

A TOOL TO MEASURE ORGANIZATIONAL SUSTAINABILITY STRENGTH

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Abstract

Last year's developments in the economies of Europe, US and other countries have awakened us for the challenges of sustainability of the economies, countries and economic organizations as well.

In this context, many companies all over the world revealed disability to deal with this present environment by failing to disclose proper strategic decisions in a significant number of cases, unbalanced management practices and the general failure to make a good use of their resources efficiently and effectively in the situation of volatile markets, in order to guarantee its consolidation and stable functioning of businesses and society.

These facts had also revealed that financial and economic attitude implemented by some companies, which are focused on short-term earnings, was surpassing a humanist and social vision of businesses and society and revealing a lack of ethic and corporate responsibility in transactions development and in the relations with stakeholders, incompliance with legal obligations, sometimes the manipulation of financial and other corporate data in order to boost a company's valuation.

Beyond several factors that could be considered relevant in the framework of sustainability and according to the "DPODE Model for Organizational Sustainability" (2010), there are some pillars (dimensions) that seem to be of major importance and under which businesses management needs to develop abilities to ensure the sustainability of their organizations.

After a primary application of the model to two major Portuguese organizations to test it, the authors are trying to improve it by disclosing a set of organizational competences and dimensions to be analyzed at different levels of organizations in terms of their objectivity and scope of information, regarding each one of the five pillars of the model (Direction, Posture, Organization, Behavior and Evaluation). In this sense, with the adoption of focus group research technic the authors united some academic researchers and managers to analyze and develop each pillar of the proposed model.

The authors are developing a study with the support of the Portuguese Construction Technological Platform regarding the main contractors of the sector in Portugal, aiming to reveal the sustainable strength indexes of each one and to disclose the pattern of sustainability robustness of this group of companies.

This paper includes a literature review on several aspects of the organizational sustainability and a review about the model, coupled with the proposal of a mathematical application in order to measure an organization's sustainability strength.

Keywords: management, sustainability, competences, Sustainability Strength Index

1. INTRODUCTION

The bankruptcy of Lehman Brothers Holdings in September 2008 which was the fourth-largest investment bank in the United States (US), and its impact on the global financial system had revealed, according to Roubini and Mihm (2010), that many institutions and companies had become so large, leveraged and interconnected that their collapse have systemic and catastrophic effects.

In March 2010, a report by a court-appointed examiner already indicated that Lehman Brothers executives regularly used disguising accounting tricks to make its balance sheets appear less unstable than they really were, for example, by means of using these practices as a type of repurchase agreement that temporarily removed securities from the company's balance sheet.

Another example of such business practices occurred when Hewlett-Packard (HP) bought in October 2011 one of the Europe's largest and fastest-growing software companies, the Autonomy Corporation settled in Cambridge, England. The price of more than 11 billion dollars paid by HP revealed to be much higher than the true value of the British company, which led to a series of courts promoted by this world major buyer company, simultaneously in US and in the UK.

According to Worthen *et al.* (2012) and despite the raise of concerns from some outside analysts about Autonomy's accounting for years, the hard-driving sales culture shaped by its founder and CEO Mike Lynch and use of aggressive accounting practices to make sure that revenues from software licensing kept growing boost company's valuation.

In Portugal, the Portuguese Government had to nationalize in 2008 the private bank BPN as a result of its poor management which led to a debt of 1.800 billion euros and several irregularities violations revealed in the institution, in order to prevent a financial crisis chain reaction in Portugal.

In April 2010 the Bank of Portugal, official institution which regulates the Portuguese financial and banking system, decreed the end of the private bank BPP after some recapitalization efforts which did not make it possible to overcome the infeasibility of this institution. Simultaneously with the bankruptcy procedures several of BPP managers where accused for accounting distortion, tax crimes, money laundering and fraud.

In Russia, the sanitation of the Bank of Moscow took place in 2011 when it was revealed that portfolio of the bank did not allow it to have financial stability; as the result of poor management practices and aggressive accounting disguise policies Russian government had to invest EUR 10 billion to provide its liquidity before sanitation of bank VTB could start its antirecessionary procedures.

