

Original Article

## The impact of FSC certification perceived by employees of Brazilian companies

O impacto da certificação FSC percebidos por colaboradores de empresas brasileiras

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### Abstract

**Purpose:** This study evaluates empirical evidence on the perceptions of employees on the positive and negative impacts of Forest Stewardship Council (FSC) certification on Brazilian companies.

**Methodology:** A survey was developed, and data from 149 employees of certified companies was collected. A scale of positive and negative impacts based on the literature was developed. The Jonckheere-Terpstra test was used to compare the statistical differences between the attributes under analysis. An exploratory factor analysis was also developed with a quantitative approach.

**Results:** The most positive perceptions are related to the protection of the forest and society. Regarding the negative aspects, the misinformation about the certifications and the cost to carry out the certification were highlighted.

**Originality:** The existing literature about FSC certification focuses on company managers and/or external stakeholders. A study on the perspective of employees from certified companies is important to ensure the well-being of employees, promote sustainability and corporate social responsibility, identify areas for improvement, and strengthen the company's reputation and credibility in the market.

**Keywords:** FSC; Forest Stewardship Council; Certification; Perception; Collaborators; Brazilian companies

### Resumo

**Objetivo:** Este estudo avalia evidências empíricas sobre a percepção dos colaboradores sobre os impactos positivos e negativos da certificação Forest Stewardship Council (FSC) em empresas brasileiras.

**Metodologia:** Foi desenvolvido um levantamento e coletados dados de 149 colaboradores de empresas certificadas. Uma escala de impactos positivos e negativos foi desenvolvida a partir da literatura. O teste de Jonckheere-Terpstra foi utilizado para comparar a diferença estatística dos atributos em análise. Também foi desenvolvida uma análise fatorial exploratória com abordagem quantitativa.

**Resultados:** As percepções mais positivas estão relacionadas à proteção da floresta e da sociedade.

Quanto aos aspectos negativos, destacam-se a desinformação sobre as certificações e o seu custo de implementação.

**Originalidade:** A literatura existente sobre a certificação FSC tem como foco os gestores das empresas e/ou stakeholders externos. O estudo sobre a perspectiva dos colaboradores de empresas certificadas é importante para garantir o bem-estar dos funcionários, promover a sustentabilidade e a responsabilidade social corporativa, identificar áreas de melhoria e fortalecer a reputação e a credibilidade da empresa no mercado.

**Palavras-chave:** FSC; Conselho de Gestão Florestal; Certificação; Percepção; Colaboradores; Empresas brasileiras

## 1 INTRODUCTION

Traditional forms of production and consumption are becoming critical given the dependence on finite natural resources (Pessoa, 2020). The search for sustainability represents an alternative for the development of new forms of consumption aiming at a good relationship between the economy and the environment (Pessoa, 2020). Forest certification represents an opportunity to demonstrate commitment to sustainability standards. It represents efforts to improve the socioenvironmental image, to reduce environmental accidents, to access new markets and even the improvement of organizational management (Basso et al., 2018).

Internalizing a certification is challenging and, from the moment that companies do that, several benefits are expected for entrepreneurs, consumers, stakeholders, and employees (Boarin et al., 2017; Olivério & Pizella, 2017; Bush, 2008; Imaflora, 2020; Dias et al., 2020). For entrepreneurs, new market opportunities are expected (Boarin et al., 2017). For consumers, the opportunity to contribute to the socio-environmental cause through the process of purchasing a certified product (Olivério & Pizella, 2017). For stakeholders, Dias et al. (2020) point out that they have great prominence in the business core, as they act through formal pressures, demanding from companies' postures that are more consistent with the new claims of the planet. For the employees, it promotes better working conditions (Bush, 2008; Imaflora, 2020).

Currently, there are numerous of forest certifications around the world, such as: Canadian Standards Association (CSA), China Forest Certification Scheme (CFCS), Sustainable Green Ecosystem Council (SGEC) in Japan, Indonesian Ecolabelling Institute and Malaysian Timber Certification Council. The globally most known are Forest Stewardship Council (FSC) and Programme for the Endorsement of Certification (PEFC) (Garzon et al., 2020; Hălălişan et al., 2021).

Despite the existence of other forest certifications, FSC is the fastest-growing in terms of added certified area. According to Dasgupta and Burivalova (2017), Piketty and Drigo (2018), and Rafael et al. (2018), FSC is one of the most respected and influential schemes because it incorporates economic, social, and environmental group interests into its evaluation criteria. Additionally, it is a non-governmental, independent, and non-profit organization.

