A Key Performance Indicator for an Integrated Assessment of the Social Sustainability of an Enterprise

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ABSTRACT:
This paper proposes a tool for the integrated assessment of a company's social sustainability. This tool is an integrated indicator, composed of two partial indicators, which refer to two different aspects of social sustainability: the impact of the company's activity on employees, its relationship with customers and the local community. To develop this tool, 34 criteria were formulated, as well as ways to quantify the company's responses to them. The criteria were grouped into several categories, depending on the aspects to which each refers. Based on each group, two partial indicators are constructed: one indicator relating to the working conditions of employees and the other indicator relating to the relationship with customers and society. For the company's responses to these criteria, formulas were proposed that lead to normalized values, which allowed them to become comparable and aggregated for the construction of the indicator. The indicator proposed in the paper can be used to monitor progress and results related to social sustainability, as well as to rank companies that aim to achieve sustainable development objectives.

Keywords: measure social sustainability; quantifying responses; key performance indicator; sustainable development.

1. Introduction

The wellbeing of a society is directly proportional to the economic development, which must be achieved continuously, in a sustainable way, judiciously using natural resources, without leading to their exhaustion or the degradation of the environment. There are three important pillars of sustainability: social, economic and environmental, but as specified in (Purvis et al 2019), a theoretically rigorous description of the three pillars does not exist.

The present work addresses the topic of social sustainability in an enterprise, and that is why we considered that an overview of this aspect is necessary. Due to the regulations and laws in force, companies are increasingly concerned with sustainability. The pressures imposed on them by governmental and non-governmental bodies, by civil society, make them act in a more sustainable way.

There are companies, such as Danone, Unilever, SAP, Ikea and other, which voluntarily implemented regulations on social sustainability norms, before the entry into force of the CSRD Directive (2023/2024). These companies have considered social

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sustainability as an important part of the business strategy, not as a legal obligation. Therefore they gained customer trust and so improved their market positions.

But still the number of such companies is quite small, regarding the number of companies acting on the markets in our days.

The number of such companies increased over time, but it is difficult to say whether they did this out of awareness of the importance of social sustainability issues and their connection to financial success, or whether they did it as a result of the obligation resulting from the transposition of the aforementioned directive into the legislative framework of the countries in which they operate.

In times of political and economic instability, such voluntary acts are generally avoided, especially if the positive, immediate effects arising from them are difficult to observe, and the motivations for this type of action are lacking. Thus, the adoption of normative acts, relating to these aspects, remains the main path to be followed to achieve these objectives.

For example, in Romania in 2020: only 42 companies published sustainability data in separate or integrated reports; in 2021, 54 reported, and in 2022, only 66 companies. So, approximately 5% of companies voluntarily reported sustainability issues before 2022, but from 2025 this reporting becomes mandatory for companies with more than 500 employees.

Many studies regarding the sustainability of an enterprise exist and different considerations related to how we can make an enterprise more sustainable are also presented.

For example, paper (Marchi and Antonini 2021) presents a study in which a tool is developed to evaluate the impact of factories on the environment, thus helping companies to find what makes them more sustainable, reducing the negative impact on the environment and quality of life.

According to (Pirouz et al.2020) the negative effect of the industry on the environment can only be reduced if a sustainable development of the companies is taken into account, and a tool is established to achieve this objective, using the Triangular Fuzzy AHP method.

In the review paper (Nilsson et al.2024) it is specified that, although the concept of social sustainability is widely debated, in many works, there is still a lack of clarity in its definition, but it is generally concretized around four predominant categories: "Equity", "Well-being", "Participation and influence" and "Social capital.

Aspects regarding social sustainability definition can be found on the site of United Nation Global Compact (https://unglobalcompact.org/what-is-gc/our-work/social.):" Social sustainability is about identifying and managing business impacts, both positive and negative, on people". As stated in Guptill, A., & SARE Quality-of-Life Working Group. (2021):"Social sustainability is the extent to which social relationships promote equity, justice, and a high quality of life".

