ERP System Implementation and Sustainability Performance Rating and Reputation

Emergent Research Forum (ERF)

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Abstract

As organizations strive to meet stakeholders’ needs for sustainability information, they convey their status as sustainability leaders by publishing reports and seeking sustainability awards. Our research examines whether the extent of Enterprise Resource Planning (ERP) system implementation, which enables data and process integration across multiple functional areas, increases organizations’ ability to capture and integrate information for sustainability reporting. We propose that ERP systems implementation increases organizations’ ability to capture sustainability data and provides more and more favorable disclosures, resulting in better sustainability assessment scores by rating agencies and indices such as MSCI and the Dow Jones Sustainability Index. We also pose research questions about the type of ERP modules that are implemented and how those impact the scores related to the social, environmental, and governance dimensions of sustainability leadership. Our study is expected to contribute to the sustainability reporting and reputation, and the ERP systems literature, and to practice.

Keywords

Sustainability data, disclosures, report, rakings, ratings, ERP implementation, DJSI, KLD.

Introduction

Organizations are increasingly focusing on sustainability efforts to meet external demands from stakeholders and for internal reasons such as cost and operational efficiency. (Lozano 2015; Kiron et al. 2012). For example, customers may exert market pressure by refusing to purchase products, regulators may impose fines, and monitoring organizations such as GreenPeace may direct stakeholder attention to organizational practices that are obviously antisocial or damage the natural environment (Elkington 1998). Research also shows that employees exert pressure on top management to improve the sustainability of operations (Høgevold 2011, Bansal and Roth 2000). To be considered sustainable, an organization must demonstrate that it contributes to the wellbeing of the natural and social environments while remaining profitable – evidence of attention to triple bottom line performance (Hart, Mark, and Joseph 2003, Dyllick and Hockerts 2002, Elkington 1998). Research shows that organizations engage in sustainable practices to increase their legitimacy, and improve their profitability (Bansal and Roth 2000) and that sustainable organizations do indeed realize greater profits and stock market performance than unsustainable organizations (Eccles, Ioannou, and Serafeim 2014, Dhaliwal et al. 2011). In addition to these benefits, the last few decades have seen the emergence of a number of sustainability awards such as the Golden Peacock Global Award for Sustainability and sustainability indices such as the Dow Jones Sustainability Index (DJSI) that recognize and even rank organizations according to their sustainability initiatives. Like their financial performance-based predecessors (for
example, the S&P500 and the Dow Jones), sustainability indices are credible, and facilitate comparison among organizations, and are also simple – representing multiple performance criteria. Although primarily used for investment purposes, these indices are also utilized by various audiences for multiple purposes.

Competition for ranking by, and inclusion in, sustainability indices demand that organizations provide more, and improved, financial as well as non-financial disclosures (Fowler and Hope 2007). These competitions however, motivate companies to disclose more, and higher quality data, particularly because indices are often used by global investors to define investment portfolios (Bloomberg Professional 2016). Our research focuses on how these data are captured for reporting to organizations that assess organizations’ sustainability performance. Extant research shows that information systems are able to measure and improve the sustainability performance of processes that they are implemented to monitor (Høgevold 2011, Watson et al. 2010, Simmonds and Bhattacharjee 2013). The literature is however, sparse on how systems – such as ERP systems – that integrate core-operations, subsystems, and data across the various organizational units (or the entire organization) enable sustainable data capture and reporting.

Experience in practice suggests that full data and process integration across functions can be achieved by implementing a single tightly integrated Best in Class (versus Best of Breed) ERP suite (Davis 2017). The expected benefits of data and process integration from a single ERP suite include: a single database of records enabling seamless data sharing across functional areas; a single supplier support for ease of management of the system; standardized technology across the enterprise; a single user-interface experience increasing efficiency of end-users; an integration of business activities and applications; and improved end-to-end process support and automation (Davis 2017, Davenport 1998).

Empirical research also provides evidence that organizations adopting ERPs realize benefits such as improved and optimized processes, cost reduction, integration, standardization, and information sharing (O’Leary 2004). The use of multiple or cross-functional ERP modules has been found to provide more benefits than a single module implementation by enabling data and process integration across functions facilitating, as it does, the coordination of applications and processes across multiple functional areas, (Karim, Somers, and Bhattacharjee 2007, Brown and Vessay 2000) Overall, the research suggests that ERP implementation across multiple functions results in better data integration and business process improvements (Karim et al. 2007). Research also suggest that holistic integration of data and processes across enterprises is expected to lead to more sustainable organizations (Chofreh et al 2014).1

A few ERP system vendors, such as SAP, have proactively started to embrace sustainability so as to ensure capture of related data throughout every component of the ERP (Chofreh et al. 2014, Hopkins 2010). Additionally, it has been shown that the data necessary for measuring KPIs related to the Global Reporting Initiative (GRI) Framework – a basis for inclusion in sustainability indices – can be mapped directly to specific SAP modules (Venugopal 2011). This suggests that implementation of particular SAP modules would support sustainability data capture and reporting. Furthermore, implementation of multiple modules of the same ERP system could certainly be expected to eliminate the need for custom interfaces and the data issues associated with disparate systems. Based on the above, we argue that implementation of a single ERP system across multiple functions will improve the amount and quality of data available for sustainability reporting, thus impacting the ability of organizations to compete for sustainability ratings and rankings. We also argue that the implementation of specific modules, particularly those related to the three sustainability dimensions, will contribute to such competitiveness. We have found no empirical research that has examined this issue.