Based in Germany, it is present in more than 80 countries with 231,051,297 certified hectares (ha) around the world. In this scenario stands out Europe and North America with 50.5% (101,395,124 ha) and 33.1% (66,401,793 ha) of total FSC-certified area respectively (FSC, 2021). South America and Caribbean Region have 6,9% (13,745,384 ha), Asia has 4,6% (9,147,39 ha), Africa 3,4% (6,784,385 ha) and Oceania 1,3% (2,651,814 ha) (FSC, 2021).

Many of the FSC benefits that have already been identified comprise the external perception of the company, that is, the vision of the stakeholders (Degnet et al., 2020; Paluš et al., 2018), the perception of the responsible person in the companies (Fagundes et al., 2021; Halalisan et al., 2018) or the analysis of corrective actions (Hermudananto & Ruslandi, 2018; Trishkin et al., 2019). Furthermore, there are studies related to institutional communication (Takiy, 2010), governance (Silva, 2012), marketing (Pimenta, 2008), social responsibility (Romano, 2010; Faro, 2013), among others. None of these studies have involved the employees of the organizations that adopt the FSC certification.

A certified organization has standardization of processes that need to be fulfilled and the collaborators are a fundamental part of this, considered as internal critical factors for organizational success (Oliveira & Pinheiro, 2010). Organizational changes are initiatives that interfere in the way of thinking, acting, communicating, relating, and working contributors. However, if employees have clarification of the reasons why the changes are taking place, they can spontaneously accept them, facilitating the implementation process, even maximizing the benefits (Robbins, 2005).

Finding studies that analyze collaborators perspective and forest certification was not possible. Studies found in the literature focus on other certifications such as ISO 14001 and ISO 9001 (Oliveira & Pinheiro, 2010). Based on this, this research aims to analyze the perception of employees on the FSC positive and negative impacts with the following research problem: What is the perception of the positive and negative impacts that employees of FSC-certified companies have regarding the seal?

Studying workers' perspectives regarding the FSC is crucial for several reasons, especially because certification directly impacts on employees working conditions, encompassing aspects such as salaries, working hours, workplace safety, and labor rights. Additionally, workers play a fundamental role as stakeholders in the forestry sector, and it is essential to involve them in the certification processes to ensure their voices are heard and their concerns are addressed. Understanding how workers perceive the social impacts of certification, including their local communities, work relationships, and living standards, is crucial for evaluating the success of certification in achieving its social objectives. Workers' acceptance and adherence to FSC certification are essential elements to ensure its effective implementation.

In addition to this introduction, the article also includes a theoretical framework chapter, methodology, results, and discussions. Final considerations and bibliographic references conclude the present study.

## 2 FOREST STEWARDSHIP COUNCIL

The FSC is an international Non-Governmental Organization (NGO) and non-profit founded in 1993 due to the high rates of global deforestation. It is recognized for being the most credible forest certification system on a world scale, as it encompasses the interests of social, environmental and economic groups on an equal basis (Garzon et al., 2020) to assure the public that forest resources are managed adequately in sustaining forest health and socio-economic viability. The Forest Stewardship Council (FSC).

Besides certifying responsible forest management, the FSC also certifies chain of custody and controlled wood. The chain of custody certification, guarantees the traceability of the raw material from its exit in the forest, through all the manufacturing processes until reaching the final consumer. The controlled wood certification determines that companies do not use wood from unacceptable sources (wood harvested illegally; wood harvested in areas where civil and traditional rights have been violated, wood harvested in forests of high conservation value, wood harvested in genetically modified forests, among others) in products labeled with the FSC (Blackman et al., 2018).

There are ten principles that any forest operation must adhere before it can receive the FSC certification regarding to the forest management. For compliance with the 10 principles, 55 criteria and 200 indicators need to be achieved. According to Garzon et al. (2020), it characterizes the certification as one of the most extensive on the market. In Table 01, it is possible to verify the 10 principles, as well as the criteria necessary to comply with each of them. Each FSC principle presents a specific theme and the necessary changes that organizations need to carry out, if they have not already been made, to acquire certification or maintain it (FSC, 2022).

Table 1 – FSC Principles and Criteria

<b>Number of the Principles</b>	<b>Principle</b>	<b>Criteria</b>
1	Compliance with Laws	The organization must comply with all applicable laws, regulations, and internationally ratified treaties, conventions, and agreements.
2	Worker Rights and Employment Conditions	The organization must maintain or enhance the economic and social well-being of workers.
3	Indigenous Peoples' Rights	The organization must identify and respect the legal and customary rights of indigenous peoples regarding the ownership, use, and management of lands, territories, and resources affected by management activities.
4	Community Relations	The organization must contribute to maintaining or increasing the social and economic well-being of local communities.
5	Forest Benefits	The organization must manage the range of products and services of the Management Unit efficiently.
6	Environmental Values and Impacts	The organization must maintain, conserve, and/or restore the ecosystem services and environmental values of the Management Unit.
7	Management Planning	The organization must have a management plan consistent with its policies and objectives and proportional to the scale, intensity, and risks of its management activities.
8	Monitoring and Evaluation	The organization must demonstrate that progress toward achieving management objectives, the impacts of management activities, and the condition of the Management Unit are monitored and evaluated.
9	High Conservation Values (HCV)	The organization must maintain and/or enhance High Conservation Values areas in the Management Unit.
10	Implementation of Management Activities	Management activities carried out by or for the organization for the Management Unit must be selected and implemented in accordance with the organization's economic, environmental, and social policies and objectives.