In specialized literature the concept of social sustainability is addressed for different fields such as: agri-environmental (Hale et al. 2019); agriculture (Janker et al. 2019); green buildings (Atanda 2019); supply chains (Mani et al.2015; Mani et al. 2016; Margot et al.2008; D'Eusanio et al. 2019); smart mobility (Jeekel 2017); education in (Jing

et al. 2023); infrastructure projects (Tierra Varela et all 2017); and industry (Husgafvel et al. 2014).

A sustainability index for process industry is presented in (Husgafvel et al. 2014), with a social sustainability component for which eight sub-indicators were envisaged, and for their evaluation a list of questions with answers mostly of "yes", "no" or "not known" type was used.

In practice, there are some indicators that refer to aspects related to social sustainability, such as the ESG indicator group. An ESG indicator includes three important components: environmental, social and governance. There are also other categories of indicators that include different aspects of the social sustainability of a company, such as the GRI 400 indicator group, but there is no global indicator that acts as an aggregation factor for all these partial indicators. The GRI framework is, for example, modular and developed on specific thematic categories (e.g. labour, communities, human rights, health, safety, diversity, etc.), so these indicators are grouped, depending on the components they capture, in several groups of sub-indicators, but they capture isolated aspects, and not cumulatively in a single score, which would encompass all these isolated aspects to which they refer. In addition, they are difficult to put into practice, especially in a general framework.

The indicator we build, as well as the partial indicators on which it is based, are consistent with other indicators such as GRI and ESG. The KPI proposed in the paper is easy to implement in practice, and captures the most important aspects, common to all enterprises, regardless of the sector in which they operate, and therefore can be applied to all industrial sectors, can be used for local analyses, when companies from a certain region are analysed, for specific or even general analyses.

The issue of social sustainability is addressed in many specialists' works from several domains namely: the establishment of social sustainability indicators in urban planning (Atalay and Gülersoy 2023; Akbarinejad et al. 2023), respectively for the establishment of an indicator on sustainable regional development (Shi et al. 2019). The selection of some indicators for measuring the progress of sustainable development in general are presented in (Gebara et al. 2024) and in (Passos Neto et al. 2023) a review of the social sustainability of the built environment is carried out, together with some criteria, the decision factors and the process followed to promote the most sustainable measures from a social point of view.

In Akbarinejad et al. 2023 an integrated social sustainability assessment is proposed for communities based on 6 criteria: social equity (A), environmental awareness (B), social cohesion (C), health and safety (D), accessibility and satisfaction (E), and cultural value (F).

Organizations that implement sustainability concepts have transparent, open communication with employees and prioritize their wellbeing. It also encourages cooperation and teamwork, balance between work and private life, remote work or flexible working hours, thus reducing the stress to which the employee is subjected and thus increasing productivity.

An employer that emphasizes sustainability creates a much more engaged and loyal workforce, especially among the younger generation. Adopting sustainability in the workplace benefits employees and has a positive impact on the company. Moreover, the

prestige of companies that have implemented sustainable practices has improved, they manage to occupy better positions on the market compared to their competitors. But how can they measure the social sustainability?

The paper refers to the concept of sustainability of an enterprise from a social point of view and aims to establish an indicator to evaluate and measure the social sustainability of enterprises.

The criteria and indicators, as well as the questionnaire developed in this paper, are established to highlight the fair treatment of workers throughout the production process, the encouragement of positive relations with the local community, adherence to standards regarding the rights and welfare of employees.

In the last period of time some different aspects related to the social sustainability of nan enterprise have been the subjects of many papers. Concerns about it are in generally focused on the supply chain (Winter and Lasch 2016; Okay et al. 2024; Erol et al. 2011). In Popovic et al. 2013, social sustainability is evaluated based on working conditions, e.g., worker stress, work satisfaction and attitudes to achieving sustainability.

The implementation of social sustainability among small and medium enterprises is presented in the paper (Sundström et al. 2019).

Some indicators to partial measure some aspects related to the social sustainability for different situations are presented in other papers.

In Walker et al. 2021, with the aid of 43 semi-structured interviews with frontrunner companies engaged with CE in Italy and the Netherlands to obtain a better picture of how these firms view the importance of the social dimension, what the barriers to conducting social assessment are, and whether they have experience with assessing social sustainability aspects within their companies and supply chains.

