



## Measuring Sustainability: A Validation Study of a Triple Bottom Line (TBL) Scale in Portugal

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### Abstract

Studies on sustainability using the Triple Bottom Line (TBL) approach are increasing. However, there is no consensus on how to measure the economic, social, and environmental dimensions of sustainability based on TBL theory. Despite numerous proposals, there is a lack of integrated measures covering all three dimensions simultaneously and having a human-centered approach. This gap is particularly pronounced in Portugal, where no existing scale adequately meets the needs of academics and practitioners. To address this challenge, and based on existing measures that encompass the nature of each TBL dimension, we present and validate a 15-item TBL scale, with 5 items per dimension: economic, social, and environmental. To test convergent validity and contribute to the discussion regarding the links between TBL and Corporate Social Responsibility (CSR), we also analyzed the association between each TBL dimension and each CSR dimension. Using a sample of 635 participants, divided into two independent sub-samples, we conducted comprehensive statistical analyses, including exploratory and confirmatory factor analysis, reliability testing, and convergent and discriminant analysis, followed by invariance testing of the TBL scale. The results suggest that the proposed measure fits the Portuguese sample, and all psychometric results are robust. We also establish the links between the three dimensions of TBL—economic, social, and environmental—and the CSR dimensions, as convergent validity is verified between social TBL and employees' CSR practices. We discuss theoretical and practical implications, as well as limitations and suggestions for future research.

### Keywords:

Sustainability;  
CSR;  
TBL;  
Corporate Social Responsibility;  
Sustainable Development;  
Scale Development;  
Survey-based Research.

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## 1- Introduction

The concept surrounding sustainability remotes to the work of Aristotle, approximately in 400 BC, who stated the need to live in a self-sustaining way, encouraged responsible use of resources, and condemned excessive consumption [1]. The term 'sustainability' is more recent, and it was only in 1987 that the Brundtland Commission (the United Nations's World Commission on Environment and Development) [2] proposed an integrated model that aimed to boost awareness to create and develop integrated strategies to improve economic, social, and environmental systems.

Therefore, sustainable development was defined as a "strategy of social development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [1], comprising three main pillars: economic, social, and environmental. Following this trend, in 1994, Elkington proposed the term TBL (Triple

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Bottom Line) to enhance the need for focusing not only on the economic perspective but also on the social and environmental aspects to achieve sustainable development in nations, societies, and organizations. The economic pillar refers to the need to measure financial profit. The social pillar is focused on measuring impacts on people and communities, and, finally, the environmental pillar concerns impacts on natural resources [1]. This TBL theory is also called the ‘3 Ps’.

In 2015, the United Nations defined 17 Sustainable Development Goals (SDGs) as part of the 2030 Agenda, which is a universal call for action for a global partnership that encourages nations, societies, organizations, and individuals to balance economic interests, environmental needs, and social well-being when making decisions and evaluating their overall performance [3, 4]. Thus, nowadays, organizations are encouraged to broaden their perspective on the repercussions of their operations across various dimensions of their business and overall society. In this sense, organizations' strategies and practices aim to increase this awareness of sustainability in its three dimensions and focus on future generations, as well as integrate these 3 Ps into companies' strategies in the short, medium, and long term [2, 5]. This focus on sustainability also foresees transparency, as it is seen as a necessity [1] that will guarantee high levels of attraction, retention, and reputation.

To ensure transparency, organizations must be capable of measuring and monitoring the results of their sustainable methods. Drawn upon the TBL theory, there is a need to create and organize the existing measuring tools for each TBL pillar—economic, social, and environmental. Considering its broader scope, each pillar offers different opportunities to work on based on scientific and managerial goals. In this sense, some measures are presented as adjusted to different sectors and organizational departments. For instance, Henriquez et al. (2023) [6] presented a systematic review and conceptual model proposal in production research based on TBL; Yip et al. (2023) [7] performed a study applying the TBL to sustainable manufacturing; and Trigo et al. (2023) [8] studied sustainable assessment in the wine sector. Additionally, other authors, such as De Giovanni (2012) [9] and Paulraj et al. (2017) [10], proposed scales to measure TBL dimensions, but the items assumed a high knowledge of business, which not every employee has. An example for the environmental pillar item is “In the last two years, because of implementing better management practices, there have been specific benefits achieved in the following categories: reduction of air emissions” [9]. Some other authors, such as Kurniawati et al. (2023) [11], use secondary data to evaluate TBL dimensions. When searching for multidimensional measures of TBL with a focus on employees' perceptions of the three pillars, results are scarce and confusing. Considering this challenge, Sitko (2023) [1] systematized and critically analyzed a set of academic and practitioner measures for each pillar. The author concluded that “there are many tools we can use to measure sustainability in people management. The amount of choice can be disorienting, and what further complicates the matter is a broader landscape of international sustainability standards”. Looking at the work of Sitko (2023) [1], many independent measures are presented to represent each pillar; however, the proposed measures usually present a large range of items. If organizations need to evaluate the three pillars of sustainability and the sum of the items is high, requiring data collection to be more complex and time-consuming. Thus, based on Sitko's (2023) [1] previous analysis and research on TBL measures comprising a small number of items and presenting a human-centered orientation, no solutions were found.

Additionally, Sitko (2023) [1] also emphasizes that sustainable development depends on different national and regional contexts. Based on Contingency Theory [12], organizations are influenced by internal and external factors, as different contexts can directly influence the dynamization and implementation of sustainability and, consequently, TBL indicators. Therefore, Sitko (2023) [1] discussed the challenges and opportunities affecting sustainability in each regional context. The results regarding Europe suggest different degrees of development. Portugal, together with Spain, Italy, Turkey, Croatia, and others, integrates South-West Europe, as one of the main challenges is the low score regarding communication practices. This result has a major impact on organizations, as the low score on communication practices regarding sustainability may be justified by the lack of tools that are easy to implement to measure, assess, and communicate sustainable indicators both internally and externally. By doing so, organizations will become more transparent, with positive consequences in terms of attraction, retention, and reputation. A simple instrument to evaluate TBL could facilitate this challenge and boost internal and external communication regarding sustainability results.

Regarding Portugal, besides the analysis performed by Sitko (2023) [1], the Sustainable Development Report 2023 performed by Sachs et al. (2023) [13] scored Portugal as a country where “Significant challenges remain” and “Score moderately improving, insufficient to attain the goal”. In addition, a search on Web of Science, EBSCO, and Google Scholar using ‘Triple Bottom Line’ and ‘Portugal’ as keywords, although it increased attention, strengthened the previous statements regarding the small number of alternatives and the lack of consensus regarding how to measure each TBL's dimensions, despite their vital importance. Furthermore, a study by Gomes et al. (2022) [14] suggested that a large part of the practices implemented by the companies focused on their environmental impact, even though the awareness and importance attributed by different stakeholders to the other pillars of sustainability. This conclusion is in line with the international pattern as highlighted by Scuri et al. (2022) [15].

Based on the previous arguments, our work aims to identify an instrument per pillar—economic, social, and environmental—and to validate them as a single TBL's tridimensional instrument for the Portuguese population. By doing so, we aim to propose a simple and small instrument that measures TBL in its three pillars and is capable of being

used in academic research, improving and boosting the theoretical and empirical knowledge regarding sustainability in Portugal, as it will also have important managerial implications. In this regard, by using the proposed instruments, organizations will be able to monitor TBL in an objective, simple, and reliable way.

In addition, the close relationship between Corporate Social Responsibility (CSR) and Sustainability and/or TBL needs further analysis. CSR can be defined as the organizations' obligations to take actions to protect and improve the safety of society along with their own interests [16], which is in line with the framework regarding sustainability. Therefore, we will also analyze the links between CSR and TBL. By doing so, not only will we be able to assess the convergent validity between constructs, but we will also contribute in-depth knowledge relating to this theoretical and managerial discussion.

