

Article

A Framework to Assess Social Indicators in a Circular Economy Perspective

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Abstract: The thriving circular economy is expected to contribute to all three dimensions of sustainable development: environmental, economic, and social. This paper aims to propose a framework to assess social indicators to support circular business models. To validate the framework, we conducted a case study in a medium-size Italian footwear luxury industry, using the Value Focused Thinking—VFT. This approach was used to define proper social indicators to measure the perception of the company’s managers related to the level of incorporation of social dilemmas in the company. We collect data through interviews, documental analysis and direct observation from October/2019 until August/2020 and apply a questionnaire in 2020/2021. The novelty of this paper lies in the proposition of a framework to assess the social indicators in broad categories, capable of covering all supply chains: Corporation, Community; Consumers; Suppliers; Human Rights and Human Resources. Another novelty is related to the analysis of indicators in terms of strategic, tactical, and operational levels, similarly to the idea of a Balanced Scorecard, which was allowed by applying the VFT approach.

Keywords: circular economy; circular business model; decision-making; social sustainability; social indicators; value focused thinking



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1. Introduction

Although the discussion on Circular Economy (C.E.) has initiated in early 2000, in the last decades, the concept has attracted a lot of attention from researchers, policymakers and practitioners to implement initiatives that allow the transition from a Linear to a Circular Economy (C.E.) [1–3]. Besides, the thriving circular economy is expected to contribute to all three dimensions of sustainable development: environmental, economic and social [4,5]. Thus, it is possible to mitigate the ecological, social and economic consequences caused by consumption growth from intense industrialisation [6]. Balancing and intertwining environmental and social sustainability considerations is pressing [7]. This kind of strategy is in line with the proposals of the United Nations Agenda 2030 for Sustainable Development. Mainly related to Sustainable Development Goals 9 and 12, which aim to enable resilient infrastructures, promote inclusive and sustainable industrialisation, foster innovation, and ensure sustainable production and consumption patterns. Also, related to the social aspects, goals 1, 5 and 8 aim to reduce and defeat poverty, provide dignified work and economic development, and boost gender equality [8].

Despite the significant number of publications on the circular economy in the last decade, further theoretical and scientific deepening are needed [5]. Studies proposing new circular business models—CBM, using key performance indicators—KPI and its respective measurement are still scarce in literature [9,10]. In this context, a new visualisation tool of CBM was proposed [10]. Few studies have considered social aspects [11–15]. Then, we find the research gap in our study, proposing the definition of key performance indicators (KPI)

related to social impact assessment to complement the model [10], indicating KPIs related to the social dimension of sustainability that can be used for this purpose.

In the specific context of the textile and apparel industry, the vast majority of fashion brands do not have manufacturing facilities. About 80% of clothing exports are shipped from undeveloped countries to developed economies [16,17]. For this reason, textile and apparel supply chain management is typically lengthy and complex [18]. This complexity is due to some fashion brands working with thousands of factories located in different parts of the world. Thus, it is widespread to outsource many production parts to developing countries such as India, Africa, China, Indonesia and others to reduce costs. The problem is that the low costs derive from less restrictive legislation on the environment, labour relations, and respect for human rights. [17]. In addition, the management of a supply chain should consider that the process does not end in the organisation, but includes the various actors involved. It must concern itself with the partners and their social issues to preserve the conditions of the workers in the companies and turn them into partners for social development [19,20].

Considering the above; this paper proposes a framework to assess social indicators to support circular business models. This framework can be used to enhance the model proposed by [10] and other contexts. To validate the framework, we conducted an application in an Italian footwear luxury industry.

The contributions of this study are twofold: (i) The definition of social KPIs contributes to complementing the tool of visualisation of CBM [10] integrating the assessment of social impact to determine the level of circularity of a company considering the three dimensions of sustainability (ii) The analysis of social indicators in a footwear luxury industry, besides contributing theoretically, bringing light to a few exploited subjects, can be helpful to managers and practitioners to provide systematised elements to the decision-making related to the circular economy, explicitly regarding social aspects.

This paper is structured as follows: Section 1 presents the subject background, the research gap and problem, the motivation and relevance of the study, the general objective and the main contributions of the paper. Section 2 presents the literature review, with the main topics approached in the paper. Section 3 describes in detail the methodological procedures followed. Section 4 presents the results. Section 5 discusses the findings of the paper in light of the literature. Finally, Section 6 delivers the concluding remarks, the limitations and suggestions for further studies.

2. Literature Review

2.1. Circular Economy and Business Models

Some authors have studied the antecedents of the circular economy and found some related concepts such as cyclical ecological system, closed-loop supply chain, closed materials cycle economy or resources circulated economy, industrial ecology, industrial metabolism, industrial symbiosis, ecological economy, general systems theory, regenerative design, performance economy, cradle to cradle, biomimicry and, blue economy [1,5,20–22]. The main difference between those concepts, which generally originated in the Academy compared to the circular economy, is that the last one has emerged from legislation, mainly related to the Chinese context [22].

The circular economy's main aim is considering economic prosperity, followed by environmental quality. However, its impact on social equity and future generations is barely mentioned [23]. The Ellen MacArthur Foundation-EMF has been the disseminator of the concept of C.E. and proposed this definition: "an industrial system that is restorative or regenerative by intention and design, replacing the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models" [24].

A concept of C.E. based on the definition of sustainable development was proposed by [5]: "Circular economy is an economy built from social production-consumption systems

that maximise service produced from the linear flow of nature, society, and energy flow. This is done using flows of cyclic materials, renewable energy sources, and cascade-type energy flows. The successful circular economy contributes to all three dimensions of sustainable development”.

The circular economy should have two levels of analysis [25]: (i) themes encompassed by norms, values, worldviews, concepts such as organisational culture, learning, responsibility, or worldviews, and visions to contribute to the culture of the sharing economy and; (ii) themes involving measures, indicators, metrics, tools and instruments such as practical and concrete physical flows of materials and energy are essential, for example, fuel, energy and resources, inputs and waste and emissions, physical flows between the nature and systems of production and consumption. This study is the second type.

Although many studies are describing some types of circular business actions in the last decade, very few studies approaching how a circular business model framework should look [9], as well; these models have limited transferability [26]. A comprehensive conceptual framework for the circular business model to aid decision-makers towards the transition from linear to circular economy was emphasised as very important by some authors such as [24,26,27].

In this context, based on the analysis of the available diagrams, their strengths and weaknesses, a new visualisation tool was presented, encompassing the transition to an enhanced and more sustainable business model based on C.E. concepts [10]. This tool served as a basis for the Vivace tool [28], which can be applied in several sectors to assess the circular economy. The main objective was to develop and provide an easy and intuitive tool based on a graphical methodology, which had to be completed with systematised information to take a snapshot of the actual situation and identify the further steps, which can be visualised in Figure 1.

