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Organizational culture and sustainability in Brazilian electricity companies

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Abstract

Purpose – This paper aims to assess the relationship between cultural profiles and the economic, environmental and social dimensions of electricity companies' reporting based on the Global Reporting Initiative's (GRI) sustainability framework.

Design/methodology/approach – The authors used the competing values framework, developed by Cameron and Quinn, as the theoretical starting point, with primary data collected through surveys that assessed organizational culture and with secondary data collected through the GRI indicators reported by the companies.

Findings – First, the framework shows whether a company's organizational culture corresponds with one of the following options: clan, adhocracy, market or hierarchy. The results show that most of the companies' organizational cultures were hierarchical, characterized by a greater need for stability and control and a formal work environment. Clans were the second most popular type of organizational culture, characterized as having greater internal flexibility, more informal environments and fewer hierarchical levels. Second, by combining the above results with the assessment of the GRI indicators in the companies' sustainability reports, the study checked whether the companies had strong (balanced) or non-balanced cultures. The results show that there was a greater correlation between a strong (balanced) culture and the total value of the reported indicators, compared to a non-balanced culture.



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Conflicts of interest: The authors declare no conflicts of interest.

Originality/value – The paper takes an innovative approach by correlating two different but well-recognized methodologies as a way to create a more holistic assessment that can help stakeholders to understand both the way these companies work and how this choice reflects the transparency of their reporting.

Keyword Sustainability

Paper type Research paper

1. Introduction

Owing to the increasing demand to create new management models, to gather reliable data for society and to provide sustainability recommendations to businesses, research on the themes of organizational culture and sustainability has become more prominent. When these themes are put into context, they become aligned with each another and favor making information available to stakeholders – the different audiences that have some kind of influence on the company or that are influenced by it. New methods of business management are also suggested from the perspectives of organizational culture and sustainability. Therefore, the main challenge for companies and their managers in this regard is to achieve a balance between organizational culture and sustainability in the economic, environmental and social dimensions.

This article explains the conceptual theoretical model adopted in this research. It sums up the research goals, main topics and proposed relations, as well as the sampling, data collection and analysis.

To answer the question posed (*RQ1*), we collected primary and secondary data. The primary data related to organizational culture, while the secondary data focused on sustainability.

This study's theoretical base regarding organizational culture is that explained in the paper by [Cameron and Quinn \(2006\)](#): the competing value framework (CVF). This choice was justified because of the framework's ability to identify the type, congruence and force of an organizational culture, satisfying the objectives of this study. Organizational culture and sustainability are relevant themes in the global context, and this research enhances understanding of these concepts.

It is important to mention that companies are dealing with increasingly complex cultural environments. These companies' goals, facing the different audiences that they relate to or that are interested in them, have been a matter of discussion, both in the academic literature and among companies from different sectors. For [Trompenaars and Hampden-Turner \(2012\)](#), globalization raises topics such as the regulation of the design of organizations, systems and internal procedures, as well as adjusting to the market, to legislation, to fiscal regimes and to social, political and cultural systems. Achieving a balance between consistency and adaptation is essential to the success of businesses.

Thus, considering that it is necessary to have consistent knowledge of organizational culture and sustainability, a study that aims to relate these themes, both academically and pragmatically, is justified. The aim of this article is to answer the following research question:

RQ1. What are the relations between cultural profiles and the economic, environmental and social dimensions [the triple bottom line (3BL)] of electricity companies' reporting based on the Global Reporting Initiative (GRI) sustainability framework?

The GRI (2017) is an independent international organization that helps businesses, governments and other organizations to understand and communicate the impacts of

business on critical sustainability issues. The GRI aims to create a future where sustainability is integral to every organization's decision-making process. In 2015, a total of 7,500 organizations disclosed their data based on the GRI protocol.

The increasing demand for transparency, accountability and good governance practices has made the GRI witness an increasing number of organizations seeking to issue reports based on its indicators over the years. As GRI indicators are standardized worldwide by sector, this favors the comparison of different companies and their respective sustainability performances (GRI, 2017).

2. Literature review

The term "organizational culture" was first used as a synonym for "organizational climate" in English in 1960. The expression "corporate culture" originated in the 1970s; it was publicized in a successful book by Terrence Deal and Allan Kennedy, published in 1982 in the USA. After that, the literature on the theme spread the term, such as the book *In Search of Excellence* (1982), published by a team from McKinsey and Harvard Business School, including Thomas Peters and Robert Altman.

The theory of organizations focuses on organizational culture. Although it was present in the literature before the 1980s, the highest incidence of studies, conferences, courses and publications on it appeared after 1983, when the journals *Administrative Science Quarterly* and *Organizational Dynamics* dedicated special issues to the matter (Freitas, 1991).