Source: FSC, 2022

The certification can be implemented in any company, regardless of its type, size, and industry. The segment of companies that usually use the FSC seal is formed by industries of paper and cellulose, wood panels, processed wood, and charcoal and biomass steel plants (Basso et al., 2018). Among the products certified and originating from sustainable forest management, the following stand out: paper, books, magazines,

packaging, pencils, blackboards, corks, beds, tables, cabinets, chairs, objects, doors, windows, jambs, floors, decks, between others. The certification also include non-wood products, such as: edible fruits, latex, seeds, vines, nuts, oils and others (Tripoli & Prates, 2015). The advantages and disadvantages of certification will be discussed below.

## **2.1 FSC BENEFITS AND CHALLENGES**

There are several benefits related to the certification, but also many challenges (Blackman et al., 2018; Ehrenberg-Azcárate & Peña-Claros, 2020 ). Among the main benefits, the following stand out: access to new markets and maintenance of current ones; premium price; increased profits; international recognition; job and income generation, among others (Paiva et al., 2015; Fagundes et al., 2021; Rana & Sills, 2018; Sugiura & Oki, 2018).

In addition to the benefits already mentioned, the FSC still manages to generate others through the implementation of its 10 principles. Certified companies are more committed to providing improvements in worker's rights and conditions through the availability of appropriate personal protective equipment and process standardization, thereby promoting the health and safety of their employees (Cerutti et al., 2017; Fagundes et al., 2021; Galati et al., 2017; Malovrh et al., 2019). Nevertheless, companies usually invest in continuous training and qualification programs in order to demonstrate the importance of employee engagement in following standards and norms stipulated by the FSC (Galati et al., 2017; Paluš et al., 2018).

Besides, certified companies still invest in communities close to organizations including indigenous peoples (Degnet et al., 2020; Halalisan et al., 2018; Miteva et al., 2015). It is necessary to maintain a close and friendly relationship with neighboring communities, respecting their rights of ownership, access and use of forest resources and ecosystem services. It is also important to identify needs and adopt formal procedures in case of negative impacts and the compensation measures implemented arising from the forestry activity (Tysiachniouk & McDermott, 2016).



The actions required by the FSC contribute to the opening of a positive dialogue among those involved (Kulyasova, 2013). Communities close to certified organizations are contemplated with projects as improvements in roads, schools and access to health and education (Degnet et al., 2020; Kalonga & Kulindwa, 2017).

FSC-certified organizations need to take care of forests with a systemic approach. Therefore, maintaining, conserving and/or restoring ecosystem functions, biological diversity, water resources, soils and landscape values is essential throughout the exploitation of wood and non-wood products (Paiva et al., 2015; Tricallotis et al., 2018).

FSC-certified companies still carry out low-impact forestry practices respecting the cycle, intensity and diameter of the cut (Griscom et al., 2014). Such criteria directly contribute to greater carbon storage in its biomass, favoring forest regeneration, combating deforestation and preventing wood waste (Dasgupta, 2017; Rana & Sills, 2018; Sollmann et al., 2017; Zalman et al., 2019). At the end of logging, impact assessment and compensation measures need to be adopted (FSC, 2021).

Among the main challenges to implement the certification one can be highlighted: the lack of permeability of the FSC in a company policy and in its different sectors; the high cost to implement and maintain the certification; low productivity; the lack of clarity in the information provided by the principles and criteria; the lack of an explicit monitoring system; lack of qualified people; generation of conflicts between companies and communities among others (Galati et al., 2017; Halalisan et al., 2018; Newsom et al., 2006; Sugiura & Oki, 2018; Tricallotis et al., 2018).

Unlike developed countries located in Europe and North America where consumers are already more familiar with the certification seal and are willing to pay a higher price for it, in South America, the scenario is different. Along with the lack of recognition of the certification seal by consumers, one of the main difficulties is the high rates of illegal logging (Dasgupta, 2017) which causes the low price of the product and the difficulty of increasing the price of the certificate, due to high competition. Companies located in developed countries can experience benefits more easily due to



environmental, social, and economic aspects. Developed countries have expertise and more economic capacity for examples.