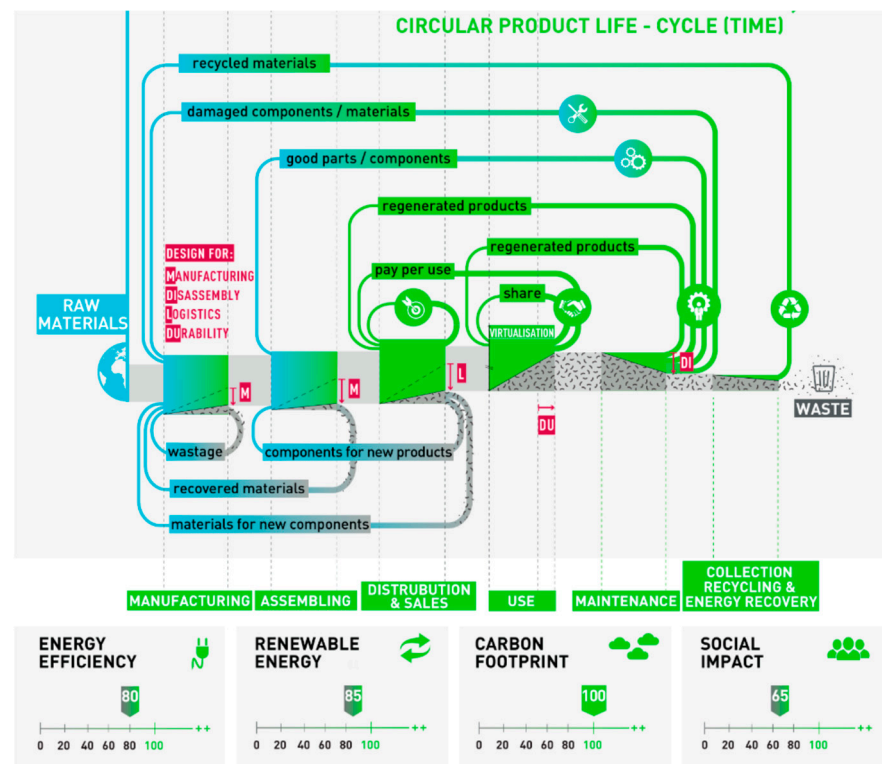


Figure 1. Graphical visualisation of the tool to quantify CBM. Source: [10].

This theoretical model needs to be complemented with systematised information [10]. Then, the research gap of our study tries to complement this tool, proposing the definition of a set of key performance indicators (KPI) related to social impact assessment.

2.2. Social Sustainability and Indicators

The economic issue and later the actions aimed at the environmental dimension have long been considered the main pillars of corporate sustainability in organisations. The social side is often ignored with low business visibility [29]. It is expected to be common that social factors are not included in analysis procedures for project feasibility but rather to verify compliance with current legislation by organisations and employees. Thus, ethical and socially responsible behaviour must be broadened and not limited to the behaviour of an organisation only, but to the whole supply chain in which it is embedded or can influence, as well as in the markets in which it participates [17,30,31].

With the conceptual evolution of the social dimension of sustainability, some factors were placed as central to their perception and involved actions with affected communities and other entities, in addition to emphasising the administration of social and internal resources of organisations, such as personnel management and training of work-specific skills [32,33]. To guide the social issues present in a Sustainable Supply Chain Management and prevent them from being seen as closed and internal norms in organisations, it is expected that social indicators will be created as ways of measuring the generation of wealth along with the well-being of social and individual dimensions more adequate than the conventional measures currently applied [30].

Some studies were published over the years to synthesise social sustainability indicators. The social aspects of sustainability in the industrial sector were verified and categorised into four groups by [34]: (i) internal human resources; (ii) external population; (iii) stakeholder participation; and (iv) macro-social performance. Eight indicators were proposed by [13] to evaluate social sustainability, which experts have evaluated, focused mainly on labour practices, human rights, and training. The proposition of 31 social indicators was made by [14], based on reports, particularly related to labour practices, decent work, and human rights. The evaluation of the social indicators employing Social Life Cycle Assessment (S-LCA) was reported by [35], which also reviewed criteria and indicators proposed to assess social and socioeconomic impacts.

A S-LCA was proposed by [15] to evaluate a Run On Flat tire produced by Goodyear with some material to be made by BASF and mounted onto a BMW vehicle. In this paper. The authors used the social indicators defined by Roundtable for Product Social Metrics, composed of 71 specific indicators, mainly related to labour conditions and human rights. Similarly, [36] also conducted an S-LCA and identified which social indicators are robust to analyse the multifunctionality of product and the positive social aspects generated by the honey life cycle in Italy; the categories proposed were: Workers, Consumers, Community, Society and Value Chain.

The inclusion of sustainability indicators in the Balanced Scorecard–BSC from Kaplan and Norton was proposed by [37], as a tool for organisations to manage the demands of relevant stakeholders such as shareholders, customers or employees and translating strategies into action, focusing on the environmental and social dimension [38] A broad systematic literature review (SLR) was conducted considering the Science Direct, Scopus and Web of Science databases from 1989 to 2017. The authors categorised the indicators found in: Corporation; Customers/Consumers; Community & Stakeholders; Suppliers; Human Rights & Welfare; Labour Conditions and, Animal Welfare, advancing concerning the indicators and categories proposed in the previously mentioned studies.

We intend to answer the following research questions (R.Q.s) in this study based on the literature mentioned above.

RQ1—How to assess social indicators from a circular economy perspective?

RQ2—How to propose a framework based on indicators to assess social sustainability with systematised steps?

RQ3—How to apply a framework to assess social sustainability and provide insightful information to decision-makers?

3. Materials and Methods

This study can be classified as descriptive and has a mixed approach. We used the Value Focused Thinking–VFT approach [21], a Problem Structuring Method–PSM from Soft Operational Research as the primary technical procedure to systematise the data collection. This is an approach that tries to get the preferences and judgments from the decision-makers focusing on their values [21]. It is recommended when the indicators (criteria or attributes) to decide are not transparent or well structured, and the decision-maker needs to learn about the problem. It is important to emphasise that in the decision context related to ethical and social demands in the fashion industry, there are demands from society and social organisations, however, many companies do not have systematised methods or tools to verify their processes and strategies.

By structuring the problem in a systematised way, actors feel more comfortable deciding based on the elements of the decision context to express their values and preferences. At the end of the process, it is possible to define and evaluate indicators, providing insightful information for decision-makers. The label of the decision problem related to this study is: How to assess the social sustainability commitment and related ethical issues of a company and/or supply chain and define indicators to measure it?

For this purpose, in this paper, we used three main procedures:

- (i) a literature review to gather the social indicators most used;
- (ii) the proposition of a framework to assess the social sustainability commitment, based on the literature and the VFT approach, considering the levels of strategic, tactical and operational;
- (iii) the validation of the model through the application in an Italian luxury footwear industry.

(i) The first procedure was based on a traditional/narrative literature review, in which some studies on social sustainability indicators were considered. The literature review was conducted in 2020/2021 through the Google Scholar mechanism, retrieving results from several scientific bases. We selected papers published until 2021 in international conference proceedings and journals in the English language. After a content analysis, we select the study conducted [38] as a basis for the most used indicators of social sustainability and ethical related practices. This study was considered the most complete, considering the categories of social indicators proposed. The authors applied a systematised approach to select and filter the literature, considering top journals covering publications related to social sustainability until 2017. Considering that we intend to present to decision-makers a broad list of social indicators to be validated, a complete list was more appropriate.

(ii) The second procedure of the study was based on applying the Value Focused Thinking–VFT approach [21]. This approach covers the following steps: (1) Analysing the context through Research potential Gold Standard documents (internal and external to the company): this step involves recognising the environment in which the company is inserted, and the results obtained must be validated by decision-makers; (2) Interview Stakeholders and/or Decision Makers: this step is aimed to validate the results found on the previous step and to elicit (gather) the values (what the company care about), in the context of decision-making; (3) Interact with lower-level representatives as necessary and conduct direct observation (from an external point of view): this step is aimed to detail the information obtained with the strategic decision-maker, to fill some blanks and find the consistency with the previous thoughts and values; (4) Consolidation of the information to define the objectives of the decision context. Figure 2 shows this general structure.