Paper (Kaldas et all 2021) presents a newly developed framework for sustainability assessment of manufacturing organizations and a composite sustainability index is there proposed, but only few (namely 7) social aspects are considered in a sub-index, without explicit formulation of their concrete evaluation, but only to what they refer to: "cost of capital, percentage of employees receiving safety training, employees exposed to high-risk work environment, work related injuries and incidents, health/safety risk to community, employee training, employee diversity, community outreach/engag".

Studies regarding what affects the social sustainability of SMEs there are also made. The effects of the total quality management practices on the sustainability of Finnish SMEs is studied for example in paper (Lepistö et al. 2023). Using regression analysis to analyse the collected data, the authors show that the management influence a lot the environmental and the social sustainability, the HR practices have a positive impact on environmental sustainability, but not social sustainability, and "the remaining TQM practices—constantly evolving processes, advanced procurement procedures, and stakeholder identification and competitive products—had no impact on the environmental or social sustainability of companies". The results also show that service companies are more socially sustainable than manufacturing companies.

In the present paper, we propose an effective instrument for measuring the social sustainability of an enterprise, quantifying the most important criteria regarding this aspect.

As a rigorous definition of the social sustainability of an enterprise cannot be found in the literature, in our assessment, we have considered that the social sustainability

of an enterprise/a company represents its activity impact on its employees, community, customers and its supply chain. It is a concept that can be understood as the extent to which a company contributes to the satisfaction of life, through prosperity, healthy life, well-being, good and safe working conditions, diversity and equality. All these aspects were envisaged into the present approach in developing the proposed indicator.

The main goal of this paper is to offer a key performance indicator to measure the social sustainability of an enterprise by considering an aggregation technique to include in this evaluation the mentioned aspects, which were grouped into two classes.

The proposed Key Performance Indicator it is a complex, integrated indicator built based on partial indicators and thus cumulates the contribution of all aspects captured by them. It includes the most representative indicators that capture all aspects of the social sustainability of an enterprise (working conditions, diversity and social inclusion, equal opportunities, policies regarding employee rights, relations with com-munities and suppliers, transparency, health and safety at work).

2. Method for Developing a Key Performance Indicator for the Assessment of Social   Sustainability of an Enterprise

Proposed indicator is an integrated one, and it includes two important aspects related to the social sustainability of an enterprise: one is related to the working conditions of employees and the second refers to the social impact on customers and on society, especially the local one.

The construction of this indicator is carried out by using multicriteria analysis methods and starts from the formulation of the considered criteria. These criteria must not only be formulated, but appropriate ways must be found by which the answers to them can be quantified as correctly as possible, can be measured, so that they can then be normalized and entered into a suitable aggregation formula. If they can be expressed by values in the same range, the normalization procedure can be omitted.

Criteria for the integrated indicator related to social sustainability measure the impact of the company's activity on employees and society, being closely related to the way objective 8, "Decent work and economic growth", of sustainable development is conceived.

The indicator includes two important components, a component related to the impact of the activity on the employees, another related to the impact of the activity on the clients and society/local community. Each of these aspects is evaluated by means of a partial indicator, which, if used separately, only allows highlighting the results of the class to which it refers.

There were established 34 criteria for the development of the proposed indicator. The set of this criteria is divided into two components, namely one component, class A, related to the impact of the activity on employees, which consists in 22 criteria (C1-C22), and another, class B, which consist in 12 criteria, (C23-C34), criteria related to the relationship with clients and the local community.

The partial indicators are constructed based on each class: I1 (indicator relating to the working conditions of employees), I2 (indicator relating to the relationship with customers and society). Both partial indicators are also complex indicators because they also capture several aspects.

Criteria from A class were divided into 4 subclasses and indicator I1 is built starting from sub-indicators J1, J2, J3, J4, each of them corresponding to a group of criteria as follows: J1 is the sub-indicator that includes the answers to the criteria from subclass A1 (criteria related to the environment and working conditions), J2 is built starting from subclass A2, J3 and J4 capture aspects related to subclass A3 (criteria related to salary and other benefits) and subclass A4 (criteria related to occupational health and safety), respectively, see Table 1 - 4.

Criteria from B class were divided into 2 subclasses and indicator I2 is built on the basis of two sub-indicators: K1, based on criteria from B1 subclass, referring to the relationship with customers and K2, based on criteria from B2 subclass, which captures aspects related to the impact of the company's activity on society, on the local community, see Table 5 and Table 6.

