

THE EXPERTONS METHOD APPLIED IN THE DIALOGUE WITH STAKEHOLDERS

Anna M. Gil Lafuente and Luciano Barcellos Paula

Faculty of Economics and Business. University of Barcelona, Av. Diagonal 690, 08034 – Barcelona, Spain

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Abstract: According to numerous scientific studies one of the most important points in the area of sustainability in business is related to dialogue with stakeholders. Based on the Theory of Stakeholder try to analyze corporate sustainability and the process of elaboration a business report prepared in accordance with the guidelines of the guide G3 - Global Reporting Initiative. With the completion of an empirical study seeks to understand the expectations of stakeholders regarding the implementation of the contents of the sustainability report. To achieve the proposed aim we use “The Expertons Method” algorithm that allows the aggregation of opinions of various experts on the subject and represents an important extension of fuzzy subsets for aggregation processes. At the end of our study, we present the results of using this algorithm, the contributions and future research.

1 INTRODUCTION

The Stakeholder Theory postulates that a company's ability to generate sustainable wealth over time and thus its long-term value is determined by its relations with its stakeholders (Freeman, 1984). Donnelly, the stakeholder of a company is (by definition) any group or individual who can affect or is affected by the achievement of the objectives of the organization. From Freeman, other authors (Alkhafaji, 1989; Carroll, 1989; Brummer, 1991; Clarkson, 1991; Goodpaster, 1991; Hill & Jones, 1992; Wood, 1991; Donaldson, T. and Preston, L.E. 1995; Mitchell, R.K., Agle, B.R. and Wood, D.J., 1997; Post, J.E., Preston, L.E. and Sachs, S. 2002; Rodríguez, M.A., Ricart, J.E. and Sánchez, P. 2002; Aguilera, R.V. and Jackson, G. 2003; Hart, S.L. and Sharma, S. 2004) have given primary emphasis on the concept of the stakeholders. According to the authors (Post, Preston and Sachs, 2002), stakeholders of a firm are individuals and groups who contribute voluntarily or involuntarily, to its capacity and wealth creation activities and therefore, are potential beneficiaries and / or risk bearers.

In the Stakeholder Theory (Olcese *et al.* 2008), the enterprise is defined as a socioeconomic organization formed to create wealth for the multiple groups that compose it. The constructive engagement of stakeholders (Elkington, J. 1998),

companies can increase external confidence in its intentions and activities, helping to improve corporate reputation and catalyze the diffusion of more sustainable practices in the enterprise system in general. In this new economy of stakeholders (Olcese Santoja, 2009) we can speak of two types of companies: traditional company and sustainable company. Its characteristics can be differentiated as described in Figure 1.

Traditional company	Sustainable company
Approach Shareholder	Approach Stakeholder
shareholders, collaborators and clients.	Shareholders, clients, ONG's, groups of opinion, suppliers, collaborators, administrations, unions and local community.
Management of tangible assets	Management of tangible and intangible assets
Short term	Long term

Figure 1: Differences between traditional company and sustainable company.

The traditional company has a shareholder-oriented approach to three stakeholders (shareholders, employees and customers). Its orientation is based to enhance the physical assets of the company and their expectations are short term. The only aim of the company is to maximize profits and respond to shareholders. Furthermore, sustainable company has a stakeholder-oriented approach towards all interest groups that take part in the business (shareholders, employees, customers,

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NGOs, governments, unions, local community, groups of opinion and suppliers). Its orientation is based to enhance tangible and intangible assets of the company as part of the value of the company and its long-term expectations are. It's a new way of managing the company (Carrión, J. 2009) in which it must develop strategies and policies through internal codes of conduct to ensure that the development of its regular activities will be sustainable and not impact against the social rights and environmental interest groups involved, while, to be taken into account in defining their business strategies. According to the Sustainability Reporting Guidelines, version 3.0, *Global Reporting Initiative* (GRI, 2006) participatory processes of stakeholders can serve as tools to understand the reasonable expectations and interests of those. The GRI says that “an organization may encounter conflicting views or differing expectations among its stakeholders, and will need to be able to explain how it balanced these in reaching its reporting decisions. Failure to identify and engage with stakeholders is likely to result in reports that are not suitable, and therefore not fully credible, to all stakeholders. In contrast, systematic stakeholder engagement enhances stakeholder receptivity and the usefulness of the report. Executed properly, it is likely to result in ongoing learning within the organization and by external parties, as well as increase accountability to a range of stakeholders. Accountability strengthens trust between the reporting organization and its stakeholders. Trust, in turn, fortifies report credibility”.