Given all these benefits found in the literature, two hypotheses were created to be empirically tested. The first one is: H1: FSC certification generates positive perception impact by employees of certified companies. However, the FSC do not only generates benefits, but it also causes several challenges. Thus, the second hypothesis to be tested is: H2: FSC certification generates negative perception impact by employees of certified companies.

### **3 RESEARCH DESIGN**

According to data obtained from the FSC in 2020, there were 71 certified companies operating in Brazil. Unfortunately, it was not possible to obtain the total number of employees of these companies for the accurate calculation of the population.

The sample, therefore, was obtained for accessibility and convenience, totaling 231 professionals directly contacted by the researchers. A total of 71 companies were covered. The sample was delimited in professionals that were working at certified companies during data collect in areas related with environmental issues. The potential sample was identified through the direct contact with the certified companies and searching potential respondents on LinkedIn. As the focus was on people, not the company, the number of employees of each company was not limited. A total of 149 collaborators from 27 companies have returned the contact.

Data was collected through a self-responded questionnaire. The first block of the questionnaire comprises a brief set of questions aimed at characterizing the sample. These are multiple choice questions with categorized answers. The second block of questions sought to analyze the level of knowledge of employees about the FSC principles. Even though the sample comprises only those respondents who work in certified companies, it was considered important to verify people's level of knowledge about the principles. This stage of the questionnaire is composed of 10 assertions,

each one representing one of the FSC principles listed in Table 1. Each principle was presented in the form of an assertion initiated by “The company where I work (...)”, followed by a description the same. A 5-point Likert scale was used to measure the level of agreement with each statement.

The third block of questions aimed to measure the perception of certification impacts from the perspective of employees. The questionnaire was constructed with questions formulated by the author based on the principles of FSC and also with the assistance of authors such as: Almeida (2012); Viana (2003); Busch (2018); Imaflora (2020); Ishikawa (2012); Imperador (2009); Halalisan et al., (2018); Soares et al. (2011) and others.

In view of the non-identification of a previously validated scale for this data collection, it was chosen to build a scale with 20 assertions, always starting with “Because I work in an FSC-certified company, I realize (...)” and complemented by positive and negative impacts built from the literature review. Again, a 5-point Likert scale was used.

The questionnaire underwent two rounds of evaluation with two researchers and two professionals working in FSC-certified companies. These rounds allowed corrections to be made to the instrument, qualifying it for its application. A pre-test was carried out and new adjustments were made to the instrument. Afterwards, the questionnaire elaborated in the Google Docs tool was sent by electronic message to the previously prepared contact base. The data collection process took place between December 2020 and March 2021 electronically.

The characterization of the sample was initially analyzed using descriptive statistics, indicating the frequency for each category of responses. The analysis continues with the investigation of the level of knowledge of the FSC principles, initially descriptive statistics using the mean and standard deviation. Subsequently, the sample characterization variables were considered as independent variables and the average level of knowledge of each principle as a dependent variable. Given the use of an agreement scale, the normality of the data was not tested, which allowed the

application of the non-parametric Jonckheere-Terpstra test to compare the statistical difference of the attributes under analysis.

In order to measure the potential impacts of FSC certification perceived by employees of certified companies, it was necessary to initially review the literature to identify which impacts had already been identified. From this review, a list was prepared with 13 assertions referring to positive impacts, and 7 assertions referring to negative impacts. These assertions were presented to the collaborators, and they were asked to indicate the level of agreement within a 5-point Likert scale.

Subsequently, the two scales, positive and negative impacts, were analyzed separately with the use of descriptive statistics and the calculation of mean, standard deviation and minimum and maximum scores. The average obtained in each statement was then considered as a dependent variable for the same sample characterization attributes already used in the analysis of the principles. Again, data normality was not tested and the nonparametric Jonckheere-Terpstra test was used. The last stage of analysis also included the development of an exploratory factor analysis for each of the scales. Therefore, the study was characterized by a quantitative approach, in which the results, that is, the numbers presented, were interpreted in light of the consulted theoretical framework.

## **4 SAMPLE CHARACTERIZATION**

A total of 149 respondents were achieved. From this total, 45,6% are between 31 and 40 years old followed by 24,2% with 41 and 55 years old. Less than 5% are between 16 and 23 years old. Regarding the education level, 63,7% of respondents have graduate studies divided between 36,9% specialization and 26,8% master and/or doctorate. Furthermore, 30,9% have undergraduate studies. Only 8% have only high school.

The study also questioned the length of time the employee has worked within the organization and 30,2% of the employees replied that work 5 to 10 years followed by 28,9% more than 10. The other 41% work less than 5 years.

Table 02 presents these results.