To find the values of these indicators we have to build the corresponding enterprise's answers to these criteria, and this cannot be done without quantifying each criterion.

There are used two types of criteria: quantitative criteria and dual choice criteria.

Quantitative criteria are represented by the criteria for which the degree of satisfaction is represented by a numerical indicator, calculated based on the data from the company's records.

If we refer to the way in which the quantitative criteria are formulated, we note the existence of two types of criteria, namely maximum criteria and minimum criteria. A maximum criterion is a criterion for which, the higher the numerical value associated with the company's response to it, the better it satisfies its requirements, and a minimum criterion is a criterion for which, the lower the numerical value associated with the company's response to it, the better it satisfies its requirements.

Dual choice criteria are those criteria for which there are two possible states for the company's response to each of them: the criterion is satisfied, in which case 1 point is awarded, or the criterion is not satisfied, in which case 0 points are awarded.

The proposed indicator can become a basis from which to start in subsequent studies, in the sense that it can become more eloquent, if for the dual-choice criteria, quantification formulas based on concrete company data are found.

3. The Considered Criteria and their quantification

The criteria for the integrated indicator related to social sustainability measure the impact of the company's activity on employees and society, being closely related to the way objective 8 of sustainable development is conceived.

Objective 8, "Decent work and economic growth" of sustainable development has a set of 10 targets with different implementation deadlines between 2020 and 2030 and which we considered when we developed the proposed indicator. We have selected the most important of them, namely: the creation of decent jobs; decent work for all women and men, including young people and people with disabilities, and equal pay for work of equal value; substantially reducing the proportion of young people without a job, education or training; effective measures to eradicate forced labour; protection of the right to work; access to banking, insurance and financial services for all.

Due to the multiple aspects that this indicator includes, a unitary way to quantify the responses provided by the company to these criteria cannot be found. Because the values of the quantities that make up such an indicator must be comparable, they must be normalized. For the quantitative criteria, in the present work, there are proposed formulas which lead to already normalized values for the company's answers and are represented by numerical values from [0,1]. Also, the quantification of the company's responses to the formulated criteria not only provides comparable values, already normalized, but is done in a manner that allows their interpretation as maximum criteria. This fact allows the integration of all these answers in an aggregation formula whose value, the higher it is, the better all the criteria are satisfied regardless of their type (maximum or minimum), the better the overall response of the enterprise to them.

For the dual choice criterion, the values of the enterprise responses are 0 if the criterion is not satisfied or 1 if it is satisfied.

Therefore, this approach, this way of quantifying the responses to the formulated criteria, actually allows the development of the key performance indicator for social sustainability of an enterprise proposed in the current paper. Thus, obviously, the higher the value of this indicator, the better the requirements of social sustainability are met.

In the following tables there are presented the chosen criteria and their quantification, namely the enterprise's answers to them, answers based on which the proposed indicators and sub-indicators are built.

Criteria from subclass A.1. represent criteria related to the environment and working conditions and includes criteria in Table 1. In the last column of Table 1, one can also see the formulas developed to quantify the company's responses to each of these criteria, a_i, being the value of the enterprise response to criterion Ci, $i = \overline{1,8}$.

Table 1: Subclass A.1 criteria and their quantification

Criterion statement	Criterion quantification
C1:The freedom to choose to be part of professional associations or associations that fight for the rights of employees	$a_1 = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C2:Support of trade union organizations by the enterprise	$a_{2,} = \dfrac{So}{S}$
C3:Work regime of apprentices, pupils/ students in practice/ professional training programs	$a_3 = 1 - \dfrac{Nc}{Ns}$
C4:Existence of recreation areas for employees	$a_4 = \dfrac{S_r}{S_e},$
C5:A clear and explicit formulation of employment contracts and their knowledge by employees	$a_5 = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C6:Transparency and non-discrimination of women/men	$a_6 = min\left(\dfrac{Nw}{Nm}, \dfrac{Nm}{Nw}\right)$
C7:Involvement of employees in improving the company's activity	$a_7 = \dfrac{N_{iw}}{N_p}$
C8:Transparency in the organization of competitions for the selection of employed personnel	$a_8 = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$