Because of the complexity that is dialogue with stakeholders, is crucial to address the analysis with an approach based on complex systems and models that help entrepreneurs in making decisions, especially in an uncertain environment. For these reasons, it is justified to analyze the dialogue with stakeholders using algorithms such as "The Expertons Method" (Kaufmann, A. and Gil Aluja, J. (1993). This method represents an important extension of fuzzy subsets whose idea and development is due to A. Kaufmann (1987). To authors (Gil Lafuente *et al.*, 2007) “the advance that the expertons method represent in relation with other instruments of treatment of the uncertainty comes given by the fact that it allows simultaneously a good aggregation of the opinion of several experts and that these express their opinions with the freedom provided by the fuzzy numbers”. We stand out some authors have used fuzzy logic applied to the sustainability as (Gil Lafuente, A.M. *et al.*, 2005, 2006) in the analysis of organic purchasing decisions

of consumers, (Barcellos Paula and Gil Lafuente, 2009a) in the selection of elements that contribute to sustainable growth of the company, (LU LYY *et al.*, 2007) in the analysis of decision and evaluation of "green" suppliers, and (Barcellos Paula; and Gil Lafuente, 2009b) in algorithms applied in the sustainable management of the human resources.

2 METHODOLOGY

Now, very briefly, how to build an Experton from their properties. We know that everything has the property Experton monotony Loose growing horizontal, i.e., the characteristic function of belonging of the function of positive slope is less than or equal to the characteristic function of belonging of the downward-sloping. And moreover all vertical growing Experton has no strict monotony, except in level 0 which always takes the value 1. Therefore, we say:

$$\forall \alpha \in [0,1]: a_1(\alpha) \leq a_2(\alpha) \text{ in } [a_1(\alpha), a_2(\alpha)] \quad (1)$$

$$\forall \alpha, \alpha' \in [0,1]: (\alpha > \alpha') \Rightarrow (a_1(\alpha) \leq a_1(\alpha'), a_2(\alpha) \leq a_2(\alpha')) \quad (2)$$

$$(\alpha = 0) \Rightarrow (a_1(\alpha) = 1, a_2(\alpha) = 1) \quad (3)$$

We consider the valuation of each expert expresses a level of truth by scale of 11 values between 0 and 1 both included that can be explained generically as follows:

- 0: false
- 0.1: practically false
- 0.2: almost false
- 0.3: quite false
- 0.4: more false than true
- 0.5: neither true nor false
- 0.6: more true than false
- 0.7: quite true
- 0.8: almost true
- 0.9: practically true
- 1: true

From here will start a process of aggregation led to the transformation of opinions in a representative of the previous valuation. The first task will be to obtain the statistics of the opinions to know the time that experts have expressed the same opinion. From the obtained cumulative frequency is the calculation of the cumulative relative frequencies for the above values by dividing the total number of views. The result is called “Experton”. Its significance lies not only in obtaining the relative frequencies assigned to the characteristic function of belonging, but that the information provided enables the distribution and

the tendency of subjective opinions about whose number can be very variable. The Experton is itself an aggregate view representative of all that have been considered in the sample. In order to give a simplified representation of an Experton, can be used to obtain the mathematical expectation. All operators can be used with variable or confidence intervals in [0,1] can also be used Experton, and these operations are valid for any number of Experton.

3 APPLICATION OF THE EXPERTONS METHOD

Our study focuses on knowing the expectations of stakeholders with respect to compliance with the contents of the sustainability report prepared by a company in accordance with the guidelines G3 - *Global Reporting Initiative*. To achieve this objective will try to analyze the sustainability of a business catering sector through a survey conducted in August 2009 by the *Ideas and Solutions Consulting* in Brazil. At the request of the contractor, the study data were treated with strict confidentiality. Therefore, as suggested by the Guidelines version 3.0, *Global Reporting Initiative (GRI)*, the company to develop its "Sustainability Report" must be engaged in an extensive network of experts from various interest groups among which include business organizations, workers, NGOs, investors and auditors, among others. The consultancy contract was charged with gathering a selection of interest groups, composed of 10 experts on a panel to discuss Corporate Social Responsibility issues that have been predefined. The aim is to examine the basic content of the GRI, which stands out among *social performance*, and produce one or more outcomes, such as comments or recommendations, which the company may or may not establish specific commitments. Once submitted to the 10 experts the contents of the Performance Report on Social Sustainability, ask that you indicate your view with the scale [0,1], whereby, as the closer estimate 1, the better the meeting the expectations of stakeholders in the following items:

- 1- Labor practices and decent work
- 2- Human rights
- 3- Society
- 4- Product responsibility

4 RESULTS

The approach that follows is based on the consideration of elements and data emerging from a real demand. The results may allow for deep reflection and application to academic and professional fields.