The study structure unfolds as follows: Following this introductory section, the second part delves into the theoretical background, exploring each TBL dimension and discussing its close relationship to CSR. Afterwards, the method section comprises information regarding the instruments, the data collection procedure, the data analysis procedure, and the sample. After that, the results and discussion sections are presented. Finally, the last section addresses the main conclusions, highlighting its research limitations and practical implications.

## 2- Theoretical Framework

### 2-1- TBL Dimensions

As highlighted by the World Commission on Environment and Development (1987) [2], organizations need to increase awareness and strategically repaginate their sustainable practices and procedures into a forward-thinking framework. This strategic realignment aims to facilitate an effective response to the prevailing landscape, wherein sustainable development is no longer defined only by traditional financial goals [17, 18]. Thus, according to Fauzi et al. (2010) [18], along with generating economic profit, organizations are also responsible for preserving the environment and taking care of society. These elements comprise the TBL theory, which is also often called the three P's - Profit, Planet, and People [17, 19, 20]. Then, the TBL serves as a holistic framework that helps organizations measure and communicate their sustainability efforts, practices, and overall performance in three balanced key areas: economic, social, and environmental [21].

The economic pillar (or Profit based on the 3Ps) assumes that management practices impact financial results and performance [12, 22] as they aim to measure a business's financial profit. Some authors increase the scope of this dimension by analyzing the impact on local, national, and/or international economies [1]. Others use only objective data regarding business profit or through Human Resources metrics such as cost per hire, time to productivity, average time stay or the absenteeism rate [1]. An alternative is also associating the economic dimension with Human Capital as it represents employees' knowledge, skills, and abilities [23]. By doing so, they combined hard and soft data. For instance, Sitko (2023) [1] identified the Saarbruecken formula as a possible indicator for this pillar. It combines objective (hard) data such as average salary with subjective (soft) data like employees' loyalty and motivation. Although it has many strengths, adding an objective (and sometimes) confidential dimension does not fulfill our research goals. In addition, Fauzi et al. (2010) [18] stated that financial performance could be measured using different approaches, such as market-based measures, accounting-based measures, perceptual-based measures, or a human-based approach. It focuses on individuals' subjective judgments about the organization's performance, comparing it with other companies [24, 25]. In this sense, Delaney & Huselid (1996) [26] proposed a measure for organizational performance that enhanced all the previous characteristics, as it comprises items that evaluate employees' perceptions regarding the quality of services, the relationship between the organization and employees, and financial profit. This alternative seems to encompass the different approaches to this pillar, and it is a robust instrument that, although it has been widely used all over the world, is rarely used in Portugal.

The social pillar (or People based on the 3Ps) enhances the close relationship between organizations and their stakeholders, as management practices can boost or undermine individuals' attitudes and behaviors. In this line, Elkington (1997) [27] highlighted that the social pillar aims to improve beneficial and fair organizational practices directed to the employees, and Gallagher [22] defined it as "the holistic focus on the health and well-being of employees, the community, customers, and society at large via initiatives and HR practices". In its summary, Sitko (2023) [1] stated that the social dimension could be measured using different approaches such as employment quality, health management, and positive/negative psychological states, presenting different measures for each approach. The author defined employment quality as the evaluation of the overall quality of the employment experience. Health management comprises employees' physical, mental, and social health, and positive/negative psychological states refer to the willingness to invest energy in employees' work (positive) or the extent to which work interferes with employees' personal lives (negative). Looking at Elkington's (1997) [27] and Gallagher's (2017) [22] definitions, we focused our analysis on the employment quality approach, as it seems the one that covers more dimensions of TBL's social dimension. In this approach, Sitko (2023) [1] presented two alternatives – the Work-Related Quality of Life Scale (WRQoL) and the CIPD Good Work Index. The first is a broad measure and was proposed by Van Laar et al. (2007)

[28]. It is focused on 6 dimensions: general well-being, home-work interface, job and career satisfaction, control at work, working conditions, and stress at work. This measure has been tested in different contexts and countries, and the reliability results are good. Easton and Van Laar (2018) [29] presented an online site with all the information regarding this measure and presented the user manual. The measure is available for non-commercial, educational, and research purposes. Although WRQoL has already been translated to Portuguese, WRQoL2 hasn't been translated to Portuguese yet. The CIPD Good Work Index is composed of seven dimensions such as pay and benefits, employment contracts, work-life balance, job design and nature of work, relationships at work, employee voice, health, and well-being, and comprises 95 items. Considering the CIPD Good Work dimension and availability, we will use WRQoL2 to represent the social dimension of TBL.

Finally, the environmental pillar (or Planet based on the 3Ps) is focused on developing behaviors that do not compromise natural resources for future generations [17]. Gallagher et al. (2018) [22] defined this TBL's dimension as "a commitment to and proactive engagement in waste reduction and energy conservation through activities, policies, and a full life cycle focus on initiatives". Sitko (2023) [1] divided this dimension into three main areas. First, green innovation and creativity focused on the implementation of new sustainable ideas, products, and services. Secondly, Green HRM practices are defined as "the activities developed by the HRM system to increase employees' environmental-supporting behaviors" [30]. Finally, green behaviors are set at an individual level, as employees can develop pro-environmental behaviors that, directly and/or indirectly, are significant for themselves, their organizations, and the planet. In this sense, we will follow this last proposal as it is in line with the notion that TBL's environmental dimension relates to individuals' behaviors towards the environment [2, 3, 22, 31]. Nowadays, there are multiple measures related to pro-environmental individual actions [32–35]. Saeed et al. (2019) [35] measure comprises items from other authors [36–38], as the author proposed a broad instrument that focuses on different facets of pro-environmental behaviors at work.

## ***2-2- TBL and Corporate Social Responsibility***

Although there is no consensus on CSR's definition, Carroll (2015) [39] noted that "modern businesses are expected to do more than make money and obey the law" as "Socially responsible firms make a special effort to integrate a concern for other stakeholders in their policies, decisions, and operations". The author proposed the CSR pyramid, which is comprised of 4 levels that are related to different organizational obligations and opportunities. The author proposes that to achieve full CSR, organizations need to satisfy all levels. The base of the pyramid is the organizations' economic responsibilities, characterized by the economic and financial organizations' responsibilities to be profitable. The next level is related to legal responsibilities, as all organizations need to obey laws and regulations to be able to operate. Both levels are closely related, as society requires both. The society expects the next two levels, as they are not mandatory. Ethical responsibilities are related to doing good and avoiding harm, even when the law does not require such practices. On the top of the pyramid, Carroll [16, 40] presents the philanthropic responsibilities, where the organizations are seen as corporate citizens having the obligation to support the surrounding communities through corporate voluntary and discretionary activities.

It is important to note that the 17 sustainable development goals mentioned above are an ideal framework and should be used to improve CSR practices. According to Fallah Shayan et al. (2022) [4], "as well as addressing the same general objective of CSR, which is the well-being of society, the SDGs focus on tackling the problems of the current and future world".

This framework to understand CSR is closely related to TBL, as Sitko (2023) [1] stated that "When the social responsibility of the organization is framed concerning economic, social, and environmental objectives, this is often referred to as the triple bottom line (TBL)". In this line, Carroll (2015) [39] also addressed the close link between CSR and sustainability, named TBL, as the author stated that one reason could be related to the terminology, as sustainability (through TBL) "does not elicit immediate objections from businesspeople like the term CSR does, which implies trying to pinpoint 'responsibility'". The author reinforces this point of view by saying that maybe, nowadays, organizations are using sustainability as a buzzword to report data related to CSR activities. The CIPD (2022) [41] also reinforces this discussion by stating that when organizations damage in any way the system on which they depend by being nonsocially responsible, they are unsustainable. In this line, the organizational effort on CSR activities could influence the three dimensions of TBL, or, considering Carroll's (2015) [39] statement, TBL and CSR could be the same construct with different names. Based on this, one question arises: Are TBL and CSR associated? We will address this question by testing the convergent validity between constructs and analyzing the correlation between TBL and CSR.

