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Managing sustainability with the support of business intelligence: Integrating socio-environmental indicators and organisational context

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ABSTRACT

In this paper we explore how management of sustainability in organisations can be supported by business intelligence (BI) systems. We suggest that BI has an important role to play in helping organisations implement and monitor sustainable practices. We pay particular attention to one phase of any BI project, the information planning phase, i.e., the systematic way of defining relevant information in order to integrate it in reporting activities. Using grounded theory, the main contribution of our study is to propose a conceptual model that seeks to support the process of integration of socio-environmental indicators into organizational strategy for sustainability.

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1. Introduction

The main purpose of this research is to explore how business intelligence (BI) models can support the management of sustainability business practices in contemporary firms. We advance the view that BI methods and tools have an important but as yet not well studied role to play in helping organisations implement and monitor sustainable and socially responsible business practices. The contribution of this paper is to shed light on *what role* and *how*.

After years of significant investment in putting in place a technological platform that supports business processes and strengthens the efficiency of operational structure, most organizations have reached a point where the use of tools to support the decision making process at the strategic level emerges as more important than ever. Herein lies the importance of the area known as business intelligence (BI), seen as a response to current needs in terms of access to relevant information through intensive use of information technology (IT) (Petrini and Pozzebon, 2008). BI systems have the potential to maximize the use of information by improving the company's capacity to structure a large volume of information and make it accessible, thereby creating competitive advantage, what Davenport calls "competing on analytics" (Davenport, 2005).

Moreover, the concepts of sustainability and corporate social responsibility (CSR) have been among the most important themes to emerge over the last decade at the global level. Although the concept of CSR historically precedes the emergence of the sustainability concept, the two are considered comparable concepts in this paper since both, nowadays, take into consideration environmental, social and economic dimensions. In addition, both refer to a long-term perspective based on requirements necessary to provide for the present without compromising the needs of future generations. Issues typically

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included in a sustainable and socially responsible agenda relate to business ethics, community investment, environmental protection, human rights and workplace conditions, among others. The increasing importance of sustainability and CSR should be assessed within the complex context of globalization, deregulation and privatization, where social, environmental and economic inequalities continue to increase (Raynard and Forstarter, 2002). In light of this contextual perspective, managers have to take into account not only increased sales and profits and/or decreased costs, but also sustainable development of the business itself and of the surrounding context. Therefore, a growing number of companies worldwide have engaged in serious efforts to integrate sustainability into their business practices (Jones, 2003).

Despite the explosion of interest in and concern with sustainable practices, their effective implementation faces serious obstacles. Up to now, most firms have kept the question of sustainability separated from considerations of business strategy and performance evaluation, areas that are often dominated by purely "economic" performance indicators. In addition to a definition of social and environmental indicators, the question of how they can be operated, visualized, and monitored is crucial in terms of value added to CSR management, once transparency and accessibility of corporate information (how it is generated and, once stored, how it is distributed and disclosed) become important issues (Clarkson, 1995).

Viewed separately, *sustainability/social responsibility* and *business intelligence* each represent relevant themes for investigation. Curiously, few studies have considered these two themes in conjunction. We argue that purposive use of BI tools and methods can improve the definition, gathering, analysis and dissemination of socio-eco-financial information among employees, clients, suppliers, partners and community. The term BI tools refers to technological applications and platforms (including software, hardware, data warehouse, network, etc.), while BI methods refer to methodologies concerned with different BI project phases. We pay particular attention to one phase of any BI project: the information planning phase, i.e., the systematic way of defining indicators, metrics and other relevant information in order to integrate them into monitoring and reporting activities.[1] The research question guiding this inquiry is: *How can the process of defining and monitoring socio-environmental indicators be integrated into the organizational strategy for sustainability?*

Our aim is to provide an original framework for theoretical advances in the field and actionable knowledge (Argyris, 2006) for supporting projects involving sustainability and CSR. By actionable knowledge we mean knowledge that enables organizational and societal members to make informed choices about important practical problems. The paper is structured as follows: Section 2 presents a review of literature around the two main themes: BI and sustainability/CSR; Section 3 presents the research method; Section 4 shows the results; Section 5 contains the discussion; and Section 6 presents the conclusion.

2. Literature review

2.1. Sustainability and corporate social responsibility

From a historical point of view, the seminal work of Bowen (1953) was one of the starting points of the field that has come to be known as corporate social responsibility (CSR). In our research, we define CSR as a comprehensive set of policies, practices and programs that are integrated into business operations, supply chains, and decision-making processes throughout a company, with the aim of inculcating responsibility for current and past actions as well as future impacts (BSR, 2008). Likewise, although issues around sustainability have a long history, the predominant interpretation of sustainable development was introduced by the Brundtland Commission's report in 1987: meeting the needs of the present without compromising the ability of future generations to meet their own needs. From a corporate point of view, a strategy for corporate sustainability must meet the needs of the firm's stakeholders without compromising its ability to meet the needs of future stakeholders as well (Hockerts, 2001). Elkington (1998) defines a sustainable enterprise as a company that contributes to sustainable development by delivering economic, social and environmental benefits simultaneously – the so-called *triple bottom line.*

The two terms, sustainability and CSR, have progressively converged and today they encompass similar dimensions and are often applied as synonymous or equivalent terms (Emerson, 2003; Mazon, 2004). First, both concepts involve multiple levels of analysis – individual, groups, firms, communities, etc. – and multiple stakeholders – employees, shareholders, clients, suppliers, partners, community members, etc. Second, CSR and sustainability deal with issues related to three distinct spheres that sometimes overlap: social, environmental and economic. It is important to note that the economic sphere is not limited to short-term performance indicators like return on investment (ROI), but also refers to elements that contribute to long-term financial success, like company reputation and company relationships. Consequently, managing sustainability and CSR implies seeking a balance between short- and long-term considerations, and among the interests of a larger group of stakeholders than those addressed by "traditional" management (Raynard and Forstarter, 2002).

To present a comprehensive review of CSR and sustainability literature is, today, a colossal task that would require an entire paper just for that purpose. For reasons of length, we summarize here three selected groups of work that characterize, from our perspective, important moments in the conceptual evolution of CSR and sustainability concepts from a management point of view (Table 1).

We outline the work of Elkington (1998), who proposed the triple bottom-line concept, allowing organizations to interpret sustainability through the integration of the three primary dimensions noted above: economic, environmental and

[1] Taydi (2006) carried out a comprehensive review of BI project phases and proposed six typical phases: preliminary study, conception, development, implementation, testing and training. The information planning phase is the most important step of the first phase, the preliminary study.

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