According to data collected by the consultant would have the views of 10 experts, as shown in Table 1.

Table 1: Views of 10 experts.

Expert	Valuation			
	1	2	3	4
1	0.3	0.4	0.4	0.5
2	0.7	0.6	0.5	0.6
3	0.1	0.4	0.6	0.7
4	0.4	0.6	0.8	1
5	0.8	0.7	0.9	0.8
6	0	0.3	0.4	0.6
7	0.5	0.6	0.7	0.4
8	0.2	0.4	0.8	0.6
9	0.3	0.3	0.6	0.7
10	0.9	0.8	0.5	0.8

The first task will be to obtain the statistics of the opinions to know the time that experts have expressed the same valuation (Table 2).

Table 2: Cumulative Frequency.

	1		2		3		4	
	Cumulative frequency	Nº Times						
0	10	1	10	0	10	0	10	0
0.1	9	1	10	0	10	0	10	0
0.2	8	1	10	0	10	0	10	0
0.3	7	2	10	2	10	0	10	0
0.4	5	1	8	3	10	2	10	1
0.5	4	1	5	0	8	2	9	1
0.6	3	0	5	3	6	2	8	3
0.7	3	1	2	1	4	1	5	2
0.8	2	1	1	1	3	2	3	2
0.9	1	1	0	0	1	1	1	0
1	0	0	0	0	0	0	1	1

From the obtained cumulative frequency is the calculation of cumulative relative frequencies (Table 3) dividing the above values by the total number of views, in our case 10.

Table 3: Cumulative relative frequencies.

	1	2	3	4
0	1	1	1	1
0.1	0.9	1	1	1
0.2	0.8	1	1	1
0.3	0.7	1	1	1
0.4	0.5	0.8	1	1
0.5	0.4	0.5	0.8	0.9
0.6	0.3	0.5	0.6	0.8
0.7	0.3	0.2	0.4	0.5
0.8	0.2	0.1	0.3	0.3
0.9	0.1	0	0.1	0.1
1	0	0	0	0.1

The result is called "Experton. The Experton is itself an aggregate view representative of all that have been considered in the sample. In order to give a simplified representation of an Experton, can be used to obtain the expected value (Table 4).

Table 4: Expected value.

$\epsilon_1 =$	0.4
$\epsilon_2 =$	0.5
$\epsilon_3 =$	0.6
$\epsilon_4 =$	0.7

The result identifies the expectations of stakeholders about the content of the sustainability report related to corporate social performance through the aggregation of views. In this case, we observe a very large distance between the expectations of stakeholders with the draft sustainability report being prepared by the company. Therefore, the company needs to devote special attention to the contents related to "labor practices and decent work" and "human rights" valuation receiving 0.4 and 0.5 respectively. The items "society" and "product responsibility" valuation were 0.6 and 0.7 respectively. The proposed model can be extended in accordance with the requirements of questions and the number of participating experts and business sectors.

5 CONCLUSIONS

The study on corporate sustainability shows that compared with the changes we are living is essential to find models that will help employers in making decisions, especially in an uncertain environment. Because of the complexity that is the search for more sustainable development through dialogue with stakeholders in our research we try to analyze these complex systems using fuzzy logic. In implementing the proposed model, we provide a tool based on the use of "Method of Experton". This methodology can facilitate decision making by obtaining qualitative data from a dialogue with various stakeholders. This is an innovation and a useful tool to be used in the processes of aggregation and unification of views or differing expectations among its stakeholders. The model also allows to know the distribution function at levels characteristic of belonging to the aggregate values. The result show that has provided us with the expectations of stakeholders regarding the implementation of the contents of the sustainability report. Now the company must revise their commitments and related management approach

social issues, such as "labor practices and decent work" and "human rights".

The main contribution of this paper is to provide a model that assist entrepreneurs in the aggregation of opinions related to the stakeholders. At the same time, as the GRI G3, the company serves as documentation and explanation of how it has evaluated such factors when drafting the report. We believe that our contribution will serve to support future research in the field of sustainability in business and the application of the methodology in dialogue with stakeholders.