Hofstede (1991, 1999) discusses *culture* and *mental programming*. For the author, each person is continuously learning and carries ideas and feelings. There are other approaches to defining and studying culture, including those of Cameron and Quinn (2006, 2011), Cameron *et al.* (2014), Reis (2007) and Schein (2012). In one approach, "culture represents the vital force of the organization, the soul of its physical body, and it can be so proportional that it deceives consciousness" (Mintzberg *et al.*, 2000, p. 195). Fleury (1987) suggests that there are relationships between culture and other organizational variables, which thus predict the success of the organization, in which culture is seen as a set of values and beliefs shared by its members.

The term "sustainability" has been widely used in many fields of knowledge. A significant milestone for sustainability can be observed in the report made by the former Norwegian Prime Minister Gro Harlem Brundtland, with the suggestive title "Our Common Future", also called the "Brundtland Report". This report used the expression "sustainable development", defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Boff, 2012, p. 34). This definition became classic and frequently used in the literature about the theme.

As a principle, and as mentioned by Pereira (2013), in the mid-1920s, environmental concerns emerged. For example, the "polluter pays" principle came up in the work by Pigou entitled *Economics of Welfare*. By considering natural resources as public property, the work proposed that environmental payments should be made based on externalities.

The environmental discussions continued. "The Earth Charter", one of the most inspiring documents from the early twenty-first century, was created from a consultation that lasted eight years (1992-2000) with thousands of people from many countries, cultures, peoples, institutions, religions and universities. According to Boff (2012), it inspired a new sense of life for humanity, besides bringing hope, values and principles regarding a prosperous future for this threatened planet.

A seminal article by Hart (1997), one of the greatest exponents of sustainability studies, concludes that private sector companies, which he characterizes as "economic machines of the future", should be responsible for ensuring a sustainable world. Hart also states that

companies should and could foster a change in consumer behavior and should influence public policies.

Companies are using data collection and analysis as a valuable basis for evaluating their sustainability performance. As they are essential forces of society, organizations of all types have a significant responsibility to achieve sustainability.

The above confirms the need to understand the relation between sustainability and organizational culture. An acceptable proposal for this analysis is the 3BL, using organizational culture as an independent variable and sustainability as a dependent variable. This approach was appropriate to the current study.

The organizational culture model used in this study was the CVF developed by [Cameron and Quinn \(2006\)](#). This theoretical model was chosen because it is able to relate organizational culture to the 3BL sustainability performance indicators (economic, environmental, and social) of companies.

In *Diagnosing and Changing Organizational Culture* ([Cameron and Quinn, 2006](#)), the model was shown to differ from other methods in assessing organizational effectiveness – after being tested, it was extended to many studies and became an efficient method to analyze cultures.

The CVF originated at the Institute of Political and Government Studies at the University of New York, Albany. This model addresses the problems within the institutional system, referring to the competing values. In the authors' words, "we want our organization to be adaptable and flexible, but we also want stability and control." This does not mean that contradictions do not exist but that, on the contrary, we need to better understand the phenomenon and achieve a balance.

The authors present two dimensions. The first dimension is based on the focus of the organization, which relates to how processes are conducted and the organization's flexibility vs dynamism and stability vs control. The second dimension deals with the organizational structure, concerned with an internal focus (integration) vs an external focus (differentiation). When considering the two structural dimensions, four types of culture are presented: clan, innovative, rational and hierarchical.

According to the model, people define what seems to be good, right and appropriate according to their essential values. These indicators represent what people consider to be important about a company's performance. The four types of culture define the set of values seen as important in an organization. Therefore, the CVF analyzes the tensions within an organizational environment, comparing flexibility and control and an internal environment focus versus an external environment focus.

The Organizational Culture Assessment Instrument (OCAI) and the CVF were chosen as the framework of this article, because of their widespread application and recognition. One can easily find innumerable articles and replications based on OCAI; however, there have been some criticisms regarding the CVF and the resulting OCAI, as typologies can reduce the perception and overall comprehension of organizational realities and cultures ([Maximini, 2015](#)). The categories used in certain cultural typologies may oversimplify culture and lead researchers to not consider the proper dimensions and the patterns among these dimensions. They may also give rise to inaccurate interpretations about what a group feels about values, practices and customs, as dimensions may be picked up by the researcher without considering their relevance to the topic at hand ([Schein, 2010](#)). According to [Maximini \(2015\)](#), the OCAI and its dimensions of analysis might be limited and insufficient to comprehend culture. Besides that, it would be impossible to include all variables in a cultural typology ([Almeida and Mello, 2017](#)). [Schein \(2010\)](#) emphasizes that culture may not be grasped by means of questionnaires, surveys and cultural typologies, without

mentioning the specific OCAI. Alternative research approaches on culture, such as ethnographic research, can be effective in companies. Despite these limitations, the present researchers chose to use the CVF and the OCAI because of their pertinence to organizational culture assessment by covering a range of relevant cultural dimensions through a standardized and validated instrument (Plavin-Masterman, 2015).