These examples show that manipulating with balance sheets in order to insure formal sustainability can be considered a very common practice which leads to instability of socio-economic holistic systems.

Described examples of modern financial and economic system functioning have awakened us for the sustainability challenges of the companies, economies, countries and even the human beings. These challenges have outlined the importance of insuring responsibility of economic organizations' management, as well as the challenges associated to its continuity in the market.

Sustainability questions focus on the articulation from several agents, starting with management and use of resources and ending with the efficiency of markets functioning, aiming to insure continuing development of the society in existing environment.

The state of environment is changing constantly. The presence of this feeling of change follows the demand of balance before economic, technological, social, politic and cultural environments, as well as the constant attempt of adjustment, looking for survival in a world-wide economy which is becoming more competitive each day (Kirkbridge, 1993).

In this context, a new challenge of insuring sustainability for the economic organizations emerges that demands a balance between differentiated and difference maker skills of the organizational performance, conditioning of the change factors starting from three main axes (Stacey, 1993):

- Discontinuance versus Continuance
- Integration versus Differentiation
- Complexity versus Instability

It's in this economic environment of share and cooperation, also marked with ubiquity, mobility, complexity and interactivity that we would like to know how to evaluate the organizations sustainability (Massey *et al.*, 2000).

All this challenges are present in actual complex structure of businesses, with an intensification of net participations in which we find difficulties that grow according to the requirements related to the integration of the activities in the various value chains, hopping to get a share of objectives, strategies, resources, information, systems and technologies and, over all, commitments.

2. LITERATURE REVIEW

There is no general consensus about the applicability of the concept of corporate sustainability (Coral, 2002).

The importance of this concept has been associated by several authors with ecological vision, where the company is sustainable if it does not pollute environment, e.g. in case when its use of natural resources for the development of its economic activity does not place in danger the rate of natural regeneration (Epelbaum, 2004; Danich, 2003; Atkinson, 2000).

However, its application to businesses did not consider other important principles that firms have to satisfy if they want to be truly sustainable: such as eco-efficiency, socio-efficiency, eco-effectiveness, socio-effectiveness, sufficiency and ecological equity (Dyllick and Hockerts, 2002).

This set of principles induced other authors to consider corporate sustainability as supported simultaneously in physical, social and economic levels, according to a modern and systemic concept of the environment and based on a culture of social responsibility and ethical principles in development of businesses (Anderson, 2006; Ehrenfeld, 2005; Dunphy, 2003).

This concept goes on with the thinking of those who claimed that the central challenge for this century is to create a sustainable global economy and society supported by organizations that are not only sustainable themselves but also sustaining in their impact on society and the biosphere.

In fact, it has never been more urgent than today to realign business and investment practices to value long-term prosperity. The global economy can no longer afford "business as usual", focusing on short-term gains and ignoring long-term risks (CERES, 2008).

As referred by Mehra (2010), sustainability is a process that continually disrupts the *status quo* and harnesses turbulence to achieve long term goals of the organizations trough constant innovation, transparency, commitment, accountability and responsibility.

According to several authors, firms and managers will have to abandon the traditional strategic view, focused essentially on profits and financial performance, and present an alternative vision that is based on the interaction with diverse stakeholders, to their interests and to the environmental impact of their activities according to a *triple bottom line* (TBL) approach (Oliveira, 2007; Almeida, 2007; Donaire, 2006; Santoro, 2003; Elkington, 2001).

However, measuring, analyzing and reporting simultaneously the social, economic and environmental performances according to a TBL approach is not enough to grant organizations sustainability, as well as enterprise's efficiency is not necessarily the result of a proper and efficient management (Svirina, 2009).

Some other questions remain without any conclusive answers:

- Do sustainability reports reveal true organizations' sustainability?
- How one should evaluate sustainability in the context of actual information society?
- How to build a fair and strong sustainable organization?
- Which are the main features which grant organizations sustainability?
- Which are the competences and dimensions that organizations and managers should consider achieving sustainability?

The majority of studies and theories focus essentially in "how" to measure the organizations sustainability and "how" to translate these measures into understandable, suitable and instructive

information for the several traditional stakeholders.