The notations in Table 1 are as follows: for C2, So is the annual amount allocated by the company to support existing organizations that fight for workers' rights, and S=the company's turnover; for C3, a minimum criterion, $Nc =$ number of hours worked weekly

by apprentices, pupils/students in practice/professional training programs and $Ns =$ the number of hours per week of a normal work schedule (40 hours); for C4, $S_r =$ the area intended for employee recreation (m^2) and $S_e=$ the total area of the enterprise (m^2); for C6, $Nw =$ number of female employees, Nm = number of male employees and for C7, $N_{iw} =$ the number of ideas for improving the activity, coming from the employees, which are put into practice, $N_p =$ total number of proposed ideas.

Subclass A.2., includes criteria related to the program which are presented, together with their quantification in Table 2.

Table 2: Subclass A.2 criteria and their quantification

Criterion statement	Criterion quantification
C9: The method of granting free days and holidays/leaves to employees;	$a_9 = \dfrac{N_{eh}}{N_h}$
C10: Flexible work schedule;	$a_{10} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C11: Compliance with contractual agreements regarding the additional program.	$a_{11} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$

The notations in Table 2 are as follows: for C9, $N_{eh} = the$ number of days off and vacation/leaves taken by employees, $N_h =$ the number of days off and legal leave allocated according to the contract.

Subclass A.3 includes criteria related to salary and other benefits and are presented, together with their quantification in Table 3.

Table 3: Subclass A.3 criteria and their quantification

Criterion statement	Criterion quantification
C12: Salary of employees;	$a_{12} = \dfrac{S_{apl}}{S_{max}}$
C13: The minimum salary of employees;	$a_{13} = 1 - \dfrac{N_m}{N}$
C14. Social benefits for employees;	$a_{14} = \dfrac{S_{sb}}{S_t}$
C15. Delays in the payment of salaries;	$a_{15} = 1 - \dfrac{D}{P}$
C16. Equal pay between men and women.	$a_{16} = min\left(\dfrac{S_{mm}}{S_{mw}}, \dfrac{S_{mw}}{S_{mm}}\right)$

The notations in Table 3 are as follows: for C12, $S_{apl} =,$ the average salary per employee $S_{max} =$ the maximum salary in the company, for C13, N_m represents the number of enterprise's employees on the minimum wage per economy and $N =$ number of employees, for C14, S_{sb} represents the amount of annual social benefits offered to employees and $S_t =$ the annual salaries granted to all employees, for C15, D represents the number of annual delays in the regular payment of workers and $P =$ number of payments according to the contract (12 or 24), for C16, S_{mm} represents the average salary of men and $S_{mw} =$ the average salary of men.

Subclass A.4. includes criteria related to occupational health and safety and are presented, together with their quantification in Table 4.

Table 4: Subclass A.4. criteria and their quantification

Criterion statement	Criterion quantification
C17: Care for the health of employees;	$a_{17} = \dfrac{N_{hc}}{12}$
C18: Training on labour protection;	$a_{18} = \dfrac{N_{iwp}}{N_{wp}}$
C19: Record of work incidents;	$a_{19} = 1 - \dfrac{N_{wi}}{N}$
C20: Existence of informative panels related to risk areas and instructions for the use of protective equipment;	$a_{20} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C21: Protective equipment	$a_{21} = \dfrac{N_{iw}}{N}$
C22: Existence of protocols in case of emergency.	$a_{22} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$

The notations in Table 4 are as follows: for C17, N_{hc} represents the number of scheduled annual health checks for all employees, for C18, N_{iwp} = number of training hours related to effective work protection (mentioned in the documents) and N_{wp} = the number of hours established according to the regulations in force for this activity (work protection), for C19, N_{wi} = the number of annual work incidents, N = the number of employees, for C21, N_{iw} = number of employees with protective equipment's in use and N = number of employees.

Criteria from subclass B.1. represent criteria related to the customers and includes criteria in Table 5. In the last column of Table 5, one can also see the formulas developed to quantify the company's responses to each of these criteria. a_i, being the value of the enterprise response to criterion Ci, $i = 23\ to\ 28$.