3. The cultural typology developed by Cameron and Quinn

Organizational culture and sustainability are topics that can be used to develop strategies that create programs and processes that measure results. However, they are relatively new and unexplored issues, especially with regard to sustainability. The works by Campos (2012), Santos (2000), Ghisi (2005), Mascarenhas (2006), Aligreli (2011), Pazos (2011), Cunha (2011) and Pereira (2012) shed some light on the topic. Using the cultural typology developed by Cameron and Quinn (2006), we were able to focus on organizational cultural profiles (hierarchical, rational, innovative, or clan) as a way to show how company culture can relate to sustainable performance, focused on the 3BL.

Considering the two structural dimensions presented – how stable or flexible the organization is and how externally or internally focused it is – the cultural typology developed by Cameron and Quinn (2006, pp. 37-44), as illustrated in Figure 1, proposes four types of culture:

- (1) *Clan culture*: represented in the upper-left quadrant, it is a flexible and internally focused organization, named for its similarity to a family organization, as it seems more like an extension of a family than an economic institution. The environment is informal, with a few hierarchical levels working as a team. There are employees; group work is recognized, as well as participation and consensus. The information is collective, aiming to obtain the involvement of staff in the organizational process.
- (2) *Adhocratic culture*: represented in the upper-right quadrant, it is a flexible and externally focused organization. Adaptation and innovation lead to new resources and profitability, emphasizing the creation of a view of the future, organized anarchy and disciplined imagination. From this point of view, a clear challenge for

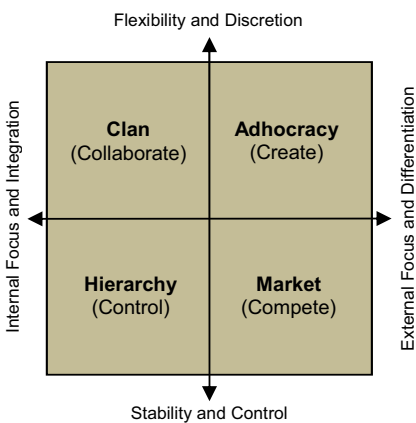


Figure 1.
The CVF

Source: Cameron and Quinn (2011, p. 39)

these organizations is to create innovative products and services and to rapidly adjust to new opportunities. Besides, there is no centralized power or a relation of authority; on the contrary, power flows from individual to individual, from team to team, depending on which problem needs to be solved at the time. However, there is a focus on embracing and anticipating risks, and, as changes are frequent and fast, there is no organizational chart, and that is why both the physical space and the roles are temporary. Therefore, employees are encouraged to create innovative solutions and generate new ways of providing services to clients.

- (3) *Market culture*: represented in the lower-right quadrant, it is a flexible and externally focused organization, characterized by emphasizing results and the presence of strict and demanding leaders. The members of the organization work toward the same goal: winning. It also operates with market mechanisms and safe databases of clients, guaranteeing success when it comes to participation and leadership in the market.
- (4) *Hierarchical culture*: represented in the lower-left quadrant, it is a stable and internally focused organization. Its environment is formal and structured, that is, procedures establish what staff will do. Efficient leaders are good coordinators and organizers and consider the maintenance of regularity to be essential. The long-term concept relies on stability, predictability and efficiency, and the formal rules and policies maintain the organization together.

Sustainability reports based on the GRI guidelines show the results obtained in the reported period regarding the commitments, strategy and management of organizations. Among other purposes, they can be used for the:

- benchmarking and evaluation of sustainability performance regarding laws, codes, performance patterns and volunteer initiatives; demonstration of how the organization influences and is influenced by expectations of sustainable development; and
- comparison of performance within the organization and between different organizations over time (GRI, 2000/2006, p. 3).

The GRI performance indicators are “qualitative or quantitative information about consequences or results associated with the organization that are comparable and demonstrate changes throughout time” (GRI, 2000/2006). The GRI divides these indicators into two different categories:

- (1) *Core indicators*: those identified by the GRI guidelines as being interesting for most stakeholders and are considered relevant, unless stated otherwise, based on GRI principles.
- (2) *Additional indicators*: those identified by the GRI guidelines as representing emerging practices or dealing with themes that might be relevant for some organizations but not for most.

Based on the guidelines for sustainability reports (GRI, 2000/2006, pp. 26-30), there are three different dimensions of performance, based on the 3BL concept:

- (1) economic performance (nine indicators: seven core and two additional indicators);
- (2) environmental performance (30 indicators: 17 core and 13 additional indicators); and
- (3) social performance (40 indicators: 23 core and 17 additional indicators).

4. Methodology

The research universe was limited to all Brazilian electricity companies (as listed by ANEEL in 2014 – www.aneel.gov.br) reporting based on the GRI methodology. Therefore, it was a census. It is worth distinguishing a sample from a census: the former concerns the analysis of items from a specific population, whereas the latter analyzes all the items (Stevenson, 2001). That is why, for Martins (2010), the sample selection method is justified by a survey with all the participants in the studied universe.