Despite this, some studies have been made in order to measure the efficiency of companies and their management. Svirina (2009) proposed a complex of managerial efficiency indicators to evaluate existing relation between managerial functions performance and company's profit, efficiency and shareholders' value in organizations.

But many times the financial, social and environmental information claimed by organizations reveal lack of transparency about their performance, changing the same according to the impact of their activities on each context and often reflecting interests of individuals, groups and corporations (Santos, 2012).

On the other hand, although many companies aim to achieve sustainable management of businesses and publish their sustainability reports, the real efforts made by them to achieve corporate sustainability remain unclear, more resembling that the same result can be achieved as a consequence of irrelevant factors and lucky coincidences instead of well-defined sustainable strategies based upon valuation of internal and external aspects of the organizations.

The simple earning of profits is not necessarily a result of proper companies' management and shareholders' value and annual profits are not enough to measure corporations' efficiency (Svirina, 2009).

At the same time a good short-term performance of organizations evaluated mainly on the basis of accounting figures and other annual balance sheet information may "cover" difficulties to grant their medium and long term sustainability (Baumgartner and Ebner, 2010).

It is in this framework of reliable information insufficiency that the "DPOBE Model for Organizational Sustainability" (Gisbert López *et al.*, 2010; 2011) arises, aiming to disclose the main features that seem to be crucial for organizations to achieve their sustainability.

It is a recent theoretical approach already with some empirical applications to major Portuguese firms (Gisbert López *et al.*, 2010, 2011; Santos, 2012) which tries to identify major questions regarding the organizational sustainability, focusing itself in the joint of several agents such as the management of human and organizational resources and markets efficiency, in order to guarantee organizations consolidated continuity in society.

This model is supported in five pillars that are referred as the most important in the frame of organizational sustainability and in which managers and organizations should develop their abilities (Figure 1).

The essence of each pillar of the model is the following:

- Direction, which is evaluating economic sense that must be given to organizations, the capacity to conceive the future and find the best way to achieve it, the capacity of strategic innovation to facilitate "business new conception", forcing management to consider in a permanent way "different forms of playing the game in present businesses" (Gisbert López *et al.*, 2010; Santos, 2012);
- Posture, which is concerned with management conducted by ethical values which will give organizations credibility and respect, acting with reliability to induce good attitudes and critical behaviors that will help to reach high performance results, based on confidence and new ideas in order to guarantee their share in a fair and balanced society and economy (Markides, 2000; 1997);
- Organization, which is measuring essential management activity for providing a multi-dimensional and multi-contextual answer to deal with so many different organizations, information systems, support technologies, necessities and objectives in different economic contexts, with the alignment between strategies and the organizational dimensions, responsibilities and performances as a central key in the information economy (Kim and Mauborgne, 2003);
- Behavior, which estimates the quality as a rule for organizations, measuring all activities developed in the sphere of quality insuring, like following strict standards of quality according to patterns of efficiency and effectiveness, with quality as an instrument to

control organizational functioning in order to answer to well-defined strategies and to reach their sustainability (Andrade and Anunciação, 2008, 2009; Anunciação and Zorrinho, 2006; Yang *et al.*, 2005; Grupe *et al.*, 2002; Zeithaml, 2002, 2001; Yoo and Donthu, 2001);

- Evaluation, which means an implementation of procedure to analyze the organizational performance according to the defined strategic options and objectives, requiring special behaviors of organizational systems' management and the performance and risk of activities, allowing a quick access to a large and accurate set of information in order to make mobilization of capacities and resources for problems and critical opportunities (Wolfenbarger and Gilly, 2002; Rajkumar and Mani, 2001; Rodrigues, 2000).



Figure 1. The DPOBE Model for Organizational Sustainability

Source: López *et al.* (2010, 2011)

Trying to upgrade this theoretical model and its empirical applications, some of the authors proposed a quantitative application in order to determine the global sustainability robustness of organizations with the measure of the sustainability strength in each one of the pillars (Santos *et al.*, 2012).