Table 5: Subclass B.1. criteria and their quantification

Criterion statement	Criterion quantification
C23: Concern for solving customer problems;	$a_{23} = \dfrac{C_s}{C_t}$
C24: Existence of labels with explicit information related to the correct and safe use of the products;	$a_{24} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C25: Ecological labelling;	$a_{25} = \dfrac{N_{el}}{N_{elmax}}$
C26: Existence of labels related to the possibility of recycling and reusing products;	$a_{26} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C27: Existence of a communication channel with clients (possibility of providing feedback and their answers);	$a_{27} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C28: Existence of customer satisfaction measurement forms and their adaptation to customer requests and needs.	$a_{28} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$

The notations in Table 5 are as follows: for C23, a maximum criterion, $Cs\ is$ number of complaints resolved per year and C_t is total number of complaints per year; for C25, a maximum criterion, N_{el} =Number of eco-labels related to the use of responsibly exploited resources and N_{elmax} = the number of existing eco-labels.

Criteria from subclass B.2. represent criteria related to the local community and includes criteria in Table6. In the last column of Table 6, one can also see the formulas developed to quantify the company's responses to each of these criteria. a_i, being the value of the enterprise response to criterion Ci, $i = 29\ to\ 34$.

Table 6. Subclass B.2. criteria and their quantification

Criterion statement	Criterion quantification
C29: Community awareness actions regarding the measures that are taken to prevent pollution;	$a_{29} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES \end{cases}$
C30: Technological transfer, research and innovation;	$a_{30} = \frac{N_{ti}}{12},$
C31: Financial support for the local community;	$a_{31} = \frac{S_*}{S},$
C32: Existence of partnerships with local educational institutions, with public institutions;	$a_{32} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES' \end{cases}$
C33: Existence of environmental certificates	$a_{33} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES' \end{cases}$
C34: Implementation of integrated management of the environment, quality and health and safety at work.	$a_{34} = \begin{cases} 0, for\ answer\ NO \\ 1, for\ answer\ YES' \end{cases}$

The notations in Table 6 are as follows: for C30, a maximum criterion, $N_{ti}\ is$ number of annual activities in which the company was involved regarding technological transfer, improvements compared to the number of months in a year; for C31, a maximum criterion, $S_*\ is$ the amount of money offered for awarding some educational activities and for sponsoring some activities with the local community and S=the company's turnover.

An advantage of this KPI is the fact that the most objective answers are proposed, answers that are calculated based on the real data contained in the official documents of the company.

4. Proposed Partial Indicators and Sub-Indicators Evaluation

Based on these responses we obtain an array from which we evaluate sub-indicator J_1, which is named 'working condition indicator'. Because all the values in this array are lying between 0 and 1 we can evaluate J_1 as the weighted average of these values. We have:

$$J_1 = \frac{\sum_{i=1}^{8} w_i a_i}{8} \tag{1}$$

where w_i is the weights associated to each criterion.

In order to establish the coefficients of importance, the opinion of specialists (in the management of social problems) is called upon. They are asked to score the criteria, using a 5-point Likert scale, specifying the score given to their opinion related to how

important the current criterion is in the analysis of the social aspects related to an enterprise: (5 points if the criterion is extremely important, 4 points if it is important, 3 points if its importance is moderate, 2 if it is not so important and 1 if it is not important at all).

If there are n specialists and $s_{ij}, i = \overline{1, n}$, is the score offered by specialist number i, to criterion $C_j, j = \overline{1, m}$, m being the number of criteria for each sub-indicator, then a general score for each criterion is then calculated by summing each specialist score given to that criterion and then converting it to a weight,

$$w_j = \frac{\sum_{i=1}^{n} s_{ij}}{\sum_{j=1}^{m} \sum_{i=1}^{n} s_{ij}}, j = \overline{1, m}. \tag{2}$$

Everywhere in this paper, the weights, or the coefficients of important are evaluate in the same manner.

In a similar mode, we evaluate J_2 and we obtain:

$$J_2 = \frac{\sum_{i=9}^{11} w_i a_i}{3} \tag{3}$$

w_i being the weights associated to each involved criterion, obtained as in (2).

As defined when criteria C6 and C16 are taken into account, the response for each of them is a subunit ratio.