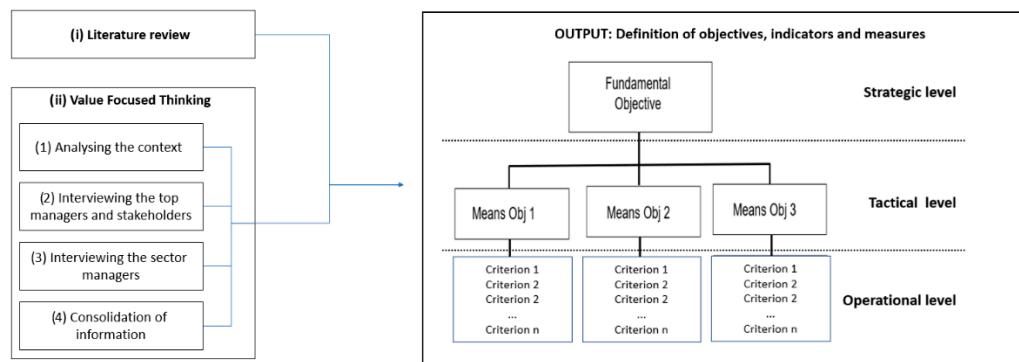


Figure 2. Steps and hierarchy of objectives based on the Keeney’s VFT approach.

After conducting these steps is possible to structure the decision elements in a hierarchy, from the fundamental (strategic and more general) objective to the most basic and operational level, which are the criteria. This structure considers it too hard to measure the achievement of a general purpose because it is composed of several subjective dimensions. Thus, we performed a decomposition of the elements of the decision to organise it into Fundamental objective (strategic), Mean objectives (tactical) and Criteria (operational indicators) [21]. The structure in levels of decision-making of the framework proposed was based on the idea of a Balanced Scorecard (BSC) [39].

In every realistic decision-making context, we can find basically three types of indicators [21]: (i) the natural ones, (ii) the proxy ones, and (iii) the constructed ones. In the case of indicators/criteria considered “natural” are entirely objective and generally have quantitative measures (quantity, weight, distance, cost, and others). The indicators/criteria considered as a “proxy” are measured indirectly. The “constructed” indicators cover several dimensions (quantitative and qualitative information). When we do not have a direct measure and subjectivity involved, it is appropriate to use this indicator.

Finally, it will be possible to generate alternatives and elicit weights to apply later a multicriteria decision aid method [21]. However, the application in this paper involved just the steps related to the structure of the hierarchy and the definition of the measurement scales for the criteria (indicators), which is covered by the structuring method part; it was not performed in the application of a multicriteria method at this moment.

(iii) To conduct the third study step, we applied a case study in an Italian luxury footwear industry. We developed ordinal scales (1–5), being one at the lowest level and five at the highest level, to measure the perception of the company’s managers related to the level of incorporation of social dilemmas in the company. The development of the measures of the indicators (criteria) was based on the literature review and the studies and campaigns carried out by Greenpeace, WWF, Business & Human Rights Research Centre, and Institute Ethos. The data collection was conducted from October/2019 to May/2021, at two different moments. We applied a pre-experimental design to validate the framework, specifically a pretest-posttest design [40,41]. The pretest occurred primarily in 2020, considering data from the year 2019, and the posttest was conducted in 2021 with data from 2020. Data collection consisted of an elicitation process under a Problem Structuring Method approach; the Value Focused Thinking (VFT) [21]. The instruments included interviews, questionnaires, and documental analysis in the elicitation process. Besides the company’s president, the study participants aimed to get the strategic perception, managers from Human Resources, Supplier Management, Purchasing, Retail, Finance and Production sectors, seeking to get the tactical perception. In addition to the data collection through interviews, direct observation, documental analysis, and questionnaires, we conducted a series of 4 workshops with decision-makers presenting the data collected to validate the information gathered. After analysing the performance of indicators, the framework can provide a global performance to categorise the company in terms of commitment to

social sustainability and related ethical practices. We also suggest a categorisation for this procedure, based [42].

4. Results and Discussion

4.1. The Application of VFT Approach to Propose the Framework of Social Indicators

In this research, as a basis to define a framework to assess the social indicators, we selected the study [38], considering that it was based on a robust systematic literature review, comprehending papers published in top journals until 2017 and includes some categories not covered in the other studies. From this broad list of indicators, we structure a framework of social indicators to be used, following the general model of the VFT approach [21] and Balanced Scorecard [39]. This framework was proposed, considering the validation of the study participants from an Italian footwear industry, which informed the indicators deemed more critical. Then, we organise the indicators in a hierarchic structure considering strategic and tactical decision-making levels.

These indicators were validated by applying the VFT approach through documental analysis (stage 1 of VFT), interviews (2 and 3) and direct observation (stage 3). (1) To analyse the context, we analysed internal documents from the company, codes of conduct of competitors in the textile and footwear industry, and documents from studies and campaigns conducted by Greenpeace, WWF, Human Rights Research Centre, and Institute Ethos. (2) To determine the values and, consequently, the company's strategic objective and respective indicators, the president (top manager) was interviewed. (3) Then, to determine the tactical objectives and their indicators, which means the division of the strategic objective into smaller ones, we interviewed the managers from sectors: acquisition and suppliers management, human resources, retail, finance and production. (4) Finally, we conducted direct observation of the processes of the company, as well as some sub-contractors and suppliers and conducted workshops to validate the information collected. From this procedure, it derives the identification of strategic and tactical objectives.

According to the VFT approach, the hierarchic organisation means the organisation of criteria/indicators from general to specific. [21] call them, respectively, as: fundamental, mean and criteria. The fundamental (strategic) level of indicators comprises those related to the strategic values, which are part of the company's mission. The mean ones are the strategic indicators divided into smaller parts to enable their comprehension and measurement; in our framework, we call them 'tactical'. Finally, we have the criteria/indicators, which are 'operational'. The indicators can be considered the smallest part of the strategic indicators. They will allow decision-makers to comprehend which elements are necessary to implement actions related to social dilemmas, to achieve the strategic and tactical objectives. In other words, it systematises the subjectivity inherent to the strategic level of indicators, which are generally multidimensional and comprise several decision elements. The hierarchy of criteria was generated based on a broad list of indicators from literature review and, the elicitation process conducted with the participants of the study, which is presented in Figure 3.

Figure 3 shows the hierarchy of the criteria defined for this study. To define and assess the indicators, we described each one of the criteria of Figure 3 and elaborated ordinal scales with 5 levels, in which 1 means the lowest level and five the highest level. The indicators were set in Strategic and Tactical indicators, to compare the alignment of the goals from top management of the company with the sectors accountable for implementing the initiatives related to social sustainability. The description of strategic and tactical indicators is presented in Table 1.