3. THE QUANTITATIVE APPROACH WITHIN THE DPOBE MODEL

3.1 Definition of organizational competences and dimensions

To disclose a set of competences and dimensions which are to be analyzed at different levels of organizations in terms of their objectivity and scope of information regarding each one of the five pillars of the model, the authors used the focus group research technic.

Methodological approach used within this study is focus groups. Focus group is a powerful research tool that can provide uniquely valuable insights and also rapid and suitable collection, integration and assembly of different points of view from a wide range of stakeholders around a conceivable theory (Boateng, 2012; Bishop, 2006).

For this proposal and by the joint of academic researchers in the field of management with management professionals, some questions were discussed in each step of the model in order to permit the definition, mainly in a micro-economic approach, of an assortment of skills and parameters suitable to be analyzed in organizations in view of each pillar of the model, already

applied to a major Portuguese company (Santos, 2012).

The author's aim, through the sharing of experiences and knowledge with invited experts, was to identify a mathematical model and give a tool to measure sustainability strength.

Therefore, four levels in organizations were chosen to be analyzed in detail:

- Strategic level;
- Operational level (including short and long term planning and organizational and functional planning);
- Top management level (including resolutions and administration written records);
- Activity reports (including sustainability and official accounting, revision and management reports).

For each level, two dimensions were defined to be evaluated:

- Objectivity (concerning the way each parameter and competence is defined or formally declared);
- Scope and Knowledge (related with the disclosure of each parameter and competence).

To rate each one of this dimensions the use of a scale with four possible types of evaluation were proposed.

For the dimension "Objectivity" the evaluation grid "explicitly defined", "implicitly defined", "undefined or not declared" and "not applicable" has been suggested.

For the dimension "Scope and Knowledge" the classifications "from public domain (stakeholders)", "from domain of all corporation's employees", "from exclusive domain of management board" and "not applicable" were used.

Parameters and competences that should be examined in each of the five pillars concerning the two dimensions above are:

- Direction
 - Mission, values and corporate policies (Why?)
 - Business strategy and definition of strategic objectives (How?)
 - Timeframe and quantification of strategic objectives (When and What?)
 - Integration of business strategy to economic group policies/strategies (How?)
 - Action markets (*Where?*)
 - Target customers (*Who?*)
 - Products and services (*What?*)
 - Time-to-Market (*When?*)
 - Products and services placement (*How?*)
- Posture
 - Values and corporate culture
 - Ethical principles
 - Organizational principles and code of conduct
 - Social responsibility principles and code of conduct
 - Environmental principles and code of conduct
 - Principles and codes of professional conduct
 - Principles of relationship with suppliers
 - Principles of action and participation in the community
 - Legal framework of activities
- Organization
 - Organizational structure
 - Integration and compatibility of organizational structure in economic group
 - Functional diagrams and operational rules
 - Organizational information systems
 - Training and information of employees, suppliers and subcontractors
 - Planning of activities and resource allocation
 - Strategic business partnerships

- Business units, geographic action areas and subsidiaries/branch offices
- Outsourcing of activities and functions
- Behavior
 - Certifications and sub-systems of management
 - Level of effectiveness (objectives)
 - Level of efficiency (resources)
 - Productivity levels
 - Internal audits
 - Customers and employees satisfaction analyses
 - Action on internal faults and complaints
 - Continuous improvement processes
 - Conciliation between strategy and operational actions
- Evaluation
 - Indicators and evaluation metrics
 - Evaluation of results
 - Appraisal between expected and obtained results
 - Monitoring of organizational efficiency
 - Monitoring of organizational effectiveness
 - Economic and markets analyses
 - Adjustment of actions according to results
 - Forecasting and development of future scenarios and potential markets
 - Strategic realignment procedures.

3.2 Measuring the sustainability strength

To fulfill a possible quantitative model which is being developed in order to define and measure the sustainability strength of each pillar and the global strength of sustainability of organizations, the authors propose the redefinition of the set of questions and parameters in order to permit a single answer regarding both dimensions, suitable to be tested in the future research applications.