Integrating the TBL approach into organizational practices and working on corporate social responsibility positively influences job candidates through a set of inferences made about the employer brand's internal working conditions. These insights are relevant as HR professionals can take advantage of CSR activities to boost the reputation of the organizational image and increase the attraction of talented, high-potential candidates [42].

### 3- Research Methodology

#### 3-1-Design and Research Flowchart

Our study presents a quantitative, correlational, and cross-sectional research design. Figure 1 presents the flowchart of our research methodology.

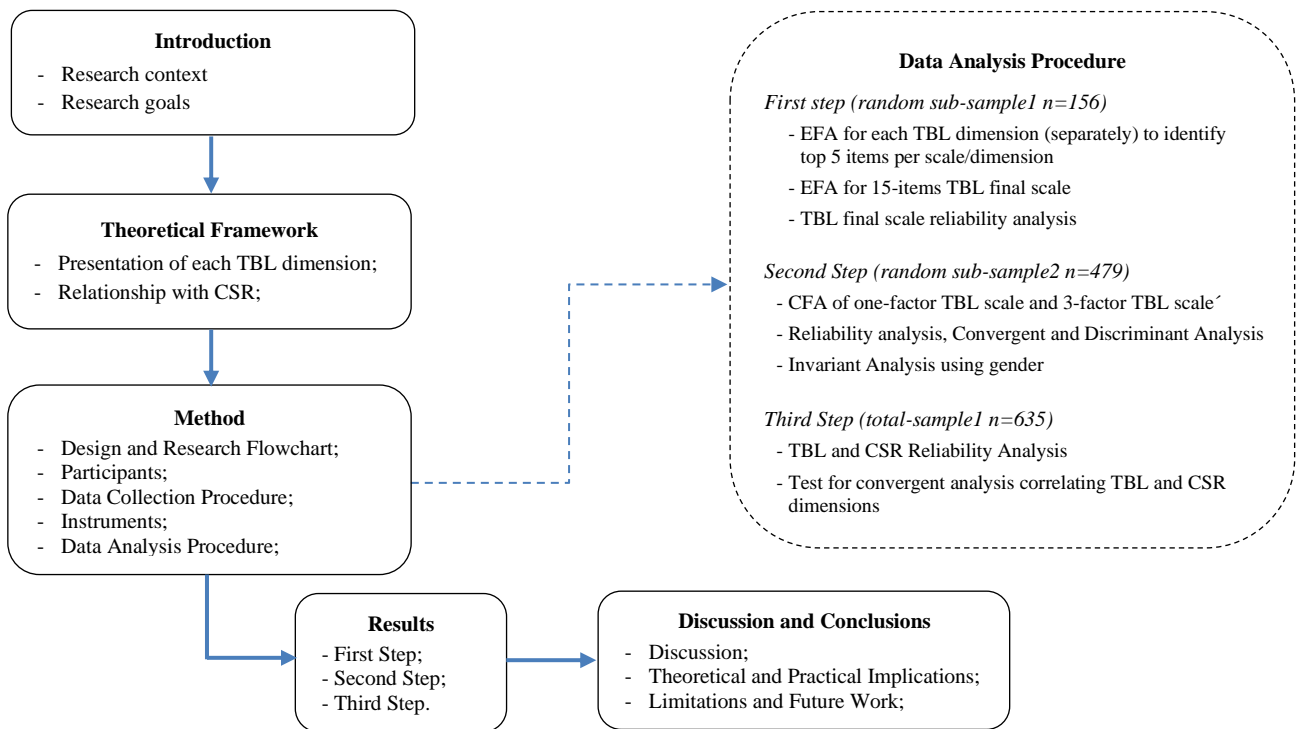


Figure 1. Flow chart of the research methodology

#### 3-2-Participants

Participants (n=635) present ages between 19 and 33 years old ( $M = 33.04$ ;  $SD = 11.22$ ). 52.1% were male and 47.9% were female. In terms of academic qualifications, 19.8% have a high school degree, 32.6% have a bachelor's degree, 7.7% have a postgraduate degree, 37.6% have a master's degree, and 2.2% have a PhD. In terms of tenure, 31.7% have been working in that organization for 1 year, 26.5% for between 1 and 2 years, 15.7% for between three and five years, 11.2% for between 6 and 10 years, and 15% for more than 10 years. 21.6% of participants hold a managerial position, and 20.25% work in the public sector, whereas 74.3% work in the private sector. As for the sector of activity, 10.2% work in the industrial sector, 54% in the services sector, 8.8% in the logistics, distribution, and trade sector, and 26.9% in another type of sector.

#### 3-3-Data Collection Procedure

To translate all scales to Portuguese, we used the translation–retroversion process that was performed by two bilingual translators who also specialized in organizational behavior. Afterwards, all items were assessed by the research team and by specialized practitioners on the research topic.

The questionnaire was available on Qualtrics, and a link was distributed on different channels such as LinkedIn, Facebook, and Email. There was no incentive (cash or otherwise) for answering the survey. We started by presenting the informed consent, and we also assured confidentiality, highlighting that there were no right or wrong answers. We also presented the survey by instrument, randomly organized the items, and used different rating scales [43].

#### 3-4-Instruments

##### *TBL – Economic Dimension*

The economic dimension was assessed using Delaney & Huselid's (1996) [26] measure usually used to measure organizational performance. This measure comprises 11 items addressing different topics related to organizational performance (sample item "How would you compare the organization's performance over the past 3 years with that of other organizations doing the same type of activity, when it comes to the quality of products, services, or programs?") and is asked participants to answer based on a comparison between their organization and others that do the same kind of work. This analysis should consider the last 3 years. We asked participants to answer using a 6-point Likert scale ranging from 1 "Much Worse" to 5 "Much Better", with an additional option of 0 "Not applicable/I don't know anything about it".

### **TBL – Social Dimension**

Social dimension was assessed using the Work-Related Quality of Life Scale-2 (WRQOL-2 scale) improved in 2018 for better psychometric properties [28, 29] which comprises 32 items divided into 7 dimensions: General Well Being (GWB) with 6 items (sample item “*I feel well at the moment*”); Working Conditions (WCS) with 4 items (sample item “*My employer provides me with what I need to do my job effectively*”); Control at Work (CAW) (sample item “*I feel able to voice opinions and influence changes in my area of work*”) with 4 items; Stress at Work (SAW) (sample item “*I often feel under pressure at work*”) with 4 items; Home-Work Interface (HWI) (sample item “*My current working hours/patterns suit my personal circumstances*”) present 4 items; Job Career Satisfaction (JCS) (sample item “*I am satisfied with the career opportunities available for me here*”) present 6 items; Employee Engagement (EEN) with 3 items (sample item “*I would recommend this organisation as a good one to work for*”). The authors added a final item related to the Overall Quality of Working Life (sample item “*I am satisfied with the overall quality of my working life*”). Participants were invited to use a 5-point Likert scale ranging from 1 “Totally Disagree” to 5 “Totally Agree”.

### **TBL – Environmental Dimension**

The environmental dimension was assessed using the pro-environmental behavior at work scale proposed by Saeed et al. (2018) [35]. This measure comprises 16 items (sample item “*At work, I take part in environmentally friendly programs*”) and asked participants to answer using a 6-point Likert scale ranging from 1 “Never” to 5 “Always”, with an additional option of 0 “Not applicable/I don't know anything about it”.