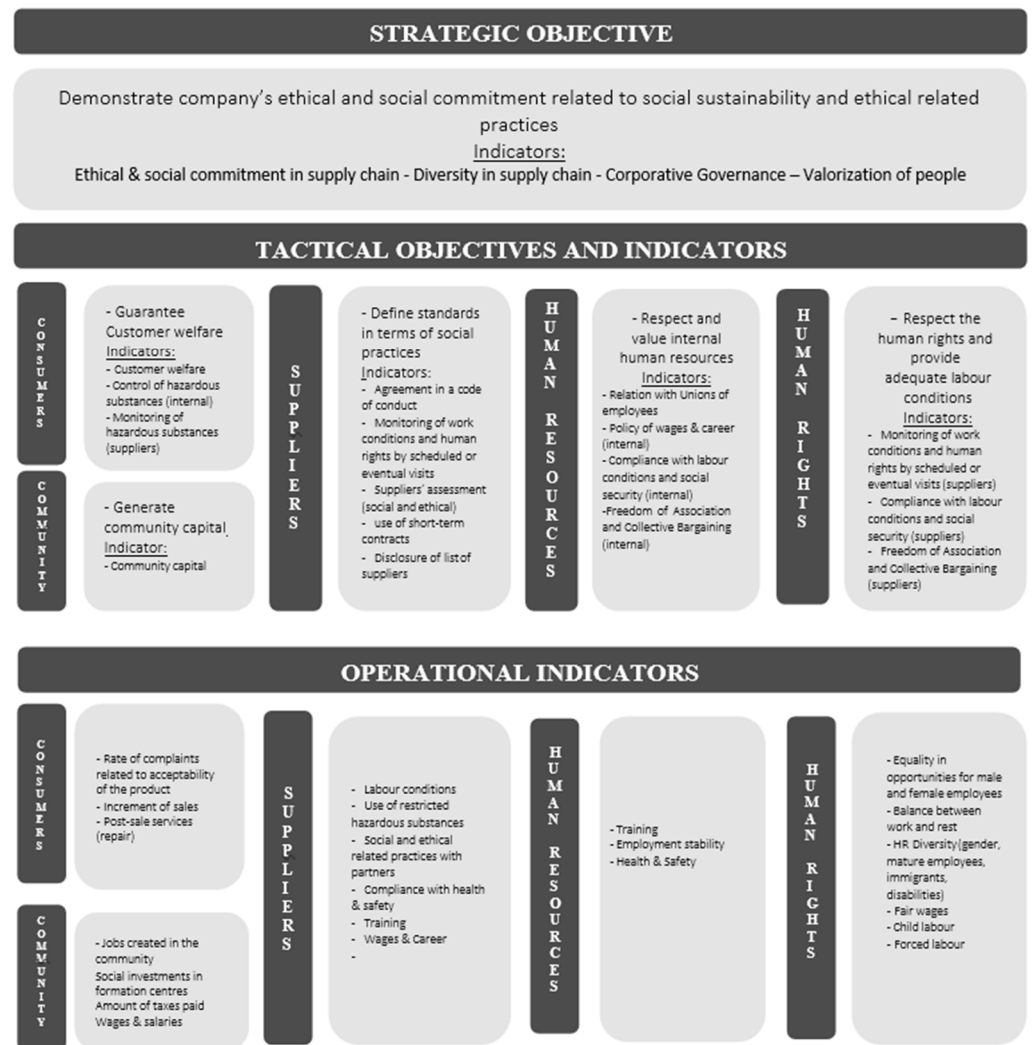


Figure 3. Framework to assess the social dimension of sustainability in a CBM model.

Table 1. Strategic and tactical social indicators with related category, description and measurement.

No.	CAT	Indicator	Description	Measurement
STRATEGIC INDICATORS				
C1	STR-CORP	Ethical & social commitment in supply chain	The level of incorporation and dissemination of the ethical and social values considering Intra and inter-organisational relationships	Qualitative—scale (1–5)
C2		Corporate Governance	The level of monitoring of the incorporation of the ethical and social values of the company, considering the internal and external process carried out in its supply chain.	
C3		Diversity in supply chain	The level of promotion of diversity in the supply chain, considering the dissemination of human rights and related practices.	
C4	CORP	Valorisation of people	The level of valorisation of people related to retention of talents, training and workers' welfare.	
TACTICAL INDICATORS				

Table 1. Cont.

No.	CAT	Indicator	Description	Measurement
C5		Customer welfare	The actions performed by the company to guarantee the customer welfare and satisfaction.	
C6	CONS	Disclosure and Control of the restricted hazardous substances	The existence and disclosure of a list of restricted hazardous substances to avoid in the internal processes and the suppliers' processes.	Qualitative—scale (1–5)
C7		Monitoring system of hazardous substances on suppliers factories	The existence of an agreement signed by suppliers aimed to avoid the use of hazardous substances, besides a monitoring system related to suppliers.	
C8	COM	Community capital	The engagement of the company in the local community, prioritising local suppliers, local employees, valorising the cultural heritage and participating in social projects of formation of members of the community.	Qualitative—Scale (1–5)
C9		Agreement in a code of conduct	The existence of a formal code of conduct covering social and ethical related practices with the agreement (awareness and signature) of business partners	
C10		Assessment of new suppliers	The evaluation of the performance of new suppliers beyond the most used criteria related to cost, quality and timing delivery, to incorporate also social criteria and related ethical practices.	
C11	SUP	Assessment of long-term suppliers	The evaluation and monitoring of the performance of long-term suppliers beyond the most used criteria related to cost, quality and timing delivery, to incorporate also social criteria and related ethical practices.	Qualitative—scale (1–5)
C12		Use of short-term contracts	The use of short-term contracts with suppliers concerning the total amount of the contracts	
C13		Disclosure of list of suppliers	The existence and publication of a list of suppliers, including sub-contractors informing their locations, products/services provided.	
C14	HR	Relation with Unions of employees	The relationship with Unions of employees providing information on working conditions, hearing and negotiating claims and having channels of communication.	Qualitative—scale (1–5)
C15		Policy of wages & career (internal)	The adoption of policies to stimulate internal employees through remuneration and investments in their professional development.	
C16	HRG (int)	Compliance with labour & social security obligations	The monitoring of compliance from suppliers with labour conditions and social security, beyond the attendance of the law.	
C17		Right to Freedom of Association and collective bargaining	The activities performed by the company to aware and communicate workers from suppliers related to the right to freedom of association and collective bargaining	
C18		Compliance with labour & social security obligations (ext)	The monitoring of compliance from suppliers with labour conditions and social security, beyond the attendance of the law in the factories of suppliers and/or sub-contractors.	
C19	HRG (sup)	The policy of wages & career (external)	The evaluation of the adoption of policies in suppliers to stimulate employees through remuneration and investments in their professional development.	Qualitative—scale (1–5)
C20		Monitoring of human rights & labour conditions by visits	The realisation of occasional or scheduled visits to monitor the observance of human rights, mostly related to the child, forced and slave-like labour and, labour conditions, based on the code of conduct.	
C21		Freedom of Association and Collective Bargaining	The activities performed by the company to aware and communicate internal workers related to the right to freedom of association and collective bargaining	

The indicators (C1–C4) cover the declaration of values related to the mission of the company, based on the perception of top management, which represents the category ‘Corporation’, comprising the following: ‘Company’s ethical and social commitment to the business and community’; the need of ‘Corporative governance’, ‘Diversity in the supply chain’ and, ‘Valorisation of people’. Then, it is expected that the main sectors responsible for implementing the strategies related to social sustainability and related ethical practices (Acquisition and suppliers management, Human Resources, Retail, Production and Finance) reflect the values identified in the top management interview. To check this alignment, it was defined as tactical and operational indicators. However, for this paper, just the Assessment of strategic and tactical indicators was conducted. The Assessment of operational indicators is ongoing and will be an object of further research.