To rate each one of the parameters and competences that should be examined in each of the five pillars with the use of a Likert scale, the authors proposed the use of the following scale with six types of answers:

- Explicitly defined and well exposed and applied (Value 5)
- Explicitly defined but insufficiently exposed and applied (Value 4)
- Implicitly defined and collectively recognized (Value 3)
- Implicitly defined but individually recognized (Value 2)
- Undefined or not declared/not applied (Value 1)
- Don't know/don't answer/not applicable (Value 0)

The first type (5) shows us a clear and objective definition of parameters and competences, with a proper disclosure and identification in each different organization level and a good evaluation from management.

The second type of answer (4) provides the sense of concern by management to do a proper and objective definition of parameters and competences but with some lack of effectiveness in their knowledge and disclosure in each organization level, with some problems in their identification in the formal institutional communication means and channels and without any accurate evaluation.

The third one (3) reveals some loopholes in the definition of parameters and competences and the sole assumption that the same, even if not explicitly presented but subjectively established, are normally recognized and implicitly assumed in each level of the organization by managers and other personal.

The fourth type of answer (2) implements that parameters and competences are defined and are

being perceptible in a subjective way, without any integration in the general organizational culture and sometimes recognized by managers and other staff.

The fifth one (1) reveals parameters and competences not identified or recognized, both in explicit or subjective ways, without any integration or application in the organizational structure and especially without any presence in their internal culture.

The last type of answer (0) reveals, on the one hand, a total lack of knowledge about the analyzed parameter or competence and its application or utility in the organizational structure and functioning; on the other hand, a non-application of the described item in the considered organizational level.

By the average of the answers, we can define the sustainability strength of each pillar of the model and with their sum the level of sustainability robustness of the global organization, permitting to rate those according to six categories (presented values for averages – pillars, between 0 and 5 points – and sums – global sustainable robustness, between 0 and 25 points):

- Extremely robust (equal or more than 5/22)
- Highly robust (from 4/18 to less than 5/22)
- Robust (from 3/13 to less than 4/18)
- Medium robustness (from 2/8 to less than 3/13)
- Low robustness (from 1/4 to less than 2/8)
- Without robustness (less than 1/4)

We propose an Organizational Sustainable Robustness Index, supported in the sustainable strength indexes of each pillar of the discussed model in the organizations:

$$\mathbf{R}_S = \mathbf{f}(\mathbf{S}_i)$$

\mathbf{S}_i : Sustainable Strength Index of each pillar of the DPOBE Model

\mathbf{R}_S : Organizational Sustainable Robustness Index

It can also allow disclosing, for a certain group of companies or a business sector, a possible pattern of sustainability and evidence a set of factors that could be representative and illustrative of a similar behavior pattern, of key-conditions and management skills required for the organizations' sustainability.

According to the pillars of the DPOBE Model, the sustainable robustness of a set of companies can be formalized as a mathematical function:

$$\mathbf{R}_S = \mathbf{R}_0 + \mathbf{a}_D \cdot \mathbf{S}_D + \mathbf{a}_P \cdot \mathbf{S}_P + \mathbf{a}_O \cdot \mathbf{S}_O + \mathbf{a}_B \cdot \mathbf{S}_B + \mathbf{a}_E \cdot \mathbf{S}_E$$

\mathbf{R}_0 : Independent coefficient

$\mathbf{S}_{D,P,O,B,E}$: Sustainable Strength Indexes of each pillar of the DPOBE Model

$\mathbf{a}_{D,P,O,B,E}$: Coefficients of each Sustainable Strength Indexes.