Therefore, the sample of this study consisted of 38 companies. Despite the obstacles and justifications of each participant, seven companies agreed to participate, hosted in six states:

- (1) Santa Catarina (1), www.celesc.com.br;
- (2) Ceará (1), www.coelce.com.br;
- (3) Pernambuco (1), www.chesf.gov.br;
- (4) Paraná (2), <http://itaipu.gov.br> and www.copel.com;
- (5) Rio de Janeiro (1), – www.furnas.com.br; and
- (6) São Paulo (1), www.cteep.com.br

The analysis was carried out according to a strict methodological sequence. It was a quantitative, descriptive and correlational study, as it described the relations between organizational culture and the levels of economic, environmental and social performance. The quantitative methodology was chosen because it could enable the research to identify statistics regarding the phenomenon (Barnham, 2015) of culture and its relation with the dimensions of the 3BL. It is worth stating that in the quantitative model, “the world is constructed in the base of incidence” (Barnham, 2015, p. 853), which can also be observed in the cultural aspects of customs, rituals, and patterns of behavior. Therefore, the quantitative methodology was suitable for this research.

The main steps were as follows:

- define the prevalent cultural profiles of the seven electricity companies in six different Brazilian states (Santa Catarina, Paraná, São Paulo, Ceará, Pernambuco, and Rio de Janeiro);
- identify the cultural force profiles of the companies (the cultural force is determined by the number of points attributed to a specific type of culture – the higher the score, the stronger or more dominant it will be. Studies have shown that strong cultures are associated with homogeneity of effort, clear focus, and better performance in environments that require unity and a common view.); and
- apply data collection based on the literature and on the analysis of Brazilian organizational cultures, according to the OCAI and the CVF.

The data were collected via an *in loco* field search, with the application of questionnaires about organizational culture to the staff of the seven companies in the sample from June 30, 2014 to October 15, 2015. A total of 897 responses were received, producing 741 valid questionnaires.

The instrument for the collection of primary data consisted of six items: dominant characteristics, organizational leadership, management of human resources, organizational cohesion, strategic emphasis and criteria of success. Each item had four options. The participants were asked to divide one hundred points among these options for each of the items, with the statement that was closer to the company's reality getting the highest score.

Secondary data were used to report the economic, environmental and social dimensions and were based on GRI (2012) data analyses, obtained through the documental analysis of the sustainability reports publicly available on the companies' websites. These reports map the economic, environmental, and social dimensions (the 3BL) of each company in the sample. All secondary data used in this study referred to 2012, containing information corresponding to the period from January 1 to December 31, 2012. The confidentiality of the companies was maintained, and they were identified as companies A, B, C, D, E, F and G.

For the data analysis, the data collected were presented in a four-quadrant chart, called Quinn's diagram, which identified the cultural profile of each company (clan, adhocracy, market and hierarchy).

Statistical analyses were conducted to work with the data, observing the features and relations of the dependent and independent variables in accordance with the research objective. Descriptive statistics (means, standard deviations and sampling errors) were used to verify the reliability and validity of the constructs. A Cronbach's alpha estimate was calculated for the data on each of the four cultural types. As a selection criterion for the model, that best represents the relation between organizational culture and sustainability, the mean quadratic deviation (MQD) was calculated for each of the four dimensions. Considering that 25 indicates a fully balanced company, the result of each dimension was subtracted from 25, equating to 100 across four quadrants. The results of the subtractions were squared. The values obtained for the dimensions of each company were added, and the square root of the sums was calculated. Finally, the number was divided by 4 to find the MQD of each company, as shown in Table VII. Afterwards, the value of 3 was randomly attributed as a cutoff point, considering companies with strong (balanced) cultural profiles as presenting MQDs lower than 3 (being closer to 25); companies with non-balanced profiles were those with MQDs higher than 3 (being further from 25) (in four quadrants). So, the lower the MQD, the better the representativeness of the model. Thus, this allowed adjustments between balanced and non-balanced cultures based on the GRI reporting. A relation between organizational culture and the dimensions of the 3BL was not found through direct statistical correlations, but through observations of the GRI reporting following the categories of the balanced and non-balanced cultures of Brazilian electricity companies.

The following formula was used to calculate the results.

Formula: MQD:

$$MQD = \left[\sqrt{\left(\sum_{i=1}^{n=4} (\text{Dimension}_i - 25) \right)} \right] / 4$$

where n = number of observations regarding the organizational culture profile.

5. Presentation and analysis of the results

To identify the types of organizational culture that were prevalent among the electricity companies, the mean values, standard deviations and sampling errors of the responses of the employees were calculated using the software SPSS. Hair *et al.* (2006, pp. 268-273) state that:

[the] mean is the arithmetic mean and one of the most used measures of central tendency. The standard deviation describes the dispersion of variability for the distribution values of the sample

based on the mean, and may be the most valuable index in the dispersion. Using the sampling error, we can build an interval to estimate the real mean values of the population.

The analyzed data were used in such a way that it was not possible to identify the companies, without any order in the presentation, considering just the phenomenon to be analyzed.