For this purpose, the following categories of tactical indicators were identified: Community, Consumers, Suppliers, Human Rights and Human Resources. These categories cover the tactical indicators (C5–C21) to evaluate the adoption of the strategies related to social sustainability in the sectors responsible for implement some changes. On the Community’s side, the indicator ‘Community Capital’ was defined. The Consumers’ side defined the indicators ‘Customer welfare’; ‘Disclosure and Control of the restricted hazardous substances’; ‘Monitoring system of hazardous substances on suppliers’ factories’. The Suppliers’ side covers the indicators: ‘Agreement in a code of conduct’; ‘Assessment of new suppliers’; ‘Assessment of long-term suppliers’; ‘Use of short-term contracts’ and ‘Disclosure of list of suppliers’.

On the Human Resources’ side are included the indicators: ‘Relation with Unions of employees’ and ‘Policy of wages & career’. The Human Rights’ side comprises indicators related to the internal environment and suppliers or sub-contractors factories, which are: ‘Compliance with labour & social security obligations (internal and external)’; ‘Right to Freedom of Association and collective bargaining (internal and external)’; ‘Policy of wages & career (external)’; ‘Monitoring of human rights & labour conditions by visits (suppliers)’.

The purpose is to combine the performances of indicators in the categories of Corporation, Community, Consumers, Suppliers, Human Rights, and Human Resources that the organisation present into a single measure that may be called the Social Sustainability Assessment Index. For this study, to assess the company’s social sustainability level at the strategic and tactical level, the performance of the indicators presented in each category is calculated through the average of the performances. The average of strategic indicators (CORP), from C1 to C4 are compared with the average of tactical indicators, from C5 to C21: Consumers (CONS); Community (COM); Suppliers (SUP); Human Resources (H.R.) and, Human Rights (HRG). Finally, the framework and its respective indicators have a general approach to allow the application in different sectors. However, the framework can be adapted to cover sectoral or regional particularities depending on the context.

4.2. The Assessment of the Social Indicators in the Framework Proposed

To analyse the performance of the company related to the social indicators in strategic and tactical level, considering that some social indicators are essentially qualitative and cover several dimensions of a given subject, it is possible to elaborate ordinal scales ranging from 1 to 5, to quantify and measure the subjective and qualitative information. This scale can be part of a questionnaire, applied to managers and other kinds of employees to gather data. We elaborated scales for the 19 strategic and tactical indicators proposed. Table 2 presents an example of this kind of scale:

Table 2. Operational social I indicators sorted by category with related description and measurement.

OPERATIONAL					
No.	CAT	Indicator	Description	Measurement	
C1	CONS	Rate of complaints related to acceptability of the product	Total of complaints (from online and physical stores) related to problems with the quality or design of the products/Total of products sold	Quantitative	
C2		% of increment of sales	% Increase in sales comparing annually		
C3		Post-sale services (repair)	% of products repaired considering the number of repairs made annually/number of products sold annually.		
C4	HRIG (internal and external)	Equality in opportunities for male and female employees	% of male and female employees; % of male and female employees in coordination functions; average of male and female wages and variable remuneration.	Quantitative	
C5		Balance between work and rest	The % obtained with: hours rest/total hours of work (considering extra hours).		
C6		HR Diversity (gender, mature employees, immigrants, disabilities)	% of diversity considering all categories by gender, employees over 45 years-old, immigrants, people with disabilities/total amount of employees.		
C7		Training (internal and external)	Total amount invested in training/number of employees involved in training.		
C8		HR	Employment stability (internal and external)		Mature people (over 45 years) > 5 years in the company/Amount of employees working in the company annually
C9			Health & Safety (internal and external)		Quantity of employees engaged in courses related to health & safety (first-aid, fire prevention, preparedness for emergence and response).
C10	COM	Jobs created in the community (internal and external)	Number of jobs created in the community.	Quantitative	
C11		Social investments in formation centres	Amount of investments made on social projects of formation, benefiting the community.		
C12		Amount of taxes paid (internal and external)	Average of taxes paid for the government.		
C13		Wages & salaries (internal and external)	Average wages and salaries of employees.		

Figure 4 presents the results of the evaluation of the strategic indicators considering 2019/2020.

It is possible to perceive that regarding the strategic indicators that demonstrate the declaration of values related to the mission of the company, the indicators 'Social & Ethical Commitment' of the company and 'Corporate Governance' have better performances and are above the average, which is 3.33. Otherwise, in the case of indicator 'Diversity in SCM', which is directly related to human rights, the company is below the average in 2019 and has an improvement in 2020. To check the alignment with the company's strategic objectives with the actions implemented by the sectors, which are related to the tactical indicators, we present Figure 5.

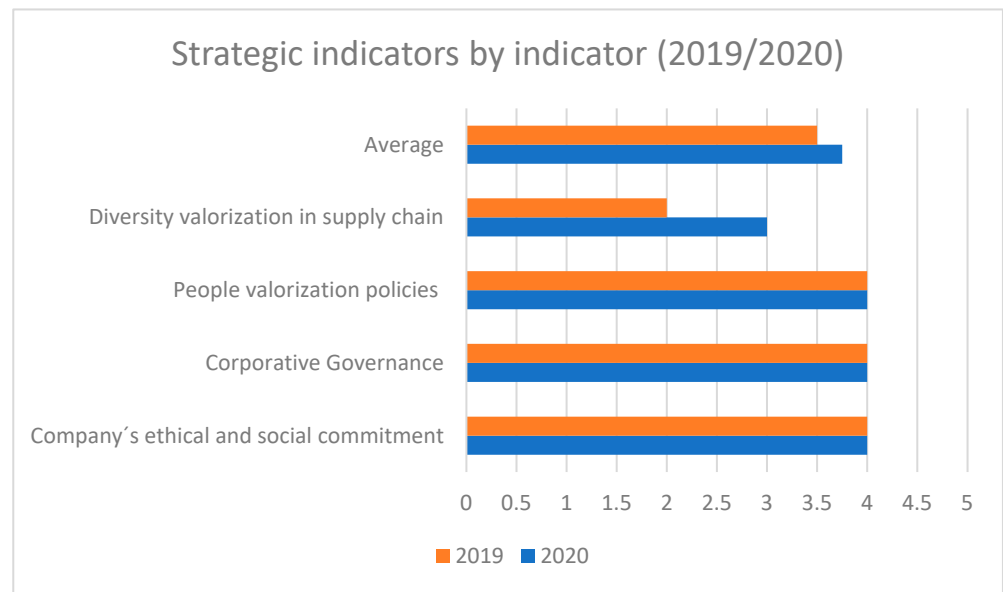


Figure 4. Performance of strategic indicators (individual and average).

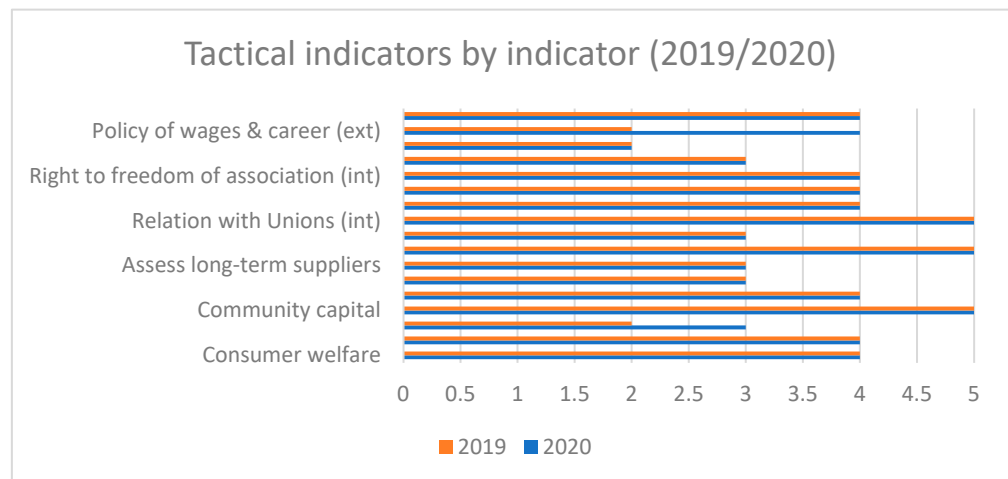


Figure 5. Performance of tactical indicators (individual) 2019/2020.