### **Corporate Social Responsibility**

CSR was assessed using an 18-item CSR scale [44] which comprises 4 dimensions. Two items are related to government (sample item “*Our company complies with legal regulations completely and promptly*”), 3 items cover clients (sample item “*Customer satisfaction is highly important for our company*”), 5 items are related to employees (sample item “*Our company policies encourage the employees to develop their skills and careers*”) and 8 items consider the society dimension (sample item “*Our company participates in activities which aim to protect and improve the quality of the natural environment*”). Participants were invited to answer using a 6-point Likert scale ranging from 1 “Totally Disagree” to 5 “Totally Agree”, with an additional option of 0 “Not applicable/I don't know anything about it”.

### **3-5-Data Analysis Procedure**

The data analysis was divided into five steps. First, we performed a set Exploratory Factor Analysis (EFA) using SPSS Statistics 29 (IBM Corp., Armonk, NY., USA). EFA aims to check whether the scale measures the construct it intends to measure and discover its factor structure. To perform the EFA, we used a sub-sample that was extracted randomly from the total sample ( $n = 156$ ). In this first phase, we started by conducting EFA for each TBL dimension. We used the principal components analysis for the extraction of the factor with varimax rotation. We calculated the KMO value, which must be greater than 0.70 [45]. We also determined the average variance extracted, which must be above 50%. Regarding the factor loading of each item, we considered the ones with values above 0.5. For each dimension, we selected the 5 items with higher factor weights, and we also considered the respective average variance extracted. Afterwards, we repeated the EFA procedure using only the 15 items (e.g., 5 items per TBL dimension) to create a TBL measurement. We performed this second EFA to evaluate the factorial structure of this new TBL instrument. The internal consistency of each of the TBL measurement proposals was tested using Cronbach's alpha, which should be greater than 0.70 [46].

For the second phase of data analysis, we used a second sub-sample, also randomly extracted and composed of 479 participants. We conducted two confirmatory factor analyses (CFA) using AMOS Graphics for Windows 29 (IBM Corp., Armonk, NY., USA). The CFA aims to confirm the structure obtained in the EFA. These CFA were related to the 15-item TBL measure; thus, we tested a unidimensional solution and a three-dimensional solution. Following the established recommendations [47], we considered six goodness-of-fit indicators with the respective reference values: Chi-square ratio/degrees of freedom ( $\chi^2/df$ ) should be below 5, the Tucker-Lewis Index (TLI), the Goodness-of-fit Index (GFI), and the Comparative Fit Index (CFI) above 0.9 suggest a good fit, and above 0.80 suggest an acceptable fit. As for the Root Mean Square Error of Approximation (RMSEA) values below 0.08 present a good fit, and the lower the Root Mean Square Residual (RMSR), the better the fit [47, 48]. Afterwards, we verified the construct reliability for each of the scale's dimensions, which assesses the precision and consistency of measurement of each dimension and whose value should be higher than 0.70. Convergent validity aims to check whether the items in each dimension converge to the dimension to which they belong. Convergent validity was tested through the Average Variance Extracted (AVE), which should be greater than 0.50 [49]. Nonetheless, if Cronbach's alpha value is greater than 0.70, AVE values greater than 0.40 are acceptable, indicating good convergent validity [50]. Concerning discriminant validity, the value of the square root of the AVE should be above the value of the correlation between the factors [49, 51], indicating that the dimensions are not significantly correlated, i.e., that they are not multicollinear. We also performed an invariance analysis of the TBL measure using gender as two independent groups to indicate whether the construct is interpreted similarly by female and male participants.

In the third step, we used the total sample (n=635), and we tested the convergent validity by comparing the TBL measure with the CSR measure as different authors discussed their close relationship [1, 39, 52, 53].

For the fourth step, with all the participants, item sensitivity was tested. The items should have responses at all the response points; the median must not be close to one of the extremes; and the absolute values of asymmetry and kurtosis must be below 2 and 7, respectively [54]. As for the fifth and final step, descriptive statistics are presented for all the variables under study.

## 4- Results

### 4-1- First Step – Exploratory Factor Analysis

Initially, we performed an EFA for each TBL dimension to identify the top 5 items per scale. Regarding the economic dimension, results suggested a KMO of 0.887 with a Bartlett's test of sphericity of  $p < 0.001$ . The solution presented 51.4% of the explained variance, and factor loading varied between 0.71 and 0.83. As for the environmental dimensions, results pointed to a KMO of 0.89 (Bartlett's sphericity test  $p < 0.001$ ), with the first factor explaining 37.9% of the variance. Factor loadings regarding environmental dimension scored between 0.34 and 0.75. The social dimension presented a KMO of 0.95 (Bartlett's sphericity test  $p < 0.001$ ), with the first factor explaining 39% of the variance. For this dimension, factor loadings ranged between 0.32 and 0.85.

We then repeated the procedure using the 15 items, which comprised the top 5 items per TBL scale. We obtained a KMO of 0.82, which is considered good [45], confirming that this instrument measures the construct it is intended to measure. Bartlett's test of sphericity was significant at  $p < 0.001$ , which is an acceptable value to carry on with the analysis. This value is also a marker that the data comes from a normal multivariate population [55]. Results suggest that factor structure is based on three factors that explain about 70% of the scale's total variability. This value is above 0.50, considered the minimum acceptable value. All the items have weights equal to or greater than 0.50 (Table 1). Regarding internal consistency, all three dimensions have Cronbach's alpha values above 0.80, which indicates good internal consistency (Table 1). This value is higher than the minimum acceptable value in organizational studies, which is 0.70 [46]. Therefore, the dimensions of this instrument measure the construct precisely and consistently.

**Table 1. Cronbach's alpha and factor loadings for each one of the TBL's dimensions**

| Item  | Factor* |      |      |
|---|---------|------|------|
|   | 1       | 2    | 3    |
| Cronbach Alpha  | 0.92    | 0.83 | 0.91 |
| My employer provides me with what I need to do my job effectively.<br>A minha entidade patronal disponibiliza-me tudo o que preciso para realizar o meu trabalho eficazmente.                     | 0.79    | 0.11 | 0.11 |
| The organisation communicates well with its employees.<br>A organização comunica bem com os seus colaboradores.   | 0.84    | 0.18 | 0.02 |
| I am proud to tell others that I am part of this organization.<br>Tenho orgulho em dizer a outras pessoas que faço parte desta organização.   | 0.84    | 0.18 | 0.02 |
| I would recommend this organisation as a good one to work for.<br>Recomendaria esta organização como um bom local para trabalhar.   | 0.92    | 0.14 | 0.13 |
| I am satisfied with the overall quality of my working life.<br>De forma geral, estou satisfeito(a) com a qualidade da minha vida profissional.  | 0.89    | 0.08 | 0.11 |
| I share my knowledge about the environment with co-workers.<br>Partilho o meu conhecimento sobre o ambiente com os meus colegas.  | 0.16    | 0.06 | 0.59 |
| I suggest new practices that could improve the environmental performance of my organization.<br>Sugiro novas práticas que podem aumentar o desempenho ambiental da minha organização.             | 0.12    | 0.24 | 0.53 |
| I adequately complete assigned duties in environmentally friendly ways.<br>Eu completo adequadamente as tarefas que me são propostas, de forma amiga do ambiente.                                 | 0.02    | 0.13 | 0.84 |
| I fulfill responsibilities specified in my job description in environmentally friendly ways.<br>Eu cumpro as responsabilidades constantes no meu descritivo funcional de forma amiga do ambiente. | 0.01    | 0.15 | 0.86 |
| I perform tasks that are expected of me in environmentally friendly ways.<br>Eu desempenho as tarefas que são esperadas de mim de forma amiga do ambiente.  | 0.03    | 0.13 | 0.90 |
| Development of new products, services, or programs<br>Ao desenvolvimento de novos produtos, serviços ou programas   | 0.07    | 0.77 | 0.25 |
| Ability to attract essential employees<br>À capacidade para atrair colaboradores-chave  | 0.11    | 0.88 | 0.13 |
| Ability to retain essential employees<br>À capacidade para reter colaboradores-chave  | 0.23    | 0.84 | 0.19 |
| Satisfaction of customers or clients<br>À satisfação de consumidores ou clientes  | 0.05    | 0.83 | 0.15 |
| Relations between management and other employees<br>Às relações entre a gestão e outros colaboradores   | 0.25    | 0.82 | 0.05 |

\* Factor 1 – Social dimension; Factor 2 – Environmental dimension; and Factor 3 – Economic dimension.