Considering the entire surveyed universe (employees of the seven electricity companies that use the GRI methodology), the response rate was 92.5 per cent – within the expectations for this type of study. The responses are demonstrated in [Table I](#).

5.1 Data analysis regarding the cultural profiles of the companies

Regarding the organizational culture profiles among the electricity companies, we can say that the prevalent beliefs and values largely reflect hierarchical cultures, as defined by the model in this study. The values for the clan and hierarchical cultural profiles are similar, followed by market cultures, demonstrating a balance among the values of these three cultural profiles. The adhocratic culture had the lowest mean, indicating that this was the least prevalent cultural profile among the companies, according to the staff ([Table II](#)).

Regarding the consolidated organizational cultural profiles of the companies, the data showed that the hierarchical culture had the highest mean value, meaning that it best represented the cultural profiles of the companies. The second highest mean value was attributed to the clan culture, followed by the market culture, whereas the adhocratic culture had the lowest representative value.

As verified in [Table III](#), the data showed that the companies mostly had hierarchical cultures. This cultural profile is characterized as being more prone to stability and control.

Table I.
 Responses obtained in the study

Item	Filled-out surveys	No. of valid responses	% of the total
Total number of respondents accessing the online questionnaire	604	549	90.9
Total number of respondents accessing the manual questionnaire	197	192	97.5
Total number of questionnaires filled out	801	741	92.5

Table II.
 Prevalent cultural profiles among the companies

A	B	C	D	E	F	G
Hierarchy	Clan	Hierarchy	Hierarchy	Hierarchy	Hierarchy	Hierarchy
Clan	Hierarchy	Clan	Clan	Clan	Clan	Clan
Market	Market	Market	Market	Market	Market	Adhocracy
Adhocracy	Adhocracy	Adhocracy	Adhocracy	Adhocracy	Adhocracy	Market

Table III.
 Prevalent cultural profiles among the companies – consolidated

Cultural profile	Mean value	SD	Sampling error
Clan	26.5	10.7	0.4
Adhocracy	18.4	7.2	0.3
Market	22.9	10.2	0.4
Hierarchy	32.6	13.6	0.5

Represented in the lower-left quadrant (Figure 2), it emphasizes performance criteria and its main characteristics are stability and a formal environment, with procedures guiding the actions of staff. Efficient leaders are good and organized coordinators, maintaining regularity as an essential characteristic. The long-term concept relies on stability, predictability and efficiency, and formal and political rules guarantee that the organization sticks together.

Clan and market cultures were also prominent. A clan culture, represented in the upper-left quadrant, is a flexible and internally focused organization, known for its similarity to a family organization, as it seems more like an extension of a family than with an economic institution. The environment is informal, with a few hierarchical levels working as a team; staff are involved, group work is recognized and there is participation and consensus. Information is collective, with the objective of obtaining the involvement of staff in the organizational process.

A market culture, represented in the lower-right quadrant, refers to a flexible, externally focused organization, characterized by focusing on results and the presence of strict and demanding leaders. The members of the organization work towards the same goal: winning. It also operates with market mechanisms and safe client databases, which guarantee its success when it comes to market participation and leadership.

Figure 2 shows the prevalent cultural profiles among the companies, helping us to increase the scope of this analysis.

5.2 Data analysis regarding sustainability

The objective of this part of the analysis was to generate results regarding the sustainability reports – to identify the number of reported indicators proposed by the GRI.

The insertion of the sustainability perspective in the organizational context requires new initiatives and other elements in the companies' performance. Therefore, in this study, the list of GRI indicators was chosen, aiming to list the aspects that should be considered in terms of sustainability. The list includes the 3BL indicators, assessing economic, environmental and social aspects. Table IV presents the number of indicators analyzed, totaling 79, which comprise three dimensions:

- (1) economic performance (nine indicators: seven core and two additional indicators);
- (2) environmental performance (30 indicators: 17 core and 13 additional indicators); and
- (3) social performance (40 indicators: 23 core and 17 additional indicators).

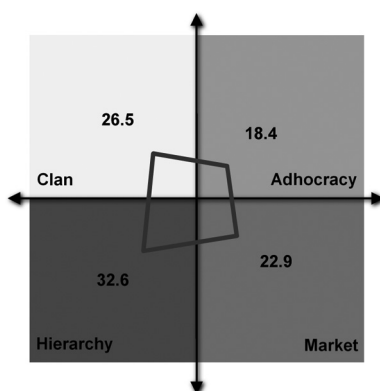


Figure 2.
Prevalent cultural
profiles of the
companies –
consolidated

Table V presents the percentage results regarding the verification of the sustainability indicator data in the three dimensions of the 3BL. The most relevant points are those related to the core (47) and additional (32) indicators reported by each company. Generally, the responses for the additional indicators had higher scores.