Figure 5 presents the performance of individual indicators and denotes their category. It is possible to perceive that the best performance was raised in the indicator 'Community Capital', from the category "Community, followed by the categories Consumers and Human Resources. In the case of indicators from the category 'Suppliers' some indicators such as: 'Short-term contracts' and 'Agreement in a code of conduct' are above the average, while other as on average: 'Assessment of long-term suppliers' and 'Disclosure of list of suppliers'. In this category, the indicator with the lowest performance was the 'Assessment of new suppliers'. In the case of 'Human Rights' category, it is possible to observe that the indicators evaluating the respect of human rights related to internal employees are well evaluated, on the other side, the indicators related to the control of respect of human rights on suppliers and sub-contractors had the worst performance, except the indicator related to 'Monitoring the labour conditions and human rights by performing occasional or scheduled visits' in 2019. However, after presenting the results related to 2019 for the president of the company and managers from other sectors, several modifications in the practices related to indicator, resulting in a significant improvement in 2020. The same occurred with the indicator related to Monitoring of RHS—Restricted Hazardous Substances in the supplier's factories.

Figure 6 presents the group of indicators that deserves more attention those related to the control of human rights related to the suppliers or sub-contractors, which means that is the category that needs actions to be conducted by the company, mainly considering the risk pertaining to suppliers and sub-contractors. Considering the individual improvements in two indicators related to the monitoring of suppliers, the average of the categories was increased from 3.7 to 3.9. As stated by [30], ethical and socially responsible behaviour must be broadened and not limited to the behaviour of an organisation only, but to the whole supply chain in which it is embedded or can influence.

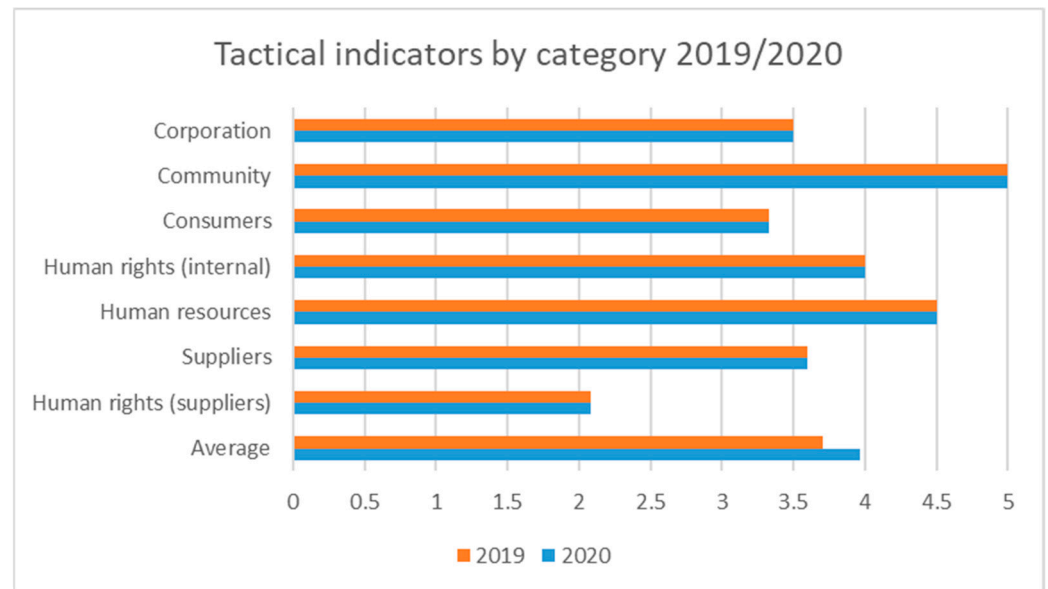


Figure 6. Performance of tactical indicators by category (2019/2020).

If we compare the results presented in Figure 4, related to strategic indicators, with the results of Figures 5 and 6, related to tactical indicators, it is possible to verify that the sectors involved in implementing the strategies associated with social and ethical objectives are relatively aligned, considering that the goals of the company related to social and ethical commitment and the control, measured by 'Corporate governance' are in line with the groups of indicators related to consumers, community, suppliers, human resources and human rights. The indicator related to human rights at the strategic level, the 'Diversity in SCM', is directly associated with those related to human rights regarding suppliers. Both strategic and tactical indicators have performance below the average. So, this aspect should be taken into consideration by the company to implement some actions of improvement, which will involve strengthening the control and visibility of the processes and activities carried out by suppliers in the supply chain. This aspect, in general, is a weak point in all supply chains worldwide, even more in those related to the textile and apparel or fashion industry.

Table 3 presents an illustration of the global evaluation of the social sustainability level, which is the Social Sustainability Index, considering the analysis of indicators in 2019 and later in 2020.

Table 3. Global Assessment of the social sustainability commitment level 2019/2020.

		2019																								
Group of Strategic Indicators		CORPORATIVE																								
Strategic Indicators		C1					C2					C3					C4									
Individual performance		4					4					2					4									
Average of performance		3.5																								
Groups of Tactical Indicators		CONS					CC					SUP					HR					HRG				
Tactical Indicators		C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21								
Individual Performance		4	4	2	5	4	3	3	5	3	5	4	4	4	3	2	2	4								
Groups Performance		3.33					5					3.6					4.5					3.16				
Groups Average		3.91																								
Social Sustainability Index		STR (3.5) + TACT (3.91)/2 = 3.7																								
		2020																								
Group of Strategic Indicators		CORPORATIVE																								
Strategic Indicators		C1					C2					C3					C4									
Individual performance		4					4					3					4									
Average of performance		3.75																								
Groups of Tactical Indicators		CONS					SUP					HR					HRG									
Tactical Indicators		C5	C6	C7	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21									
Individual Performance		4	4	3	4	3	3	5	3	5	4	4	4	3	2	4	4									
Groups Performance		3.66					3.6					4.5					3.5									
Groups Average		4.05																								
Social Sustainability Index		STR (3.75) + TACT (4.05)/2 = 3.9																								

The company's global average performance considering the group corporation of strategic indicators and the five groups of tactical indicators was 3.7 in 2019, increasing to 3.9 in 2020, representing a middle level of commitment in terms of social sustainability. The average of strategic indicators, which was 3.5 in 2019 and 3.5 in 2020, was relatively aligned with the average of tactical indicators, respectively 3.9 in 2019 and 4.0 in 2020. So, the resulting average considering strategic and tactical indicators is 3.7 in 2019 and 3.9 in 2020. However, the average considers the trade-off between indicators, which means that the highest performance in the categories of 'Community', 'Human Resources' and 'Human Rights' related to internal employees can compensate for the lowest performance in the 'Category of Suppliers'. If the rationality of the decision-makers is not compensatory, it would be impossible to analyse the company's global performance, and it would be more adequate to analyse the performance of groups or to use another method of aggregation rather than the additive one. Table 4 shows the categories constructed to determine the company's level of commitment in terms of social sustainability (strategic and tactical level). These categories were based on [42] and adapted considering the indicators gathered and validated in the VFT approach [21].