#### 4-2-Second Step – Confirmatory Factor Analysis

We then performed two CFAs, one with a one-factor structure and the other with a three-factor structure. The goodness of fit indices for the one-factor CFA were not adequate ( $\chi^2/df = 12.84$ ; CFI = 0.71; GFI = 0.75; TLI = 0.65; RMSR = 0.94; RMSEA = 0.32). The goodness of fit indices obtained in the three-factor CFA are adequate ( $\chi^2/df = 1.67$ ; CFI = 0.96; GFI = 0.91; TLI = 0.96; RMSR = 0.09; RMSEA = 0.04). All items have factor weights above 0.40 (Table 2). These results confirm the presence of three factors since the fit indices of the three-factor model are adequate, which is not the case with the one-factor model.

**Table 2. Factor weights for each one of the TBL's dimensions items**

| Dimension     | Item   | Factor weights |
|---------------|--|----------------|
| Social        | My employer provides me with what I need to do my job effectively.<br>A minha entidade patronal disponibiliza-me tudo o que preciso para realizar o meu trabalho eficazmente.                    | 0.53           |
|               | The organization communicates well with its employees.<br>A organização comunica bem com os seus colaboradores.  | 0.68           |
|               | I am proud to tell others that I am part of this organization.<br>Tenho orgulho em dizer a outras pessoas que faço parte desta organização.  | 0.85           |
|               | I would recommend this organization as a good one to work for.<br>Recomendaria esta organização como um bom local para trabalhar.  | 0.88           |
|               | I am satisfied with the overall quality of my working life.<br>De forma geral, estou satisfeito(a) com a qualidade da minha vida profissional.   | 0.75           |
| Environmental | I share my knowledge about the environment with co-workers.<br>Partilho o meu conhecimento sobre o ambiente com os meus colegas.   | 0.40           |
|               | I suggest new practices that could improve the environmental performance of my organization.<br>Sugiro novas práticas que podem aumentar o desempenho ambiental da minha organização.            | 0.42           |
|               | I adequately complete assigned duties in environmentally friendly ways.<br>Eu completo adequadamente as tarefas que me são propostas, de forma amiga do ambiente.                                | 0.88           |
|               | I fulfil responsibilities specified in my job description in environmentally friendly ways.<br>Eu cumpro as responsabilidades constantes no meu descritivo funcional de forma amiga do ambiente. | 0.85           |
|               | I perform tasks that are expected of me in environmentally friendly ways.<br>Eu desempenho as tarefas que são esperadas de mim de forma amiga do ambiente.                                       | 0.94           |
| Economic      | Development of new products, services, or programs<br>Ao desenvolvimento de novos produtos, serviços ou programas  | 0.74           |
|               | Ability to attract essential employees<br>À capacidade para atrair colaboradores-chave   | 0.75           |
|               | Ability to retain essential employees<br>À capacidade para reter colaboradores-chave   | 0.64           |
|               | Satisfaction of customers or clients<br>À satisfação de consumidores ou clientes   | 0.68           |
|               | Relations between management and other employees<br>Às relações entre a gestão e outros colaboradores  | 0.72           |

As far as construct reliability is concerned, all the dimensions have Cronbach alphas above 0.80, indicating good construct reliability (Table 3). Regarding convergent validity, the social and environmental dimensions presented values above 0.50, which indicates good convergent validity (Table 3) [49]. The economic dimension showed a value slightly below 0.50 (Table 3). However, because Cronbach's alpha value for this dimension is above 0.70, we can conclude that we have good convergent validity [50].

**Table 3. Cronbach alphas and convergent validity for each one of the TBL's dimensions**

| Dimension     | Number of Items | Cronbach Alpha | CR   | AVE  |
|---------------|-----------------|----------------|------|------|
| Social        | 5               | 0.92           | 0.87 | 0.57 |
| Environmental | 5               | 0.83           | 0.84 | 0.55 |
| Economic      | 5               | 0.91           | 0.82 | 0.49 |

Regarding discriminant validity, all values of the square root of the AVE are higher than the value of the correlation between the factors, which indicates good discriminant validity (Table 4). These values indicate that the three TBL dimensions are not significantly correlated, i.e., that they are not multicollinear.

**Table 4. Values of the square root of AVE - discriminant validity - for each TBL dimension**

|                  | 1      | 2      | 3      |
|------------------|--------|--------|--------|
| 1. Social        | (0.75) |        |        |
| 2. Environmental | 0.21** | (0.74) |        |
| 3. Economic      | 0.44** | 0.27** | (0.70) |

Note. \*\* p < 0.01



The invariance analysis of the TBL measure was performed by comparing two independent groups: female and male participants. We then compared the free model (with factor weights and free factor variances/covariances) with the constrained model where the factor weights and variances/covariances of the two groups were fixed. The two models' significance was measured using the Chi-Square test [56]. The constrained model, with factor weights and fixed variances/covariances in the two groups, did not show a significantly worse fit than the model with free parameters ( $\Delta\chi^2(12) = 17.77$ ;  $p = 0.123$ ). It was also found that the intercepts were invariant between female and male participants ( $\Delta\chi^2(6) = 9.29$ ;  $p = 0.158$ ), indicating that we are dealing with a strong invariant model. Thus, the invariance of the factor model between male and female participants is demonstrated.

#### 4-3-Third Step – Convergent Validity Regarding CSR

In this third step, we used the total sample ( $n=635$ ) to correlate the TBL measure with the CSR measure. We aimed to analyze convergent validity in comparison to CSR and to contribute to the discussion regarding the close relationship between TBL and CSR. To do that, we started by verifying the internal consistency of each of the TBL and CSR dimensions, using the total sample. For the TBL scale, results are in line with previous ones as reliability is assured. The same pattern is found on the CSR scale, as all four dimensions presented good internal consistency.

Results regarding the correlation between TBL and CSR dimensions are interesting as convergent validity is confirmed for the strong association between the TBL Social dimension and CSR\_Employees dimension ( $r=0.73$ ,  $p < 0.05$ ) as both dimensions are related to employee's perceptions of their work. Contrarily, the other dimensions, although significantly associated, present medium-low levels of correlation, suggesting that there are differences between both constructs (Table 5). As such, these results suggest that the close link between TBL and CSR may be through the social pillar that is highly associated with CSR\_Employees as both evaluate employees' perceptions of their work.

