance of fashion companies in South Brazil in relation to the incorporation of actions within the framework of the Sustainable Development Goals (SDGs) proposed by the UN. It turned out that, in the majority of cases, the general performance of the companies in the incorporation of actions within the framework of the SDGs is favorable, with excellent and good performances. However, a smaller portion of actions classify the performance of the companies as bad, attesting that although the companies are interested in carrying out some initiatives to achieve the SDGs, others are deficient on that score.

Some negative topics should be dealt with by the companies, like the low frequency by which channels are made available to report cases of sexual harassment, low frequency of actions to stop gender discrimination and the lack of capacity building courses. Furthermore, there is little ethnic diversity.

The negative performance relative to responsible production and consumption is cause for concern because changes in the production system are urgently needed. The lower-than-expected performance relative to the fight against climate change activates a warning sign once the pollution levels on the planet have been rising, and the fashion sector expands these numbers.

The surveyed companies act unevenly to reach the SDGs. It is therefore necessary to create a more global vision on their actions in order to make up for their week points in some SDGs and, as a result, improve their general performance. Balanced actions will facilitate the incorporation of sustainability and will help with the target to achieve the Sustainable Development Goals, by 2030. More than that, sustainability incorporation, in its three pillars – environmental, social and economic, turns out to be a competitive edge to the companies.

Some studies detected limitations during the period they were conducted, like the difficulty in receiving back filled in questionnaires. As it was not possible to get the totality of the sample, the results herein presented could not be generalized for the population of companies based in Rio Grande do Sul. A fact that limits the results only for the surveyed companies located in the mid-north region of the State of Rio Grande do Sul.

A contribution that stands out is the presentation of a panorama on the adoption of strategies, including both positive and deficient factors, within the framework of the SDGs of the United Nations by companies based in the State of Rio Grande do Sul, Brazil. Based on the results achieved, the companies are in a position to delineate new strategies and verify which points are necessary and relevant. What also deserves to be mentioned is the data collection instrument, which could be replicated in research works that aim to observe the incorporation of the SDGs in fashion companies in other social, economic and cultural contexts.

It is recommended to replicate this study in other contexts, comprising a bigger number of companies, thus making it possible to generalize the results. Furthermore, it is possible to recommend a more comprehensive study, with complementary data, obtained through direct interviews with company owners and employees.

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Authors contributions

Dr. Ricardo Ribeiro Alves was responsible for study design and revising. Ms. Jéssica Alves da Motta was responsible for data collection and drafted the manuscript. Dr. João Garibaldi Almeida Viana collaborated with the data analysis. Dr. Ana Julia Teixeira Senna Sarmento Barata and Andressa Hennig Silva were responsible for reviewing and making corrections to the translation. All authors read and approved the final manuscript. All authors contributed equally to the study.

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