5.3 Data analysis regarding cultural force

The model allowed us to establish general cultural profiles, as well as clan, adhocratic, market and hierarchical profiles, for each of the six cultural attributes (dominant characteristics, organizational leadership, management of human resources, organizational cohesion, strategic emphasis and criteria of success). Then, it was possible to interpret these profiles based on several perspectives.

The cultural force is “determined by the number of points attributed to a specific type of culture”. The model foresees that “other organizations might require a more balanced culture, in which similar emphasis on each one of the four types of culture is required” (Cameron and Quinn, 2011, p. 83). In the approach of the applied model, “the strong culture is the one that mostly incorporates the attributes of the four cultural types” (Santos, 2000, p. 115).

Considering the above, this study analyzed the cultural profiles according to force (balanced or non-balanced) and adjusted the mathematical model to the data. Effectively, the four reported cultural dimensions, as demonstrated in Figure 1 (clan, adhocracy, market and hierarchy), were in accordance with the analysis by Cameron and Quinn (2006) regarding the distribution of cultural force.

In this sense, based on the data regarding the GRI indicators reported in Table V, MQD analysis was performed, including the four representative dimensions. Therefore, to obtain the extension of balanced culture of each of the companies in the sample, Table VI was created.

Table IV.
Dimensions of the
3BL

Indicators	Core	Additional	Total
Economic performance	7	2	9
Environmental performance	17	13	30
Social performance	23	17	40

Table V.
Consolidation of the
results in the
sustainability reports

Company	Additional economic dimension (%)	Core economic dimension (%)	Additional environmental dimension (%)	Core environmental dimension (%)	Additional social dimension (%)	Core social dimension (%)
A	0.0	57.1	23.1	41.2	46.7	68.0
B	100.0	100.0	100.0	100.0	86.7	92.0
C	100.0	85.7	84.6	70.6	86.7	88.0
D	100.0	100.0	100.0	94.1	100.0	96.0
E	100.0	71.4	69.2	70.6	60.0	72.0
F	50.0	85.7	69.2	88.2	93.3	88.0
G	100.0	100.0	100.0	100.0	93.3	96.0

Based on the application of the MQD statistical technique, two cultural groups are presented: strong (balanced) and non-balanced. The first group, with strong cultural force, consisted of four companies (B, C, D and F). The second group (non-balanced) consisted of the other companies (A, E and G).

It is important to clarify that the cultural force is determined by the number of points attributed to a specific type of culture – the higher the score, the stronger or more dominant it will be. [Table VII](#) shows the two groups defined by the MQD.

The companies were classified as balanced and non-balanced based on the MQD. [Figure 3](#) represents the mean of each of the dimensions of the balanced and non-balanced companies, comparing them with the theoretical profile of a totally balanced company, as well as according to [Figure 1](#).

[Figure 3](#) also illustrates the means of each quadrant, represented by the pattern of ideal balance in the model (clan = 25, adhocracy = 25, hierarchy = 25 and market = 25), the effectiveness of the balanced companies (clan = 27.4, adhocracy = 18.7, hierarchy = 29.8 and market = 23.2) and the effectiveness of the non-balanced companies (clan = 25.4, adhocracy = 17.8, hierarchy = 35.6 and market = 21.9).

Ratifying the scope of this study, we analyzed the means of the culturally balanced vs non-balanced companies. Based on the data analysis regarding the strong (balanced) and non-balanced groups, and with the used statistical method (MQD), [Table VIII](#) shows the total mean values for the two cultural forces and the means of the reported indicators.

Considering the two mentioned forces and the means of the 3BL indicators, we show the following results in [Table IX](#), elaborated with data from [Table V](#).

[Table IX](#) demonstrates the most relevant relations between cultural balance and the indicators reported. The dominant dimension for a strong (balanced) culture was the core economic dimension, with 95.7 per cent of reported indicators; for a non-balanced culture, it was the additional economic dimension, with 80.0 per cent of the indicators.

Company	MQD
Company A	3.1
Company B	1.1
Company C	2.8
Company D	2.9
Company E	3.1
Company F	1.4
Company G	4.1

Table VI.
MQD per company

Company	Strong (Balanced) culture	Non-balanced culture
Company A		3.1
Company B	1.1	
Company C	2.8	
Company D	2.9	
Company E		3.1
Company F	1.4	
Company G		4.1