**Table 5. Correlations between the dimensions of TBL and CSR**

|                       | 1.1    | 1.2    | 1.3    | 2.1    | 2.2    | 2.3    | 2.4    |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| 1.1 TBL_Social        | (0.88) |        |        |        |        |        |        |
| 1.2 TBL_Environmental | 0.20** | (0.84) |        |        |        |        |        |
| 1.3 TBL_Economic      | 0.35** | 0.28** | (0.85) |        |        |        |        |
| 2.1 CSR_Society       | 0.36** | 0.47** | 0.35** | (0.88) |        |        |        |
| 2.2 CSR_Employees     | 0.74** | 0.22** | 0.43** | 0.47** | (0.84) |        |        |
| 2.3 CSR_Clients       | 0.39** | 0.18** | 0.32** | 0.21** | 0.43** | (0.79) |        |
| 2.4 CSR_Government    | 0.32** | 0.25** | 0.35** | 0.25** | 0.31** | 0.40** | (0.85) |

#### 4-4-Fourth Step – Sensitivity of the Items

To test the sensitivity of the items, we calculated the minimum, maximum, and median, as well as the asymmetry and kurtosis values. All items have responses at all points, and no item has a median close to one of the extremes. As for the absolute values of skewness and kurtosis, they are below 2 and 7, respectively, for all the items in the three dimensions considered, which indicates that they do not grossly violate normality [54] (Table 6). It can be concluded that the items discriminate between subjects.

**Table 6. Median, Minimum, Maximum, Asymmetry and Kurtosis of each item**

|     | Median | Skewness | Std. Error of Skewness | Kurtosis | Std. Error of Kurtosis | Minimum | Maximum |
|-----|--------|----------|------------------------|----------|------------------------|---------|---------|
| S_1 | 4.00   | -0.87    | 0.10                   | -0.20    | 0.19                   | 1       | 5       |
| S_2 | 4.00   | -0.35    | 0.10                   | -1.10    | 0.19                   | 1       | 5       |
| S_3 | 4.00   | -0.58    | 0.10                   | -0.26    | 0.19                   | 1       | 5       |
| S_4 | 4.00   | -0.66    | 0.10                   | -0.57    | 0.19                   | 1       | 5       |
| S_5 | 4.00   | -0.73    | 0.10                   | -0.34    | 0.19                   | 1       | 5       |
| A_1 | 3.00   | -0.20    | 0.10                   | -0.57    | 0.19                   | 0       | 5       |
| A_2 | 2.00   | 0.19     | 0.10                   | -0.64    | 0.19                   | 0       | 5       |
| A_3 | 4.00   | -1.34    | 0.10                   | 0.89     | 0.19                   | 0       | 5       |
| A_4 | 4.00   | -1.14    | 0.10                   | 0.19     | 0.19                   | 0       | 5       |
| A_5 | 4.00   | -1.24    | 0.10                   | 0.57     | 0.19                   | 0       | 5       |
| E_1 | 3.00   | -0.88    | 0.10                   | -0.20    | 0.19                   | 0       | 5       |
| E_2 | 3.00   | -0.47    | 0.10                   | -0.58    | 0.19                   | 0       | 5       |
| E_3 | 3.00   | -0.34    | 0.10                   | -0.64    | 0.19                   | 0       | 5       |
| E_4 | 3.00   | -1.02    | 0.10                   | 0.21     | 0.19                   | 0       | 5       |
| E_5 | 3.00   | -0.72    | 0.10                   | -0.34    | 0.19                   | 0       | 5       |

\* S – Social dimension; A – Environmental dimension; and E – Economic dimension

#### 4-5-Fifth Step – Descriptive Statistics for the Variables under Study

Lastly, descriptive statistics (Table 7) suggest that participants' answers were significantly above the scale's central point (3), which indicates that they positively evaluate TBL's social dimension. The same pattern is presented for participants' perceptions regarding their pro-environmental behaviors at work (TBL's environmental dimension). The participant's evaluation regarding the economic dimension seems to be close to the central point of the scale.

**Table 7. Descriptive statistics of all three TBL's dimensions**

| Dimension (pillar) | t     | p       | d    | Mean | SD   |
|--------------------|-------|---------|------|------|------|
| Social             | 16.55 | < 0.001 | 0.66 | 3.64 | 0.98 |
| Environmental      | 14.51 | < 0.001 | 0.58 | 3.16 | 1.14 |
| Economic           | 7.85  | < 0.001 | 0.58 | 2.87 | 1.17 |

Note. \*\*\* p < 0.001

## 5- Discussion

The goal of this study was to validate for the Portuguese population a small, practical, and robust instrument to measure TBL on its three dimensions – Social, Environmental, and Economic. Previous literature on this topic has been disorienting and has little consensus [1]. Particularly in Portugal, no validated instruments were found to fulfill our needs. To achieve this goal, we started by identifying one instrument per TBL dimension that was in line with its nature and assumptions. We then performed a set of statistical analyses to identify the top 5 items for each dimension to create a single instrument that comprises all three dimensions.

The EFA confirmed the presence of three factors, each one related to the TBL's dimension. We obtained a KMO of 0.82, which is considered good [45]. All the items presented factor weights equal to or above 0.50, and the total variance explained was 70.43%, which is higher than the minimum acceptable value of 50%. All the dimensions of this scale have Cronbach's alpha values above 0.80, which indicates good internal consistency.

Following the EFA, the CFA reinforced the obtained results as confirmed by a three-factor factorial structure. The fit indices obtained are adequate. The same pattern was found in the CFA, as the factor weights are all higher than 0.40. As far as convergent validity is concerned, although the economic dimension has an AVE value slightly below 0.50, the minimum acceptable value for good convergent validity [49], this dimension presented a Cronbach's alpha value above 0.70. Thus, according to Hair et al. (2011) [50], it can also be concluded that we have good convergent validity. The square root of the AVE values is higher than the correlation values between the factors, which indicates the existence of good discriminant validity. As far as construct reliability is concerned, all the dimensions have a construct reliability higher than 0.80. The invariance of the factor model between male and female participants was demonstrated, and it was also proven that we are dealing with a model of strong invariance.

Our second goal was to contribute to the discussion regarding the potential links between CSR and TBL [1, 39, 52, 53], as we use CSR to also verify convergent validity between constructs. Results suggested that two TBL and CSR, social and employees, respectively, are, in fact, strongly associated, confirming convergent validity between them. The associations between the other dimensions are positive and significant, but with intensities below 0.7. This result is in line with the theoretical discussion [1, 39, 52, 53] that emphasizes the close links between constructs as the social pillar of sustainability is based on the efforts regarding CSR orientated to the employees. Not only we can perceive Social TBL as CSR orientated to employees, but we can also foresee that implementing practices to foster social sustainability will repercuss also in CSR orientated to the employees. Future works should deepen this relationship, focusing on the impacts of one another, as recent studies have not yet reached a consensual agreement. For instance, Ortiz-Martínez et al. (2023) [57] established the influence of sustainability on CSR. However, the authors did not consider the three pillars of sustainability, nor the four dimensions proposed by Tucker (2009) [44]. In another line, Mendes et al.'s (2023) [53] results suggested that CSR efforts led to firms' innovation and business cooperation, as the authors suggest that CSR should include social, economic, and environmental programs. In this case, there is a clear overlap between CSR and TBL.

Regarding the sensitivity of the items, it is relevant to note that the results obtained allow us to identify how the scale items, in their three dimensions, manage to capture a wide range of responses, with no items with extreme responses. Considering the averages of the responses in the different dimensions, they seem to indicate that the participants in the study positively evaluate the organization where they work concerning the social dimension of the TBL. The same applies to the environmental dimension, where the average of the answers given is above the central point, indicating a favorable perception of the individual's adoption of pro-environmental behaviors in the workplace. In the economic dimension, the average of the data is also close to the central point of the response scale.