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REFERENCES

- Aguilera, R.V., Jackson, G., 2003. The Cross-National Diversity of Corporate Governance: Dimensions and Determinants. *The Academy of Management Review*, 28(3), 447-465.
- Alkhafaji, A.F., 1989. A stakeholder approach to corporate governance: Managing in a dynamic environment. New York: Quorum Books.
- Barcellos Paula, L., Gil Lafuente, A.M., 2009a. Proceso de selección de elementos que contribuyen al crecimiento sostenible de la empresa. *Proceeding of International Conference and Doctoral Consortium for ISEOR and Academy of Management*, held at Lyon, France, (1), 773-788.
- Barcellos Paula, L., Gil Lafuente, A.M., 2009b. Algoritmos aplicados en la gestión sostenible de los recursos humanos. Economic and Financial Crisis: "New challenges and Perspectives". *Proceeding of XV Congress of International Association for Fuzzy-Set Management and Economy (SIGEF)*, Lugo, Spain.
- Brummer, J.J., 1991. *Corporate responsibility and legitimacy: An interdisciplinary analysis*. New York: Greenwood Press.
- Carrión, J., 2009. *Responsabilidad Social Corporativa. Observatory on Debt in Globalization*. Sustainability Portal. UNESCO Chair of Sustainability at UPC. Barcelona.
- Carroll, A.B., Buchholtz, A.K., 1989. *Business and Society: Ethics and Stakeholder Management*. Southwestern Publishing Co., Cincinnati.
- Clarkson, M.B.E., 1991. Defining, evaluating, and managing corporate social performance: A stakeholder management model. In *J. E. Post (Ed.), Research in corporate social performance and policy* (pp. 331-358). Greenwich, CT: JAI Press.

- Donaldson, T., Preston, L. E., 1995. The Stakeholder Theory of the Corporation: Concepts, Evidence and Implications. *Academy Management Review*, 20(1), 65-91.
- Elkington, J., 1998. *Cannibals with forks: the triple bottom line of 21st Century Business*. Oxford, U.K. Capstone Publishing Limited.
- Freeman, R.E., 1984. *Strategic Management: A Stakeholder Approach*. Pitman Series in Business and Public Policy.
- Gil Lafuente, A. M *et al.*, 2007. *Modelos y Algoritmos para el tratamiento de la creatividad en la gestión empresarial*. Editorial Milladoiro (pp.47-91).
- Gil Lafuente, A.M. *et al.*, 2005. Models for analysing purchase decision in consumers of ecologic products. *Fuzzy Economic Review*, X, 47-62.
- Gil Lafuente, A.M., Salgado Beltrán, L., Subirá Lobera, E., Beltrán, L.F., 2006. Teoría de efectos olvidados en el consumo sustentable de productos ecológicos. In *Desarrollo sustentable: ¿Mito o realidad?* (pp. 223-240). Ed. Centro de investigaciones biológicas del noroeste, S.C. Mexico.
- Global Reporting Initiative, 2006. *Sustainability Reporting Guidelines*, version 3.0.
- Goodpaster, K.E., 1991. Business ethics and stakeholder analysis. *Business Ethics Quarterly*, 1(1), 53-73.
- Hart, S.L., Sharma, S., 2004. Engaging Fringe Stakeholders for Competitive Imagination. *Academy of Management Executive*, 18(1).
- Hill, C.W.L., Jones, T.M., 1992. Stakeholder-Agency Theory. *Journal of Management Studies*, 29, 131-154.
- Kaufmann, A., 1987. *Les expertones*. Ed. Hermés. París.
- Kaufmann, A., Gil Aluja, J., 1993. *Técnicas especiales para la gestión de expertos*. Milladoiro, Santiago de Compostela (pp. 89-118).
- Lu Lyy, Wu Ch, Kuo Tc., 2007. Environmental principles applicable to green supplier evaluation by using multi-objective decision analysis. *International Journal of Production Research*, 45(18-19), 4317-4331.
- Mitchell, R.K., Agle, B.R., Wood, D.J., 1997. Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of who and what really Counts. *The Academy of Management Review*, 22(4), 853-886.
- Olcese Santoja, A., 2009. *La Responsabilidad Social y el Buen Gobierno en la empresa, desde la Perspectiva del Consejo de Administración*. Thesis Directors: Dr. Prosper Lamothe and Dr. John Mascarenas. Universidad Autonoma de Madrid and Universidad Complutense de Madrid. Faculties of Economics and Business.
- Olcese, A., Rodríguez Ángel, M., Alfaro, J., 2008. *Manual de la empresa Responsable y Sostenible*. Madrid: McGraw-Hill.
- Post, J.E., Preston, L.E., Sachs, S., 2002. Managing the Extended Enterprise: The New Stakeholder View. *California Management Review*, 45(1), 5-28.
- Rodríguez, M.A., Ricart, J.E., Sánchez, P., 2002. Sustainable Development and the Sustainability of Competitive Advantage: A Dynamic and Sustainable View of the firm. *Creativity and Innovation Management*, 11.
- Wood, D. J., 1991. Social issues in management: Theory and research in corporate social performance. *Journal of Management*, 17, 383-405.