Table 4. Levels of commitment of the company in terms of social sustainability.

Categorisation of the Company in Terms of Social Sustainability	Levels
It represents a proactive phase in which the company has reached standards considered to be of excellence in its practices, involving suppliers, consumers, customers, and communities, and influencing public policies of interest to the company.	5–81% to 100% Very high
It represents an advanced stage of action, where the benefits of going beyond legal compliance, preparing for new regulatory pressures in the market, society, etc., are already recognised. Social responsibility and sustainable development are considered strategic for the company.	4–61% to 80% High
It represents an intermediate stage of action. The company maintains a defensive stance on social issues but is already starting to make changes and progress regarding the compliance of its practices.	3–41% to 60% Medium
It represents a primary stage of business actions, which is still responsive to legal requirements.	2–21% to 40% Low
It represents that the company has no knowledge of legal requirements and market pressures and has no relevant action to become socially sustainable.	1–0% to 20% Very Low

Table 4 shows that the lowest level 1 represents a dangerous posture for the companies, considering that no initiative related to social sustainability is implemented, which can increase the risks. Mainly in the case of the textile and apparel sector, which outsources a significant part of its processes for sub-contractors, most of whom are from developing countries. In general, the suppliers from developing countries present some irregularities

regarding labour conditions and respect for human rights [17]. One well-known strategy to mitigate this kind of risk is to demand from suppliers or sub-contractors social and ethical certifications [43]. However, the certification process is long, complex and is not accessible to all suppliers. The lack of information or visibility does not eliminate the responsibility of the buyer company, considering that it has an extended responsibility in the supply chain. Level 5 represents the ideal situation and denotes the company's proactivity in terms of awareness, initiatives, and strategies related to social sustainability, which means fewer risks for the company. However, a greater engagement to control indicators related to social sustainability is required, not only in the internal environment but also, in the factories of supplies and sub-contractors. This level also requires more resources invested developing these actions and more collaboration with partners in the supply chain to enable a change in culture, processes and information sharing.

Considering the categories presented in Table 4, the company from the luxury footwear industry analysed in this study can figure between the categories 3 and 4, considering the average of 3.7 in 2019 and 3.9 in 2020. This results indicate that the company is in the process of evolving from an intermediate to an advanced stage of actions related to social sustainability. In the intermediate stage the companies have a defensive posture related to social dilemmas, towards while in an advanced stage of actions, in which already starts to make changes in its process, preparing for new regulatory pressures in the market and society. As confirmed, considering the interview with the company's president (top management), the social dilemmas are already recognised, and social responsibility and sustainable development are becoming strategic for the business. The following steps will require from decision-makers the implementation of some changes, mainly related to the management of suppliers, to monitor the respect of human rights, adequate labour conditions and remuneration, as well to guarantee the consumers welfare, monitoring and avoiding in the suppliers/subcontractors factories, for example, the use of restricted hazardous substances in the final product. The lack of control and visibility in supply chains is a reality in the textile and apparel industry because it presents several levels and a higher level of sub-contractors. In this context, initiatives to strengthen the control are highly recommended to avoid risks related to unethical practices occurring in the suppliers' factories.

It is essential to point out that the Italian Luxury Footwear Industry engaged a team from an Italian University to analyse, in a broad sense, several indicators related to environmental, social and economic issues, aiming to make possible the transition toward the circular economy. This study had the purpose to complement the previous analysis of the social indicators and propose a framework to deal with them.

Some strong points were identified in the company considering the evaluation of the information provided by managers related to the year 2019:

- The leather used in the products does not come from livestock farms that deforest the Amazon or other environmental protection areas;
- The company's packaging paper is not produced by suppliers who destroy rainforests and the habitat of endangered animals;
- The company has a list of prohibited hazardous substances and requires the signature of suppliers;
- The company recommends that suppliers avoid hazardous chemicals presented in REACH (E.U.), TSCA (U.S.) and ZDHC (Greenpeace) and has a list of substances to avoid.
- There are projects to be implemented in 2020 regarding training, aggregation and improvement of the working environment;
- Has a strong relationship and commitment with the community;
- It has a pact and monitors human rights in suppliers with visits;
- Most suppliers are local, making monitoring human rights and working conditions more manageable.
- The company has an ethical agreement signed by some suppliers.

After applying the framework in the company studied from October 2019 to March 2020, considering the data from 2019, the managers have taken several actions to change some processes and strategies in 2020, which resulted in improvements in some indicators. The actions can be synthesised as follows:

- The company maintained in its suppliers base a majority of local suppliers, which enables the close monitoring of human rights;
- It has an ethical agreement, which was improved after the presentation of the data from 2019 and, the most of the suppliers were signed it in 2020;
- The company already monitored human rights in suppliers by scheduled and occasional visits and improved and increased this activity by the year 2020;
- The company increased the control of suppliers concerning human rights and working conditions;
- It implemented a continuous and permanent evaluation of new long-term suppliers;
- It improved the awareness of suppliers related to human rights issues;
- The company implemented an agreement with suppliers pertaining to hazardous substances;
- It guided suppliers on hazardous substances through the guide from the Zero Discharge of Hazardous Chemicals (ZDHC) Program (available free of charge and online), which is a group of apparel and footwear brands and retailers working together to lead the industry toward zero discharge of hazardous chemicals by 2020;
- An action plan has been developed to solve the problems highlighted during the first phase of research, with all suggestions given by researchers;
- A Circularity Committee was created to follow the social and environmental indicators considered to track their progress.

Some points still can be improved, such as:

- Disclosure of sustainability and supplier information on the company's website to increase transparency, as Greenpeace and Business Human Rights Centre recommended.
- Improvement of the effective control of supplier information on hazardous substances.

In 2020 the company aimed to consolidate the decisions and actions implemented in 2019. Therefore, it is possible to verify that the company has had an evolution in the general social sustainability indicator, from 3.7 (2019) to 3.9 (2020), which indicates that it is evolving and strategically committed to generating a positive social impact on the local community, consumers, suppliers and employees.

5. Discussion of the Results

Considering the studies cited in Section 4.1, which deals with the identification and Assessment of the social indicators [13–15,34–38], we could identify a basis of indicators to be the start point to the proposition of a framework to assess the social sustainability including the categories of social indicators, proposing the inclusion of Corporation; Customers/Consumers; Community & Stakeholders; Suppliers; Human Rights & Welfare; Labour Conditions and, Animal Welfare.

The other studies dealing with social indicators propose using S-LCA for the Assessment of social sustainability such [15,35,36]. However, as [15] stated, S-LCA's weakness is related to gathering quantitative data, which are, more frequently, available at a corporate level, or in the best case, they are site-specific. This fact was corroborated in this study. The studied company did not have availability of all data needed to conduct a comprehensive analysis covering the operational data, and some of this data was considered classified information. The authors also highlighted that, depending on the company's location, some criteria could be not considered, such as child labour, when the study is conducted in European companies.