## 6- Theoretical and Managerial Implications

This study poses both theoretical and managerial implications that need to be highlighted. Concerning the theoretical implications, we have contributed to the existing literature on organizational sustainability, on the conceptual framework of TBL, since we have proposed a measure for multilevel assessment of organizational performance in the social, environmental, and economic pillars, adapted and validated for the Portuguese population. Although the validation is for Portugal, other countries and cultural settings may use it and validate it for their contexts. As Sitko (2023) [1] stated and the Sustainable Development Report (2023) reinforced, there are other countries and regions with similar sustainable challenges; thus, the proposed scale may be a useful instrument for them as well. Because this scale is also relevant for cross-cultural comparison, not only does it allow other researchers to use it and make the respective adaptations and validations to their contexts of origin, but it can also favor comparisons of how the same variables can manifest themselves differently in different contexts.

Regarding managerial implications, this study sheds light on how organizations can embed sustainable practices and initiatives into their organizational culture, as well as into their decision-making and strategy formulation processes, which will put them on the path to sustainability and bring them closer to more promising results in the social, environmental, and economic domains.

The validation of a scale integrating the different pillars of sustainability, based on the triple bottom line approach and adapted to the context of the Portuguese population, is an advantageous tool for organizations, as it enables them to measure their performance in the various dimensions previously stated—social, environmental, and economic—and thus identify, on the one hand, which pillar(s) are contributing more positively or negatively to the organization's overall performance (and perception of that performance) and, in this way, intervene in a more targeted way. On the other hand, but equally relevant, the output of this study allows organizations to understand, within each dimension, which sustainable practices, initiatives, or policies have a positive impact on stakeholders' perceptions and the results obtained in the respective category, as well as those that need to be rethought and/or improved. One example of how this tool can be used by organizations is to assess the impact of specific sustainable actions, procedures, or politics. Organizations may collect data before and after the action, verifying its impact on the three pillars of sustainability. Such actions may affect different sectors and departments, as this tool presents a broad scope, allowing its application in different areas.

During the past few decades, there has been a shift in the paradigm surrounding sustainability and its challenges, compelling organizations, as economic agents, to harmonize their objectives and business decisions with the imperative of fostering a progressively sustainable global environment [17]. Arowoshegbe et al. (2016) [17] propose that an organization whose mission is geared towards sustainability cannot just make this claim without concrete actions that support this sustainable goal and commitment. It is in this sense that the TBL approach becomes fundamental, as it allows for a comprehensive and holistic assessment of organizational sustainability [58], identifying the areas in which the efforts and practices implemented by the organization are successful as well as those that represent opportunities for improvement [17].

Finally, we believe that this scale, in addition to its applicability as an assessment tool, can also be used as a strategic guide for organizations for continuous improvement from a long-term perspective. One way to operationalize this perspective is to use the proposed tool to regularly analyze the effectiveness of the practices and policies implemented towards an organization's sustainability development. In the same vein, as a validated instrument that aims to help organizations report the perceived outcomes on the three pillars of sustainability, organizations have an immediate tool that can be used to report sustainable results, increasing transparency toward their employees or external stakeholders. By doing so, organizations' efforts toward sustainability boost their reputation as a transparent and credible organization in the field of sustainability. As discussed in previous studies [4, 19, 42], the sustainability of organizations and corporate responsibility practices not only benefit the organization in terms of its financial performance but also help to promote customer trust and loyalty, purchase intentions and acquisition of products and services, job-seeker attraction, brand reputation, and competitive advantage.

## 7- Conclusion

Although work on sustainability in different organizational settings is increasing, many challenges remain. Not all studies comprise the three dimensions of sustainability, and there is no consensus on how to measure sustainability as some alternatives are organizational-centered, are too long or use secondary data. As Sitko (2023) [1] stated, there are many tools we can use to measure sustainability with a human-centered approach, as the alternatives can be disorienting. Besides that, the proximity between academia and organizations can help them improve their sustainable efforts through a measure that is easy to apply and can be used by organizations to evaluate their efforts. Portugal is no exception, as research on sustainability is a must to help the country and its organizations answer these challenges. Drawing upon the TBL Theory, the present study presents two main goals. Firstly, to propose and validate a small and easy-to-apply measure for the three pillars of sustainability. Secondly, to verify convergent validity and to contribute to the discussion

regarding the close links between TBL and CSR, we tested the associations between the three dimensions of TBL—economic, social, and environmental—and the four dimensions of CSR—employees, clients, government, and society. Based on previous measures that were already identified as capable of measuring each pillar, we reduced them and proposed a TBL 15-item scale, 5-item per dimension, that can be used by academics and practitioners. To validate our proposal, we used a sample of 635 workers from Portugal, as this measure can also be validated in other countries. The validation results confirm the robustness of the proposed scale. Regarding our second goal, convergent validity was confirmed for the association between social TBL and CSR towards employees, as this last dimension could also be used to measure the social results of sustainability.

### ***7-1-Limitations and Future Work***

As for the limitations and future work proposals, even though this research has important strengths, some need to be emphasized.

Firstly, all the measures reflect employees' perceptions of their workplaces, which may mean that the information obtained is incorrect or incomplete and does not illustrate the reality of the sustainability of the practices adopted by the respective organizations. Although the confidentiality of the study participants was guaranteed, we assume that respondents may not have sufficient data/knowledge about the organization's sustainable efforts and initiatives and the results obtained at different levels, which may have led to inaccurate responses. However, it would be interesting if the perceptions of other relevant stakeholders were also assessed in future studies.

It is important to note that the items in the environmental dimension are focused on the individual and the adoption of eco-friendly behaviors, and do not reflect the sustainable practices implemented by the organization itself. Nevertheless, all organizations take a crucial role in promoting, through green human resources management practices (GHRM), more responsible attitudes and behaviors in the workplace, as these will contribute to the organization becoming more conscious, sustainable, and aligned with SDSs aimed at preserving the environment.

In addition, since the data was only collected in Portugal, the results and conclusions set out here can only be interpreted and understood considering the characteristics and particularities of our country with a typically Western culture. The cross-cutting nature of the data collection, although not a limitation to the purpose of our study, may be an aspect to be reconsidered in further research, to apply this instrument longitudinally, measuring the effectiveness of sustainable interventions, practices, and policies after identifying gaps and redefining objectives compared to initial evaluation moments.

## **8- Declarations**

### ***8-1-Author Contributions***

Conceptualization, A.S. and F.C.; methodology, A.S.; software, M.P.C. and A.M.; validation, A.S.; formal analysis, A.M. and M.P.C.; investigation, F.C.; resources, A.S.; data curation, F.C.; writing—original draft preparation, M.P.C. and A.M.; writing—review and editing, A.S. and F.C.; visualization, F.C.; supervision, A.S.; project administration, A.S.; funding acquisition, A.S. All authors have read and agreed to the published version of the manuscript.

### ***8-2-Data Availability Statement***

The data presented in this study is contained within the article.

### ***8-3-Funding***

This study is part of a research project that received external funding by FCT - Foundation for Science and Technology, under the reference FCT/UIDB/05299/2020.

### ***8-4-Institutional Review Board Statement***

Not applicable.

### ***8-5-Informed Consent Statement***

Informed consent was obtained from all subjects involved in the study.

### ***8-6-Conflicts of Interest***

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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## Appendix I

### *The Triple Bottom Line (TBL) Multidimensional Scale (Portuguese-Translated Items)*

#### **Social Dimension**

Based on Work-Related Quality of Life Scale-2 (WRQOL-2 scale) “Van Laar et al. (2007) [28]”.

EN: Below you can find some statements about your perception of the conditions and opportunities offered to you in your organization. Please indicate how much you disagree/agree with each of them.

*PT: Abaixo encontram-se algumas afirmações a respeito da sua percepção das condições e oportunidades que lhe são proporcionadas na sua organização. Indique qual o seu grau de discordância/concordância com cada uma delas.*

EN: 5-point Likert scale: 1 = “totally disagree”, 2 = “disagree”, 3 = “neither agree nor disagree”, 4 = “agree”, 5 = “totally agree”.