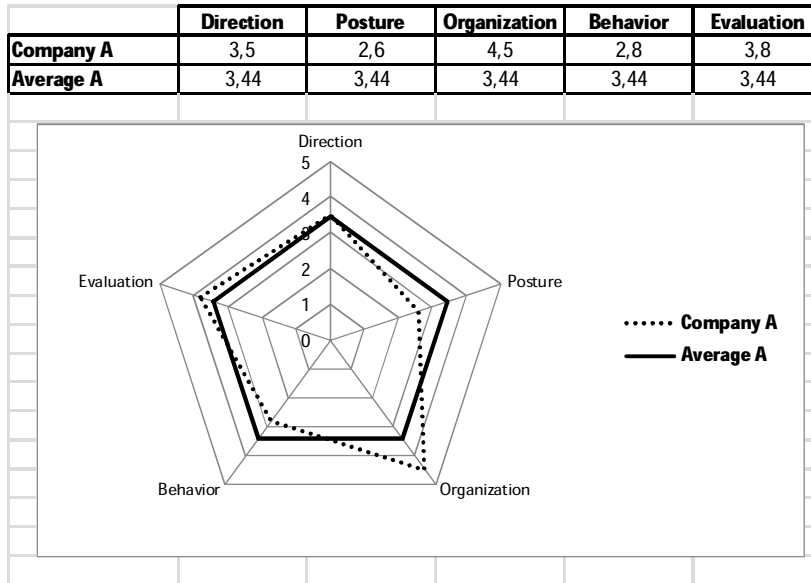


Figure 2. Sustainable Strength Indexes for One Company (*Example*)

This type of analysis allows one to compare sustainability strengths in each pillar and the global sustainability robustness for a set of companies in a business sector visually as well:

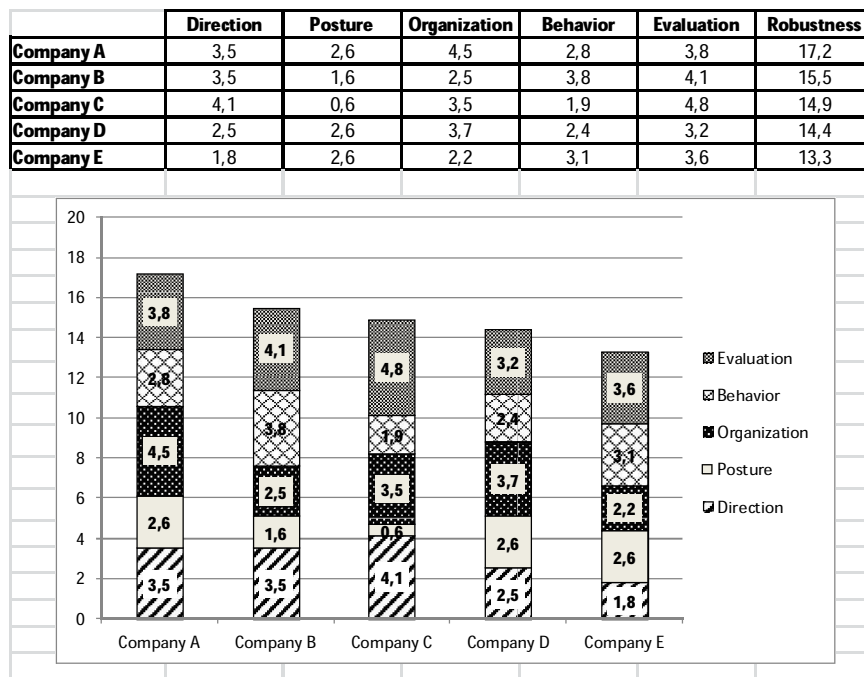


Figure 3. Sustainability Strengths and Robustness of a Group of Companies (*Example*)

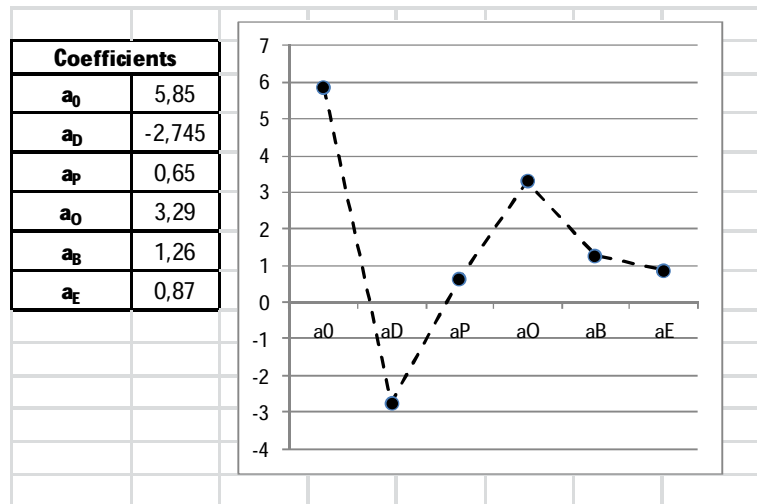


Figure 4. Statistical Inference of a Group of Companies/Business Sector (Example)

Such an approach allows having a powerful tool for measuring organizations' sustainability in multiple dimensions.