Table 2 – Respondents characteristics

Aspect	Option	Percentage
Experience in the company	Less than 1 year	7,4%
	From 1 to 3	18,8%
	From 3 to 5	14,8%
	From 5 to 10	30,2%
	More than 10	28,9%
Age	From 16 to 23 years old	4,7%
	From 24 to 30	22,8%
	From 31 to 40	45,6%
	From 41 to 55	24,2%
	More than 55	2,7%
Education level	High School	5,4%
	University degree (Undergraduate)	30,9%
	University degree (Graduate)	36,9%
	Master and/or Doctorate degree	26,8%

Source: Developed by the authors based on data collection

## 5 LEVEL OF KNOWLEDGE

For the analysis of the level of knowledge about the FSC principles a statement was made for each one. All the research participants demonstrated to know the FSC principles because all means are more than 4,55 (Table 03). It is important to mention that all the affirmatives began with the phrase “The company where I work...”.

According to the Table 03, the sample indicated that they know better Principle 2, 1 and 3. All these principles are related to tenure, rights and responsibilities, legislation and indigenous communities respectively.

Respondents expressed the lowest level of knowledge with Principle 10 and 7. These both principles, along with Principle 8, are considered elements of the system – forest management plan, monitoring, and implementation.

Table 3 – Level of knowledge

<b>Number of the Principles</b>	<b>Affirmatives</b>	<b>Mean</b>	<b>Stand. Deviation</b>
1	... operates in compliance with national legislation, as well as international treaties and agreements signed between countries.	4,9294	0,2576
2	... maintain or enhance the economic and social well-being of workers.	4,9647	0,2412
3	... recognizes and respects the rights of indigenous communities and traditional communities, as well as the act of owning, using, and managing their territories.	4,8941	0,3787
4	... respects community relations and workers' rights, contributing to maintaining and/or expanding the social and economic well-being of local communities.	4,8705	0,3712
5	... contributes to maximizing forest benefits by efficiently managing its forest products and services to ensure economic viability and social and environmental benefits.	4,8235	0,4674
6	... considers environmental impact, conserving ecological diversity and its associated values, as well as maintaining and preserving ecosystem services, mitigating negative impacts.	4,8352	0,4037
7	... has and disseminates an appropriate forest management plan consistent with policies and objectives.	4,6235	0,8448
8	... demonstrates progress in achieving proposed management objectives to assess the forest condition, yields of forest products, chain of custody, and management activities and their environmental and social impacts.	4,7882	0,4109
9	... values the maintenance of high-maintenance forests, maintaining and/or expanding the attributes that define such forests and taking all necessary precautions when managing them.	4,6588	0,8099
10	... plans and conducts plantation management to reduce pressures and promote the recovery and conservation of natural forests, providing a range of social and economic benefits, and contributing to meeting global needs for forest products.	4,5647	0,9691

Source: Developed by the authors based on data collection

Considering the average level of agreement with each of the principles, a comparative analysis with the non-parametric Jonckheere-Terpstra (J-T) test was developed to compare the statistical difference of the attributes under analysis.

Considering a statistical significance at the level of 5%, it was found that the “age” of respondents has an impact on the perception of the application of FSC principles in the organization management.

Employees aged between 24 and 40 years were the ones with the highest level of knowledge of the FSC principles, on the other hand, those between 41 and 55 years old had the lowest level of knowledge. Aspects as experience in the company and education level do not significantly impact the perception of the FSC principles considering the values of J-T and the level of significance. It is not possible to generalize these results due to the profile of the sample. However, it is worth highlighting it as an indicative.

## 6 FSC CERTIFICATION PERCEIVED IMPACTS

The results of the descriptive analysis are presented in Table 04 in average descending order. It is important to mention that all the affirmatives began with the phrase “for working at an FSC-certified company, I realize...”.

Table 4 – Positive Impacts

Number of the Principles	Affirmatives	Mean	Stand. Deviation
5	...privilege products that benefit the environment and society.	4,779	0,6023
6	...has a protective relationship with the forest.	4,671	0,6921
4	...has a protective relationship with the communities.	4,638	0,6700
1	... respect by the company for economic, social and environmental principles.	4,584	0,6985
1, 4 and 6	...improvement of external company image.	4,577	0,7900
9	...allows consumers to purchase products free of social and environmental liabilities.	4,537	0,7400
2, 3 and 4	...has a protective relationship with other people.	4,409	0,7971
7 and 8	...link between productivity and lessening negative environmental impacts.	4,309	1,0061
2 and 4	...offers better working conditions.	4,174	1,0950
2 and 7	...offers training.	4,040	1,0898
5 and 6	...certified products have different values.	3,987	1,2839
10	...FSC marketing that the company carries.	3,718	1,2197
2, 3 and 4	...better standard of living for me and my family.	3,591	1,1969

Source: Developed by the authors based on data collection

The highest averages were obtained in the perception that certified products are an opportunity to benefit the environment (mean score 4,671; standard deviation 0,6023) and society (mean score 4,638; standard deviation 0,6921). These issues were closely followed by the improvement on external image (mean score 4,577; standard deviation 0,7900). Conversely, the lowest means, those below 4,0, were identified in questions related to standard of living (mean score 3,591; standard deviation 1,1969), marketing (mean score 3,718; standard deviation 1,2197) and different values (mean score 3,987; standard deviation 1,2839).