*PT: Escala Likert de 5 pontos: 1 = “discordo totalmente”, 2 = “discordo”, 3 = “não concordo nem discordo”, 4 = “concordo”, 5 = “concordo totalmente”.*

1. My employer provides me with what I need to do my job effectively.
1. *A minha entidade patronal disponibiliza-me tudo o que preciso para realizar o meu trabalho eficazmente.*
2. The organisation communicates well with its employees.
2. *A organização comunica bem com os seus colaboradores.*
3. I am proud to tell others that I am part of this organization.
3. *Tenho orgulho em dizer a outras pessoas que faço parte desta organização.*
4. I would recommend this organisation as a good one to work for.
4. *Recomendaria esta organização como um bom local para trabalhar.*
5. I am satisfied with the overall quality of my working life.
5. *De forma geral, estou satisfeito(a) com a qualidade da minha vida profissional.*

#### **Environmental Dimension**

Based on Pro-environmental Behavior at Work Scale “Saeed et al. (2018) [35]”.

EN: Considering the following statements, please indicate how often you adopt the different ecological behaviors in your workplace.

*PT: Tendo em conta as seguintes afirmações, por favor indique o grau de frequência com que adota os diferentes comportamentos ecológicos no seu local de trabalho.*

EN: 6-point Likert scale: 1 = “never”, 2 = “rarely”, 3 = “occasionally”, 4 = “often”, 5 = “always”, 6 = “not applicable”.

*PT: Escala Likert de 6 pontos: 1 = “nunca”, 2 = “raramente”, 3 = “ocasionalmente”, 4 = “frequentemente”, 5 = “sempre”, 6 = “não aplicável”.*

1. I share my knowledge about the environment with co - workers.
1. *Partilho o meu conhecimento sobre o ambiente com os meus colegas.*
2. I suggest new practices that could improve the environmental performance of my organization.
2. *Sugiro novas práticas que podem aumentar o desempenho ambiental da minha organização.*
3. I adequately complete assigned duties in environmentally friendly ways.
3. *Eu completo adequadamente as tarefas que me são propostas, de forma amiga do ambiente.*
4. I fulfil the responsibilities specified in my job description in environmentally friendly ways.
4. *Eu cumpro as responsabilidades constantes no meu descritivo funcional de forma amiga do ambiente.*
5. I perform tasks that are expected of me in environmentally friendly ways.
5. *Eu desempenho as tarefas que são esperadas de mim de forma amiga do ambiente.*



### Economic Dimension

Based on the Perceived Organizational Performance Scale “Delaney & Huselid's (1996)” [26].

EN: Considering the statements below, how would you compare your organization's performance over the last 3 years with that of other organizations doing the same type of activity, when it comes to the...

PT: *Considerando as afirmações apresentadas de seguida, como compararia o desempenho da sua organização nos últimos 3 anos com o de outras organizações que fazem o mesmo tipo de atividade, no que diz respeito...*

EN: 6-point Likert scale: 1 = “much worse”, 2 = “worse”, 3 = “no difference”, 4 = “better”, 5 = “much better”, 6 = “not applicable/don't have enough knowledge on the subject”.

PT: *Escala Likert de 6 pontos: 1 = “muito pior”, 2 = “pior”, 3 = “idêntico”, 4 = “melhor”, 5 = “muito melhor”, 6 = “não aplicável/não tenho conhecimento sobre o tema”.*

1. Development of new products, services, or programs?  
*1. Ao desenvolvimento de novos produtos, serviços ou programas?*
2. Ability to attract essential employees?  
*2. À capacidade para atrair colaboradores-chave?*
3. Ability to retain essential employees?  
*3. À capacidade para reter colaboradores-chave?*
4. Satisfaction of customers or clients?  
*4. À satisfação de consumidores ou clientes?*
5. Relations between management and other employees?  
*5. Às relações entre a gestão e outros colaboradores?*

### Corporate Social Responsibility (CSR)

Based on CSR Scale “Turker (2009) [44]”.

EN: Please answer the following statements considering the social responsibility activities and practices adopted by the organization where you work. Please indicate your level of disagreement/agreement with each of them.

PT: *Responda às seguintes afirmações tendo em conta as atividades e práticas de responsabilidade social adotadas pela organização onde trabalha. Indique o seu nível de discordância/concordância para cada uma delas.*

EN: 6-point Likert scale: 1 = “totally disagree”, 2 = “disagree”, 3 = “neither agree nor disagree”, 4 = “agree”, 5 = “totally agree”, 6 = “not applicable/don't have enough knowledge on the subject”.

PT: *Escala Likert de 6 pontos: 1 = “discordo totalmente”, 2 = “discordo”, 3 = “não concordo nem discordo”, 4 = “concordo”, 5 = “concordo totalmente”, 6 = “não aplicável/não tenho conhecimento sobre o tema”.*

### Dimension CSR to Society

1. Our company participates in activities which aim to protect and improve the quality of the natural environment.  
*1. A nossa organização participa em atividades que visam proteger e melhorar a qualidade do meio ambiente.*
2. Our company makes investments to create a better life for future generations.  
*2. A nossa organização faz investimentos para criar uma vida melhor às gerações futuras.*
3. Our company implements special programs to minimize its negative impact on the natural environment.  
*3. A nossa organização implementa programas especiais para minimizar os seus impactos negativos no meio ambiente.*
4. Our company targets sustainable growth which considers future generations.  
*4. A nossa organização considera objetivos de sustentabilidade orientados para as gerações futuras.*
5. Our company supports nongovernmental organizations working in problematic areas.  
*5. A nossa empresa apoia organizações não governamentais que trabalham em áreas problemáticas.*

6. Our company contributes to campaigns and projects that promote the well-being of the society.
6. *A nossa organização contribui em campanhas e projetos que promovem o bem-estar da sociedade.*
7. Our company encourages its employees to participate in voluntarily activities.
7. *A nossa organização encoraja os seus colaboradores a participarem em atividades de voluntariado.*
8. Our company emphasizes the importance of its social responsibilities to the society.
8. *A nossa organização realça a importância da sua responsabilidade social para a sociedade.*

#### **Dimension CSR to Employees**

9. Our company policies encourage the employees to develop their skills and careers.
9. *As políticas da nossa organização encorajam os colaboradores a desenvolverem as suas competências e carreiras.*
10. The management of our company is primarily concerned with employees' needs and wants.
10. *Os gestores da nossa organização têm como prioridade as necessidades e desejos dos colaboradores.*
11. Our company implements flexible policies to provide a good work & life balance for its employees.
11. *A nossa organização implementa políticas flexíveis de modo a contribuir para um equilíbrio entre a vida profissional e pessoal dos seus trabalhadores.*
12. The managerial decisions related with the employees are usually fair.
12. *As decisões de gestão relacionadas com os colaboradores são, regra geral, justas.*
13. Our company supports employees who want to acquire additional education.
13. *A nossa organização apoia os trabalhadores que querem adquirir formação complementar.*

#### **Dimension CSR to Customers**

14. Our company respects consumer rights beyond the legal requirements.
14. *A nossa organização respeita os direitos dos clientes para além dos requisitos legais.*
15. Our company provides full and accurate information about its products to its customers.
15. *A nossa organização fornece informação completa e exata aos clientes sobre os seus produtos.*
16. Customer satisfaction is highly important for our company.
16. *A satisfação do cliente é muito importante para a nossa organização.*

#### **Dimension CSR to Government**

17. Our company always pays its taxes on a regular and continuing basis.
17. *A nossa organização cumpre as suas obrigações fiscais de forma regular e contínua.*
18. Our company complies with legal regulations completely and promptly.
18. *A nossa organização cumpre os regulamentos legais de forma rigorosa e rápida*