Table VII.
Strong (balanced)
and non-balanced
cultural groups

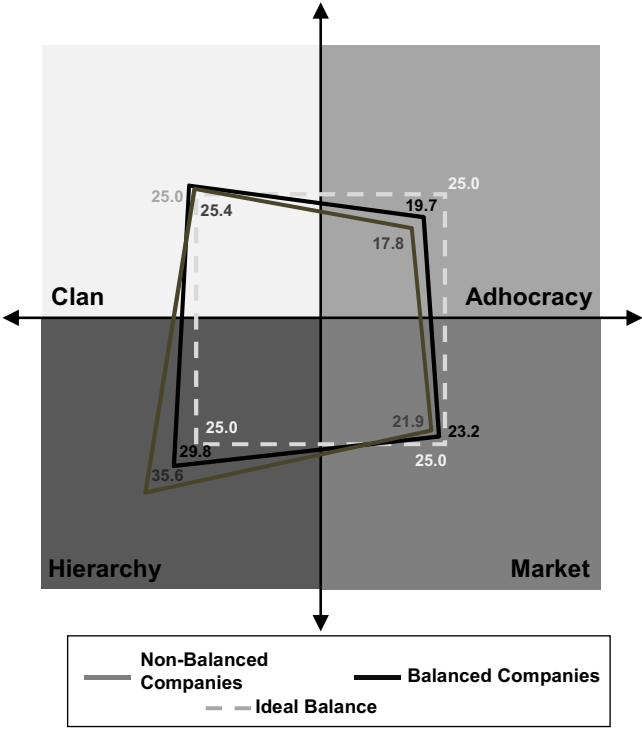


Figure 3.
Balanced and non-
balanced companies

Table VIII.

Analysis of the link
between the cultural
force and the mean of
the reported
indicators

Cultural force	Company	Mean of reported indicators	MQD mean
Strong (balanced)	B	73.6 (93.2%)	1.1
	C		2.8
	D		2.9
	F		1.4
Non-balanced	A	58.0 (73.4%)	3.1
	E		3.1
	G		4.1

Table IX.

Values of the
indicators of the 3BL
approach

Dimension	Balanced culture			Non-balanced culture		
	Mean (%)	Median (%)	SD	Mean (%)	Median (%)	SD
Economic performance A	1.9 (95.0)	2.0 (100.0)	0.3	1.6 (80.0)	2.0 (100.0)	0.8
Economic performance E	6.7 (95.7)	7.0 (100.0)	0.5	5.4 (77.1)	5.0 (71.4)	1.1
Environmental performance A	12.1 (93.1)	13.0 (100.0)	1.5	9.0 (69.2)	9.0 (69.2)	3.3
Environmental performance E	15.4 (90.6)	16.0 (94.1)	1.5	12.5 (73.5)	12.0 (70.6)	3.3
Social performance A	14.2 (94.7)	15.0 (100.0)	0.9	10.0 (66.7)	9.0 (60.0)	2.6
Social performance E	23.3 (93.2)	24.0 (96.0)	0.9	19.5 (78.0)	18.0 (72.0)	2.8
Total	73.6 (93.2)	77.0 (97.5)	4.6 (5.8)	58.0 (73.4)	55.0 (69.6)	13.3

Generally, Figure 4 suggests that there are more engaged relations regarding the strong (balanced) culture in the number of indicators reported.

These relations confirm the argument of the model's authors (Cameron and Quinn, 2011) regarding the cultural force being determined by the number of points attributed to a specific type of culture – the higher the score, the stronger or more dominant it will be.

6. Conclusion

The cultural typology developed by Cameron and Quinn was used to provide contributions and insights for the Brazilian electricity industry, specifically for companies that issue sustainability reports based on the GRI methodology. The results provide clarity on the dominant cultural profile, cultural forces and the relations between cultural profiles and the economic, environmental and social dimensions (the 3BL approach).

Regarding the dominant cultural profiles among the companies, according to the knowledge of the staff, companies A, C, D, E, F and G were hierarchical. Company B had a mostly clan-based profile. The results show the prevalence of the hierarchical and clan cultural profiles, so these companies demonstrate stability, control and a focus on the internal environment. It is clear that companies in the remaining two quadrants are more efficient in demonstrating flexibility, decentralization and a focus on the external environment.

The activities anchored in the hierarchical quadrant (control) generate more value when mistakes are not an option, for example, in sectors and environments that are highly regulated or stable. Value is mainly a result of increasing certainty, predictability and regularity while eliminating anything that could inhibit perfect or error-free results.

The strategies in the clan quadrant (collaborate) create more value for an organization that should maintain its stability even in the presence of uncertainties and when the collective wisdom of the group needs to be used. Effective and long-lasting partnerships – inside and outside the organization – are usually a requirement for long-term success, and competence in the clan quadrant (collaborate) is the path to establish such partnerships.

The main purpose of determining the cultural profile of a company is to help it to identify what kind of cultural change is most appropriate. However, considering that it is hard to identify or describe the culture of an organization (not to mention trying to change it), having a clear image of the culture makes it easier to systematically adopt change in a

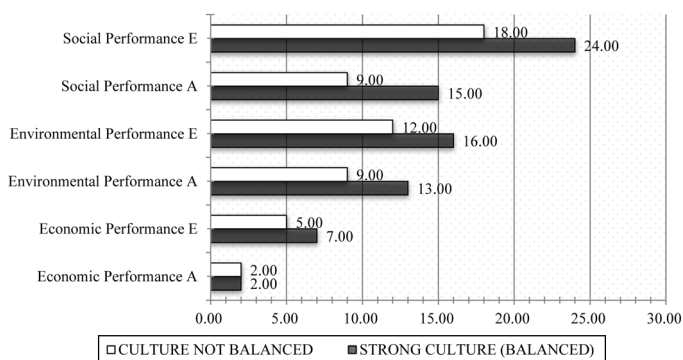


Figure 4.
MQD values for the
indicators of the 3BL
approach

consistent, coherent and consensual manner. Regarding force, companies A, E and G presented non-balanced cultural forces. On the contrary, companies, B, C, D and F had balanced cultural forces.