Research Questions

We aim to contribute to knowledge in the area of sustainability reporting and ERP systems by addressing the aforementioned gap in the literature. We will empirically examine how ERP systems that integrate and monitor processes across an entire organization may enable sustainability, through a higher quality data integration and disclosure of the sustainability performance of the implementing organization. We propose

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1 Chofreh et al 2014 highlight the strengths of systems that can integrate data across multiple systems. The authors also pose research directions for a holistic ERP driven by sustainability considerations throughout the value chain. Our research addresses prerequisite question gap in the literature of whether integration in current ERPs allows for better capture and reporting of sustainability.
that the extent of integration of an organizations’ ERP system such as SAP will enable better sustainability reporting, enabling the organization to compete for and achieve a high sustainability performance rating and reputation from monitoring organizations, such as those that publish sustainability indices. In our research, we ask the following questions:

1. How does the extent of ERP implementation impact an organization’s sustainability performance rating and reputation?
2. What relationship, if any, exists between an organization’s sustainability performance rating in a specific dimension -- environmental, financial, and social -- and the ERP modules that it implements?

Our research will add to the knowledge on the impact of ERP implementation on organizations’ ability to disclose their triple bottom line performance and establish their sustainability reputation. This research is also increasingly important as organizations seek to disclose data related to their sustainability performance, especially with the aim of improving their sustainability reputation and achieve higher sustainability scores -- the study is expected to guide managers on how many and what ERP modules best enable disclosure of sustainability performance to external stakeholders.

Research Model

Our research model is presented in Figure 1. The model includes two dependent variables: sustainability performance rating and sustainability reputation. Sustainability performance rating represents how experts assess and ascribe value to organizations’ practices. Sustainability reputation represents stakeholders’ perception of organizations’ sustainability leadership. Organizations signal sustainability leadership and reputation by seeking inclusion in widely recognized sustainability indices (Fowler and Hope 2007). In the next two paragraphs, we present the operationalization of our dependent variables.

To measure sustainability performance ratings, we follow prior academic research and use the MSCI ESG KLD Stats (hereafter referred to as KLD) database (Iannou and Serafeim 2015, Kim et al. 2012). KLD performs extensive research on monitored companies by examining company produced financial and non-financial reports as well as government and regulatory reports, news articles, and academic research. KLD covers detailed subcategories of ratings sustainability performance within general categories of corporate governance, community, diversity, employee relations, environment, human rights and products. For each subcategory, KLD assigns a binary score (0, 1) for strengths (positive screens) as well as concerns (negative screens). Given several sub-categories of positive and negative scores, researchers have disagreed on whether different weights should be assigned to the subcategories of KLD performance data (Iannou and Serafeim 2015). We follow Iannou and Serafeim (2015) and assign equal weight to the subcategories and separately examine the overall score for strengths as the dependent variable related to sustainability disclosure from the company. We will also create separate strength scores for each of the three sustainability dimensions, to help address our second research question. We will create a composite score for overall concerns to add as a control to our models rather than as a dependent variable, since it is not related to the disclosure ability and may include fines, news articles and other external data sources.

We measure our second dependent variable, sustainability reputation, by identifying whether a firm was included in the DJSI. We use inclusion in the DJSI as a proxy for sustainability reputation because announcements of inclusion in the DJSI index has been shown to be associated with firm reputation (Robinson et al. 2011). The DJSI uses a positive screening or “Best-in-Class” approach to identify best-sustainability practices of organizations. Companies are evaluated based on the RobecoSAM’s Corporate Sustainability Assessment (CSA) methodology. To be included in the index, companies must complete a long CSA questionnaire that covers industry-specific risks and opportunities associated with economic, environmental and social challenges and trends that are industry-specific (Robinson et al 2011). The questionnaire is used to compare companies against their own peers (comparing apples to apples) for inclusion as well as to identify sustainability industry leaders.

2 For information regarding the sustainability questionnaire companies complete for DJSI consideration, see http://www.robecosam.com/en/sustainability-insights/about-sustainability/corporate-sustainability-assessment/index.jsp
Our model includes two independent variables that represent *sustainability disclosure capability*: extent of sustainability data capture ability, measured by the number of ERP modules implemented by the organization, and *type of sustainability data capture ability*, measured by the types of ERP modules implemented. Finally, our control variables include firm characteristics such as size and profitability; existence, type and version of sustainability reporting; and existence of firm sustainability assurance.

**Research Methodology**

We will conduct an archival research to investigate our research questions. Our data will be collected from a proprietary database, MSCI ESG KLD database, DJSI database, GRI database, and the North American Compustat database. To examine the effect of ERP implementations on sustainability ranking, we will use ordinary least square (OLS) regressions with our independent variables and controls regressed on the overall sustainability scores and triple bottom line components from MSCI ratings. To examine the effect of ERP implementation on sustainability reputation, we will use a logistic regression to predict the probability of inclusion in the DJSI index.
REFERENCES