The non-parametric J-T test was applied to compare the statistical difference of the attributes under analysis. "Experience in the company" (JT value: 3791,500; sig.: 0,000) and "aged" (JT value: 2903,500, sig.: 0,034) significantly impact the perception of positive impacts in view of their J-T values and significance level. On the other hand, education level showed no significant difference among groups (JT value: 2372,000; sig.: 0,090).

Considering that this study required the construction of assertions from the literature review, an exploratory factor analysis was then carried out. Data intercorrelation was ensured by the Kaiser-Meyer-Olkin test (KMO = 0.836) and by significance below 0.05 in the Bartlett's test of sphericity (sig. = 0.000). The analysis comprised the use of Varimax rotation. The variables with loads lower than 0.40 were excluded. The factor analysis process also included the analysis of the commonalities of the variables, presenting values greater than 0.5. The rotation sum of squared loads revealed a variance of 64.80%.

The rotating components matrix grouped the assertions into four initial components. Analyzing the factor loads presented in the matrix, it is necessary to exclude cross loads. At this stage, four assertions were excluded. As components 2, 3 and 4 presented only one assertion, they were excluded, leaving only components 1 with six assertions. These assertions are marked in bold at Table 05.



Table 5 – Rotating Component Array

<b>Affirmatives</b>	<b>Mean</b>	<b>Stand. Deviation</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
...certified products have different values.	3,987	1,2839		,486	,427	
...privilege products that benefit the environment and society.	4,779	0,6023			,731	
...improvement of external company image.	4,577	0,7900			,595	,467
...better standard of living for me and my family.	3,591	1,1969		,833		
...offers better working conditions.	4,174	1,0950	,481	,637		
...offers training.	4,040	1,0898	,581			
...company's respect economic, social, and environmental principles.	4,584	0,6985	,896			
...has a protective relationship with other people.	4,409	0,7971	,829			
...has a protective relationship with the forest.	4,671	0,6921	,885			
...allows consumers to purchase products free of social and environmental liabilities.	4,537	0,7400	,470			
...FSC marketing that the company carries.	3,718	1,2197				,686
...has a protective relationship with the communities.	4,638	0,6700	,720			
...link between productivity and lessening negative environmental impacts.	4,309	1,0061	,533	,467	,472	

Source: Developed by the authors based on data collection

Table 6 – Negative Impacts

<b>Number of the Principles</b>	<b>Affirmatives</b>	<b>Mean</b>	<b>Stand. Deviation</b>
10	...people are misinformed about FSC and environmental certifications in general.	4,262	0,9256
1	...many companies choose not to carry the FSC certification because they consider the implementation value too high.	3,913	1,0586
6 and 7	...there is unfair competition in the market between certified-companies and non-certified companies.	3,826	1,2010
10	...the requirements demanded by FSC are complicated and time-consuming.	3,282	1,1454
6	...the procedures adopted to obtain an environmental certification do not fully eliminate the environmental risks of production processes.	3,201	1,2786
4	...the sales channels act with indifference towards certified products.	2,369	1,3015
9 and 10	...the company is not sustainable as it claims to be.	1,671	1,1880

Source: Developed by the authors based on data collection

The results of the descriptive analysis related to the perception of negative impacts can be seen in Table 06. It is important to mention that all the affirmatives began with the phrase “for working at an FSC-certified company, I realize that...”.

Difference from the averages presented by the positive impacts, in Table 2, it is possible to see that no mean had results higher than 4.5. Only one statement had an average above 4 and the rest, all below. Misinformed (mean score 4,262; standard deviation 0,9556) is the most important negative impact from the respondent, followed by the cost (mean score 3,913; standard deviation 1,0586), and unfair competition (mean score 3,826; standard deviation 1,2010).

The respondents express the lowest level of agreement with the statement regarding the “the company is not sustainable as it claims to be” (mean score 2,369; standard deviation 1,3015) and “the sales channels act with indifference towards certified products” (mean score 1,671; standard deviation 1,1880).

The sample characterization items were used for the comparative analysis with the non-parametric J-T test to compare the statistical difference of the attributes under analysis. “Experience in the company” was statistically significant considering the values of 3681,000 J-T test and 0,006.

Following the pattern of analysis of positive impacts, negative impacts were also subjected to an exploratory factor analysis. However, a correlation of data was identified (Kaiser-Meyer-Olkin KMO test = 0.551, sig. = 0.000). The analysis of the communities also showed values below 0.5, which made it impossible to continue with the factor analysis.