Using criteria C12 - C16 we build sub-indicator J_3, named salary's sub- indicator.

$$J_3 = \frac{\sum_{i=12}^{16} w_i a_i}{5} \tag{4}$$

w_i being the weights associated to each involved criterion, obtained as in (2).

For evaluating J_4, the sub-indicator related to workers health and safety, we need enterprise's responses to criteria related to health and safety at work.

The value of sub-indicator J_4, the sub-indicator related to workers health and safety, can be constructed:

$$J_4 = \frac{\sum_{i=17}^{22} w_i a_i}{6} \tag{5}$$

w_i being the weights associated to each involved criterion, obtained as in (2).

Based on the specialists' opinions we establish weights for each of the sub-indicators we have built, namely for $J_1, J_2 J_3, J_4$. Denoting by $p_i, i = \overline{1,4}$, these weights, we build I_1, the partial indicator relating to the working conditions of employees, with relation:

$$I_1 = \frac{\sum_{i=1}^{4} p_i J_i}{4} \tag{6}$$

The partial indicator I1 focuses on working conditions, well-being and professional development of employees. This indicator shows whether the company treats its employees as a valuable resource, invests in their professional development and provides a safe, fair and motivating working environment.

In an analogous manner, criteria related to the relationship with clients and the local community are used to obtain I_2.

It is based on two sub-indicators K_1, K_2 the first sub-indicator includes aspects related to the relationship with consumers and the second sub-indicator includes aspects related to the relationship with local community.

For K_1 we use criteria C23-C28, and for K_2 we use criteria C29-C34.

We build K₁ as a weighted average value of the mentioned responses:

$$K_1 = \frac{\sum_{i=23}^{28} w_i a_i}{6} \tag{7}$$

We are now able to evaluate sub-indicator $K_2 = \frac{\sum_{i=29}^{34} w_i a_i}{6}$ and then based on K_1 and K_2 we obtain the expression for the partial indicator I_2:

$$I_2 = \frac{K_1 + K_2}{2} \tag{8}$$

The partial indicator I2 refers to how the company fulfils its commitments to consumers and promotes safe, ethical and transparent products/services, as well as how the company contributes to the sustainable development of the community in which it operates.

An ethical and responsible relationship with customers strengthens the trust, loyalty and reputation of the company, being essential for long-term sustainability. The importance of the indicator arises from the fact that a responsible company actively contributes to the well-being of the community, avoiding social conflicts and building a favorable framework for common development.

5. Key Performance Indicator for Social Sustainability of an Enterprise Evaluation

With partial indicators I_1, I_2 an indicator reflecting the social sustainability of an enterprise is developed. It can be used to reflect the concrete results made by the company to contribute to the improvement of the social and living conditions of the employees and the community, without considering how they are perceived.

This key performance indicator for measuring the social sustainability of a company is evaluated as a weighted average of I_1, I_2:

$$I = \frac{\sum_{j=1}^{2} w_j I_j}{\sum_{j=1}^{2} w_j} \tag{9}$$

w_j being the weight of indicator I_j, obtained as in (2).

The weights can be equal at the beginning of the use of this indicator, but can be changed, if necessary, to give a more important role to one or another of the indicators on the basis of which it is evaluated.

In case of equal importance, we have: $I = \frac{I_1 + I_2}{2}$ (10)

Considering the way in which the criteria are formulated, and especially the way they are quantified, the value of this indicator will be in the range $[0,1]$. The higher its value, the more we can say that the enterprise better meets the requirements related to social sustainability.

If evaluating this key performance indicator for different periods of time we can see if the company is acting in the right direction regarding social sustainability or not.

It can also be used to make a hierarchy of some companies regarding the degree to which they satisfy the requirements of one of the three pillars of sustainable development, namely the social one, to highlight companies that implement successful practices in this regard, or to see which are those that require increased efforts.

The proposed indicator can be compared with other indicators following practical studies.

In practical studies, the values provided by the proposed indicator, as well as the partial indicators, can be compared with the scores provided by consulting firms that analyse different aspects related to the social sustainability of companies (such as ESG Bloomberg social sustainability enterprises and others), to see if their values align or differ with those of the other scores.