The characterization of culture in the companies of the electricity industry can be divided into two different profiles. The first profile relates to a strong (balanced) culture, which is mostly identified with the basic premises, styles and prevalent values (Figure 1). The second profile represents non-balanced cultures, which are less identified with the basic premises, styles and prevalent values.

This article emphasized the importance of cultural balance in the analyzed companies. It is important to identify the type of culture that is prevalent in a company because success depends on how much the organizational culture corresponds to the demands in the competitive environment.

Regarding the economic, environmental and social performance indicators (the 3BL approach) of the companies in the electricity industry reporting to the GRI guidelines, the companies reported a lack of progress in the elaboration of their reports. The information in the reports must deal with issues and indicators that reflect the significant economic, environmental and social impacts of the organizations or that can have a substantial influence on the assessments and decisions of the stakeholders.

Regarding the relations between the cultural profiles and the economic, environmental and social dimensions (the 3BL approach) in the electricity companies' reporting based on the GRI sustainability guidelines, the following findings were identified:

- R¹: There was a positive relation between a strong (balanced) culture and the total mean of the indexes reported (93.2 per cent); in all six dimensions, for both the additional and core indicators, the reported means were higher than those of a non-balanced culture at 73.4 per cent.
- R²: The dominant dimension for a strong (balanced) culture was core economic performance, with 95.7 per cent of reported indexes; for a non-balanced culture, it was additional economic performance, with 80.0 per cent of the reports.
- R³: The additional social performance dimension had the lowest mean (66.7 per cent) for a culture (balanced and non-balanced).

These relations confirm the model's authors' views regarding the cultural force: that there is no ideal cultural scheme and that each organization should determine the level of cultural force required to be successful in its environment. Thus, it is possible to observe that the idea of cultural force applied in the companies in the sample, contemplates the 93.2 per cent of the reports in a strong (balanced) culture and the 73.4 per cent in a non-balanced culture.

It is important to mention that it is not possible to consider this study about organizational culture in the Brazilian electricity industry as finality, not only for the obvious reason that the outcomes of the facts and processes are unknown but also because of the nature of others that are yet to happen. It is important to consider that organizational culture is always subject to reviews and interpretations, no matter how much it is studied.

7. Contributions

The main contributions of the study relate to the evidence attesting the positive relation between a strong (balanced) culture and the total mean of the reported indicators (93.2

per cent) in the GRI sustainability report; for all six dimensions, for both the additional and core indicators, the reported means were higher than those for a non-balanced culture at 73.4 per cent.

It is not possible to dissociate these tools from their context because, when aligned, they provide information for stakeholders and indicate new lines of work for the company's management from the perspective of organizational culture and sustainability. Therefore, the main challenge for companies and their managers in this regard is to achieve a balance between organizational culture and sustainability in the economic, environmental and social dimensions. The results reinforce the need for transparency in the reports, as well as the strategic use of investment based on the relations analyzed.

8. Recommendations

To extend and complement this study, we offer the following suggestions:

Regarding organizational culture:

- CO_1 : the scientific replication of this study, in qualitative and quantitative terms, in other strategic segments of the Brazilian economy or specifically in the energy industry (such as the wind, photovoltaic, hydroelectric, tide and thermoelectric industries) would increase the sample and allow comparative analysis.
- CO_2 : The relations of organizational culture with other dimensions, such as innovation and performance, should be identified.

Regarding sustainability:

- S_1 : The GRI check is an optional checking document that companies send to the GRI to get a certificate. It is available after version G3.1, to meet the report of the indicators. Each indicator consists of several items to be reported (or not as applicable) to the GRI to show adherence.
- S_2 : Even though materiality has always been important, in GRI version G4, it became essential to have a well-defined materiality concept and sustainability report that carefully describes the specific points, not only the number of reported indicators.
- S_3 : There are certain indicators (EU1 to EU30) that are specific to sectors/businesses. It is difficult to compare them, so they should be treated separately.
- S_4 : Studies on the scientific production regarding additional indicators – for their importance – should be part of theses in the coming years.
- S_5 : The development and training of new practices for sustainability reporting would allow for the more precise and consistent incorporation of data.
- S_6 : The inclusion of sustainability as a discipline in school syllabuses would improve knowledge of the need for changes in development patterns.

Regarding organizational culture and sustainability:

- $CO+S_1$: The effective integration of organizational culture and sustainability should be verified, as well as the perspectives of the balanced scorecard, as proposed by some companies, but these proposals are still just intentions.

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