Although the European legislation is more rigorous, indicators related to child or forced labour are still essential to be considered due to some processes carried out by sub-contractors, for example mainly, in the textiles and apparel industry, which sometimes

are out of the control of the focal company in the supply chain. Thus, actions related to avoiding child, forced and/or slave-like labour are still necessary. For example, some cases of forced or slave-like labour have still been reported in Europe, as seen in the 'Global Slavery Index 2018' [44]. Also, information from the Commissioner for Human Rights of the Council of Europe reported that many children working across Europe have hazardous occupations in agriculture, construction, small factories or on the street. Cases of such situation have been reported, mainly in Albania, Bulgaria, Georgia, Moldova, Montenegro, Romania, Serbia, Turkey and Ukraine; however, other countries are at risk, such as Cyprus, Greece, Italy and Portugal [45].

Besides present some cases in its territory, Europe is one of the most consumers of products originating in developing countries and one of the main outsourcers of production to developing countries, in which practices such as child, forced and/or slave-like labour and disrespect of human rights and minimum labour conditions are widely found [17]. Considering the responsibility shared by the entire supply chain, actions related to avoiding this practice are still necessary.

On the other side, studies such as [13,14,34] proposed a list of social indicators and analysed the prioritisation of these indicators using multicriteria decision aid and Statistics methods. However, the authors did not propose how to measure the indicators and do not explain the decision-making level they can be used. Although the study from [37] presents the inclusion of environmental and social indicators in the Balanced Scorecard from Kaplan and Norton structure, it did not cite what kind of indicators may be used and did not indicate their respective measurement.

According to [46], the Sustainability-oriented Balanced Scorecard (SBSC) is an open concept that can be used to incorporate environmental and social aspects into the conventional corporate strategies [46]. However, according to [47], based on a broad literature review, there is no consensus related to the architecture of the SBSC to incorporate indicators related to environmental, social and ethical dimensions of sustainability. The authors state that they consider SBSC a promising framework to integrate sustainability in strategic aspects in organisations and emphasise that other performance management frameworks can be used for this purpose. Our paper proposes a framework based on the Operational Research area containing the strategic elements from the Balanced Scorecard approach [47]. The Balanced Scorecard provides a helpful structure to analyse the social indicators in operational measures. However, it lacks incorporate an index to measure social sustainability.

An adjusted SBSC was proposed by [48] to manage critical issues connected to environmental and social indicators. They conducted surveys and interviews with managers of Italian companies to get information. The proposition considers that the selection of the Key performance indicators-KPIs depends on the strategic goals of each company. However, the authors complement that adding additional KPIs could have the shortcoming of adding too much complexity to using the SBSC. Thus, our framework intends to overcome this shortcoming because there are no restrictions on adding indicators. In addition, it integrates systematic steps to define the most appropriate set of indicators for the measurement and calculation of a sustainability index.

A survey was conducted by [49] to verify the diffusion of sustainable Balanced Scorecards (SBSC) among Norwegian firms. The findings indicated that the awareness and adoption of the Balanced Scorecard in sustainability are low. The authors also state that the supply-side has influenced the diffusion process of tools and practices, such as the sustainable-oriented Balanced Scorecard. The study did not discuss sustainability's social aspects, which differentiates it from our paper.

Thus, the novelty of this paper lies in the proposition of a framework to assess the social indicators in broad categories, capable of covering all supply chains: Corporation, Community; Consumers; Suppliers; Human Rights and Human Resources. Another novelty is related to the analysis of strategic, tactical and operational indicators, similar to the idea of a Balanced Scorecard, which was allowed by applying the VFT approach [21].

This approach starts with the general values of the decision context to the specific [21]. The strategic level of indicators is related to strategic values, which is a long-term view. The tactical represents the strategic indicators divided into smaller parts to enable the implementation of some strategies in the medium term. The operational is the smallest part of the strategic indicators and will allow decision-makers to control some actions/processes related to social dilemmas. Therefore, proposing a framework with this line of thought becomes possible to systematise the subjectivity inherent to the decision-making process and comprehend its multidimensional nature.

Moreover, we propose that this framework be used to complement the tool presented in [10]. This new visualisation tool offers the Assessment of new circular models under the three dimensions of sustainability: economic, environmental and social. Then, the generic framework proposed in this paper can be used to assess the social impact of companies and supply chains in other segments.

6. Conclusions

6.1. Concluding Remarks

The primary purpose of this paper was to propose a framework for the Assessment of social impact with indicators, which was possible through the VFT approach. We carried out the validation of the model through an application in an Italian Footwear Luxury Industry. It was possible to define the indicators for the framework at the strategic, tactical and operational levels. However, in this paper, only the indicators at the strategic and tactical levels were evaluated.

Then, it was possible to categorise the studied company in terms of commitment to social sustainability. We highlight that this should be the first step in analysing the organisation's social impact. The alignment between the top management of the company and the sectors involved in implementing initiatives in terms of social dilemmas is essential because it allows for a holistic change of behaviours. Evaluating the social impact, conjointly with the economic and environmental ones, in a single company or a supply chain can give inputs to decision-makers to implement changes towards a circular economy transition.

6.2. Contributions

The theoretical contributions of this paper are twofold: (i) The definition of social KPIs contributes to complementing the tool of visualisation of CBM, to integrate the Assessment of social impact to determine the level of circularity of a company, thus considering the three pillars of sustainability: economic, environmental and social and. (ii) The analysis of the Assessment of social sustainability in a footwear luxury industry, besides contributing theoretically bringing light to a few exploited topics, can be helpful for managers and practitioners to provide systematised elements to the decision-making related to the social aspects under a circular economy perspective.

It is noteworthy to mention that most studies focusing on social indicators in supply chains do not propose a framework or methodologies to assess social sustainability. Instead, these studies discuss the better set of indicators and their qualitative/subjective and theoretical aspects. In terms of methodological contributions, we can point out the aggregation of an approach from Operational Research, based on literature review, managerial reports, diagnosis and Balanced Scorecard approach. The use of several sources to collect data and several participants (managers from strategic and tactical levels) contributes to increasing the framework's validity.

6.3. Practical and Theoretical Implications

The quantitative approach of the tool, completed by the methodology proposed in this paper, allows the Assessment of the three pillars of sustainability, providing structured data and information about initiatives, industrial processes and supply chain. This information can be helpful to monitor some specific aspects to support the definition of new or revised

industrial strategies, considering different scenarios, and verify how they will respond to more comprehensive strategies and actions, for example, the E.U. Green Deal.

Theoretically, this study proposes a generic framework covering a wide range of social indicators to assess social sustainability. This framework can be enriched with the proposition of a new theory lens to analyse the results. The aggregation of a methodology from Problem Structuring Methods can contribute to the linkage of Operations, Management and Decision Analysis areas in the analysis of social sustainability and related ethical aspects.

Concerning social implications, this paper brings light to a few exploited topics in Academy, which have received increasing attention and visibility in practical context. Moreover, it is a topic related to the Sustainable Development Goals and needs to be widely discussed by academics and practitioners.

6.4. Limitations and Suggestions for Further Studies

Despite their contributions, it is essential to acknowledge the limitations of our study that might provide opportunities for future research. The Assessment of social indicators was made only considering the strategic and tactical levels of decision-making. Thus, the analysis of operational indicators can be developed in future studies.

The framework was validated in a specific segment of the industry: the footwear luxury industry. This limitation can also be the object of further study, which can propose the validation in other segments and, if necessary, propose the adaptation of the model.

Furthermore, this study is limited to analysing one dimension of sustainability covered by the circular economy concept, the social one. Future studies can apply the new visualisation tool proposed by [10,28], aggregating the framework to analyse the social impact presented, conjointly with the environmental and economic ones, to provide a holistic analysis of supply chains in the textile and apparel industry, as well in other contexts and segments.

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