Also, starting from the fact that the measures taken by companies to improve aspects related to social sustainability must be felt by the beneficiaries and the employees of the company in question, this instrument can be practically validated using employees feedback. Thus, to see if the effects resulting from the adoption of social sustainability measures are in line with the expectations of employees, the results of the indicators can be compared with the result of a direct and anonymous survey of their opinions.

In this sense, a questionnaire can be designed to capture the aspects included in the indicators and, based on the employees' responses to this questionnaire, an overall score can be formulated. This can then be compared with the value of the KPI indicator proposed in the paper.

A concordance of these values shows an increase in employee well-being, an increase in their confidence in the measures adopted towards improving social sustainability, a discrepancy between them may indicate that the measures taken did not have the expected effect, or may reflect the subjectivity of the data provided for the construction of the indicator.

Regarding the weighting system used for the construction of both partial indicators and final, global, indicator, it can be improved, by eliminating the subjectivity of expert evaluation. This can be done, for example, by introducing different techniques and methods for determining these coefficients, borrowed from multicriteria analysis models, or based on artificial intelligence (AI) techniques as algorithms of machine learning.

AI models can effectively be used not only to establish weights but also to predict the value of such an indicator for a company. However, AI can determine weights for predicting such an indicator's value only by learning from a training set of data. Therefore, it is necessary to collect as much data as possible from companies, data that are used in the construction of the partial indicators, because they represents the training data of the AI model. The quality of the training data, and also the complexity of the AI model, influence the effectiveness of weights assignment and so the KPI's value.

6. Conclusion

Social sustainability is not very developed in the specialist articles and therefore this study is part of a new research area related to the assessment of social sustainability. In this work, an integrated indicator that measures and evaluates social sustainability of an enterprise is determined based on 34 criteria.

There are many papers regarding the impact of different actions, changes or improvements that can be done for improving life satisfaction, many papers regarding some criteria which can be used for studying some aspects of social sustainability, some proposed social sustainability indicators for different aspects. However, an instrument to measure a company social sustainability by capturing the multidimensionality of this concept through quantitative evaluations, as objective as possible, for the considered

criteria does not exist. This paper is an important step regarding the development of a practical instrument to measure the social sustainability of an enterprise based mostly on objective quantitative criteria with normalized value answers that allow all criteria to be considered as maximum criteria.

The proposed indicator should be use for the evaluation of the social sustainability of an enterprise. As social sustainability focuses on issues related to the health, safety and satisfaction of the employee, the approach to gender equality and more, this being the engine in attracting the workforce involved and loyal to the company, the indicator proposed here is a multi-metric indicator, which incorporates many aspects related to this subject as: the working conditions, the workers' salaries, the workers' health and safety, the relationship with the customers and with the local community. The most important criteria related to this subject were chosen, were classified into different categories and quantification methods were also proposed, as objective as possible, based on concrete data from the company, for each of them. Some partial indicators and sub-indicators were also evaluated. Each of them highlights the company's position in relation to a certain aspect from those related to social sustainability.

We are convinced that all the considered components are extremely important in the evaluation of the social sustainability of an enterprise, and a tool that can provide the extent to which an enterprise responds to them is particularly useful not only to the managers of the enterprise but also to all the factors involved in the analysis of the way in which an enterprise responds to the requirements of sustainable development.

Through the periodic evaluation of this indicator, it can be seen if the measures adopted by the company's management correspond to the achievement of this objective, and it can also be used to create a hierarchy of various companies in terms of aspects related to their social impact.

We have considered in this paper those aspects that we think to be the most important regarding the social sustainability of companies, but the set of criteria considered here can be completed with other criteria. It is important to establish adequate, objective, quantitative responses to as many of them as possible, with normalized values, in order to obtain a well-defined indicator.

The indicator we propose has a universal character and can be applied even to companies operating in the service sector, with the mention that for some criteria correction factors must be introduced.

This indicator can represent a basis for future works. Future studies can focus not only on making it more comprehensive but also on improving it regarding the modification of the responses to the dual criteria. A possible reformulation of these can transform them into criteria that allow their quantification through well-established formulas, objectively evaluated based on concrete company data.

All these improvements will transform it into a more eloquent indicator and will contribute to increasing its role and importance.

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