4. CURRENT DEVELOPMENTS

The authors are developing a study regarding the main contractors of the building and civil construction sector in Portugal with the support of the Portuguese Construction Technological Platform*.

As an industrial sector construction traditionally has relevant weight in Portuguese gross domestic product (GDP) and makes a significant impact on employment figures, due to last year's general recession and specifically in the building and civil construction sector, the authors aim to reveal the sustainable strength indexes of each one of the selected companies and to disclose a pattern of sustainability robustness of this reference group.

The needed enquiry will be launch during May 2013 in a cluster of about one hundred Portuguese companies of the construction and engineering sector, owners at least of one the highest official grade of construction (Level 9) in the subcategory "General Contractor or General Constructor" or in one of the subcategories of the category "Waterworks".

5. FUTURE DEVELOPMENTS

In the future, there will be a need to develop some studies within this field in order to validate the mathematical application of the model, adjusting or changing it if necessary according to new aspects and characteristics that may be considered as relevant to reach a deeper knowledge on organizations that aims to follow sustainable strategies and grant their sustainability.

* Organization created by associations, federations, confederations, public and private entities of the construction industry and public works sector or connected with it that aims to promote a reflection on the sector and the implementation of initiatives and projects of research, development and innovation in order to increase its competitiveness, to promote cooperation between companies and entities of the Portuguese Scientific and Technological System and to influence policies related with construction in Portugal and in Europe through the European Construction Technological Platform (ECTP).

These studies should be performed for different types of industries, in both within one single country or internationally as well as both within one industry or cross-sectionally.

A group of three Russian construction companies would be also used as a control group which is possible due to a similar role which construction sector plays in Portuguese and Russian economy.

Meanwhile, the research team is developing the procedures needed to register and protect this methodology of analysis in order to create a working tool, suitable to be used by different economic agents and public and private entities to disclose the effective sustainability level of organizations.

Other hypothesis already discussed among the research team is the possible future drawing of an organizational standard of sustainability, supported in the principles of the discussed model and its mathematical application.

6. CONCLUSIONS

For the authors and other researches interested in the economic, social and the environmental scopes in a medium and long term perspective, there are several dimensions and parameters that seem to be fundamental and in which managers and organizations must improve their knowledge and develop competences.

The achievement of a set of indicators of financial, environmental and social nature according to the TBL approach does not grant itself an effective sustainability of organizations. Also the data and metrics used in accordance with this approach and the showed organizational results cannot translate by themselves the real effort made (or not) to define and pursuit sustainable strategies.

In this framework, the necessity to define and use tools and models suitable to permit an analysis and detection of the fundamentals and purposes of organizations and the principles and strength of the followed strategies in what seems to be an a sustainable organization emerges.

The DPOBE Model of Organizational Sustainability is a recent theoretical approach based on empirical analysis and still has only a few applications in case studies. However, the authors aim to develop it into a proposal of a quantitative model, which can enable comparative mathematical and statistics analyses such as statistical inference and correlation analysis.

This approach allows making a comparison of organizations, both between the levels of sustainability measured according to a TBL approach such as the Dow Jones Sustainable indexes, the accounting rules AA 1000 or the Global Reporting Initiative indexes and the effective strength of the organizational sustainability.

This evolution of the DPOBE Model for Organizational Sustainability and the pretended definition of the concept of sustainable strength/robustness require hard testing, analysis and comparison among several organizations.

These comparisons between several organizations should be performed on different sectors or industries in a same country, giving opportunity to future studies regarding comparisons between the sustainable strength/robustness of a same sector and its agents in several countries.

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