## 7 DISCUSSIONS

Considering the average of agreement with each principal respondent showed expressive knowledge regarding the principles in view of the high mean values, all more than 4,55. However, principles 1, 2 and 3 stand out where the averages almost reached the maximum grade, 4,9294, 4,9647 and 4,8941 respectively.

Each FSC principle presents a specific theme, that is, each one presents the necessary changes that organizations need to carry out. The closer organizational operations are to legal procedures, responsible forest management techniques and intelligent management, the closer companies are to receiving certification. On the other hand, the further away the operations are, the greater the challenges to be overcome. Principle 1, 2 and 3 requires companies to comply with the legislation, including labor, land and tax, as well as comply with high standards related to the social well-being of workers which can justify the high averages, as they are points directly related to employees.

The implementation of a certification system is not an easy task and the employees play an essential role in complying with the standard (Oliveira & Pinheiro, 2010). Despite not appearing among the main negative impacts, the respondents realize that the FSC requirements are complicated and time-consuming to implement. Some companies even hire people or reallocate specific employees to handle with the certification demands (Cubbage et al., 2010). FSC certification is seen as the most extensive mechanism on the market (Garzon et al., 2020).

The lack of clarity in the information provided by the FSC and the lack of qualified people to implement the certification can make the implementation and maintenance of certification a laborious process for the organization (Galati et al., 2017; Halalisan et al., 2018; Sugiura & Oki, 2018; Tricallotis et al., 2018). In this sense, it is important that companies consider qualification and personal training as part of the FSC investment. For Newsom et al. (2006) and Cubbage et al. (2010), training is fundamental in the FSC context, after all, the employees are often the ones who need to follow the standards (Galati et al., 2017; Paluš et al., 2018).

The employees of the companies studied perceive the offer of training by the companies as one of the positive impacts which can justify the high knowledge of the FSC principles as already mentioned. This item also presents a load, in one factor, above 0,580 in the exploratory factor analysis. Despite requiring organization investment, the

training supports the understanding of the importance to follow stipulated standards mainly from the moment that the possible benefits are visualized. Employees need to have the clarification of the reasons why the changes are taking place.

Employees also perceive that certified companies offer them better employment conditions (Principle 2). Other studies (Bush, 2008; Cerutti et al., 2017; Fagundes et al., 2021; Galati et al., 2017; Malovrh et al., 2019; Imaflora, 2020) also found that FSC can generate improvements in the work environment which can contribute to increasing of the social well-being of all employees.

FSC requires companies to promote the social well-being of local communities – Principles 3 and 4 (FSC, 2021). The respondents realized that the company has a protective relationship with the communities. The recognition of employees and local community well-being were confirmed as positive impacts of the certification.

Contributing to the well-being of communities requires actions from the organization. Among the main ones, the following stand out: maintain a close and friendly relationship with neighboring communities; respecting their rights of ownership; access and use of forest resources and ecosystem services among others. All these actions contribute to the opening of a positive dialogue further spreading the FSC benefits (Degnet et al., 2020; Kalonga & Kulindwa, 2017; Kulyasova, 2013; Tysiachniouk & McDermott, 2016).

The perception that certified companies have a good relationship with people can justify the statement with the highest average in this study. Along with environmental issues, employees perceive that FSC-certified products are a way of favoring products that benefit the environment and society (Principle 5). As a result, the consumers have the possibility to contribute and stimulate this chain. Afterwards, consumers are more aware of their impacts (Michal et al., 2019; Tripoli & Prates, 2015).

On the other hand, people are still misinformed about FSC and forest certifications in general, representing the highest average regarding negative impacts (Principle 10). One of the FSC challenges is the lack of recognition of the certification

seal by consumers, especially in Brazil (Dasgupta, 2017; Galati et al., 2017; Halalisan et al., 2018; Sugiura & Oki, 2018; Tricallotis et al., 2018). New forms of consumption focused on products that respect the principles of sustainability need to be carried out due to the dependence on finite natural resources in traditional ones (Pessoa, 2020).

However, the collaborators also know that the procedures adopted to obtain the forest certification do not fully eliminate the environmental risks of production processes (Principle 6). During the exploitation of wood and non-wood products it is important that FSC-certified organizations minimize their impacts (Dasgupta, 2017; Griscom et al., 2014; Lemes et al., 2017; Rana & Sills, 2018; Sollmann et al., 2017; Zalman et al., 2019), but when it is not possible, compensation measures are necessary (Paiva et al., 2015; Tricallotis et al., 2018).

According to FSC (2021), complying with all principles stipulated by the FSC involves a series of internal modifications and investments. The respondents realized that the many companies choose not to carry out the FSC certification because they consider the implementation value too high (Principle 1).

Nevertheless, some companies reach premium price to overcome the cost problem related to the FSC certification (Paiva et al., 2015; Fagundes et al., 2021; Rana & Sills, 2018; Sugiura & Oki, 2018) including, this is one of the factors that motivate the adoption of the certification (Basso et al., 2018). Along with the improvement of external company image, premium price is also perceived by the companies' employees as one of the positive impacts.

However, especially in Brazil, there is unfair competition in the market between certified and non-certified companies due to the high rates of illegal logging and the lack of recognition of the certification seal by consumers (Dasgupta, 2017). Both issues directly impact the difficulty of companies in achieving a premium price and even acting nationally. This situation is also directly influenced by the variable with the highest average in the negative impacts of the FSC "people are misinformed about FSC and environmental certifications in general", which corroborates the statement by

Dasgupta (2017) in which consumers located in Brazil are not aware of paying a higher price for certified products or even do not recognize a certification seal.

Considering the respect by the company for economic, social, and environmental principles, one can argue that it results in our research as a positive impact, can be explained by the intensification of training in relation to the FSC and high visualization of the benefits generated by the certification.

## **8 FINAL CONSIDERATIONS**

The study aimed to identify the perception of employees about the positive and negative impacts of FSC certification in Brazil. In addition, the study also proposed to answer two different hypotheses, they were: H1-FSC certification generates positive perception impact by employees of certified companies; and H2-FSC certification generates negative perception impact by employees of certified companies. Based on a quantitative study, it is believed to have achieved the proposed of the research.

As for the employee's perception, it is possible to say that they perceive that the presence of the FSC in the company contributes to generate positive benefits. Among the main ones are products that benefit the environment and society, protective relationship with the forest and with the communities. It is worth mentioning that such benefits are directly linked to the FSC principles as demonstrated.

Statistical values achieved helped us to decide to accept the H1. Employees are the key to implementing a certification. Through adequate training, employees can visualize the real importance of the organizational changes required enhancing their benefits. In addition, the factor analysis helped building a scale to measure the positive impacts perceived by employees, one of the main innovations and contributions of this study so far.

In relation to the negative impacts resulting from the FSC certification the context is different. Despite not being in evidence when compared to the positive aspects, negative impacts were also noticeable at the first moment. However, statistical tests

showed that H2 still cannot be confirmed. Moreover, it was not possible to build a scale to measure the FSC negative impacts.

It is believed that the start of the discussion to fill the gap about the FSC from the collaborator's perspective makes the study innovative. Employees' perception provides a unique and internal perspective on the processes, policies, and organizational culture of the company. By experiencing the work environment daily, employees have valuable insights into the internal workings of the company, its practices, challenges, and opportunities. Their perceptions add value to the decision-making process, allowing management to better understand the needs, concerns, and expectations of the employees. Furthermore, employees' opinions have the power to influence a company reputation and image, both internally and externally. By sharing their experiences and views, employees help shape opinions, contributing to the creation of a more transparent, inclusive, and mutually successful work environment.

The relevance of the FSC (Forest Stewardship Council) is crucial for promoting sustainable forest management worldwide. Through its rigorous principles and criteria, the FSC establishes standards that encourage biodiversity conservation, protection of the rights of indigenous peoples and local communities, promotion of responsible management practices, and mitigation of negative environmental impacts. Additionally, FSC certification provides consumers the assurance that the forest products they are purchasing have been obtained in an ethical and sustainable manner. This not only stimulates demand for certified products but also drives companies to adopt more responsible practices in their operations.

However, some limitations decrease our contribution. One of the limitations encountered throughout the research was the difficulty in returning the questionnaires, which resulted in a small sample and the non-use of more robust statistical tests. In this sense, the result presented here must be considered carefully because our sample only represents a small part of the Brazilian environment, not allowing the generalization of the results. In addition, there is another important limitation. The limited literature



related with the FSC and the employee's perception of positive and negative benefits in which limited the discussion of the results.

The opportunity to use the identified scale in other contexts, whether regional or beyond national borders, as well as the possibility of analyzing and comparing the responses obtained by employees of the same and different company to verify any disparity, are suggestions for future research. The FSC is present in more than 80 countries requiring the interaction of organizational collaborators with its principles and criteria, a context still incipient and full of research opportunities.

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1. Definition of research problem	√	√		
2. Development of hypotheses or research questions (empirical studies)	√	√		√
3. Development of theoretical propositions (theoretical work)				√
4. Theoretical foundation / Literature review		√	√	
5. Definition of methodological procedures	√			
6. Data collection	√	√		
7. Statistical analysis	√	√		
8. Analysis and interpretation of data	√	√	√	√
9. Critical revision of the manuscript	√		√	√
10. Manuscript writing	√		√	
11. Other (please specify)				

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