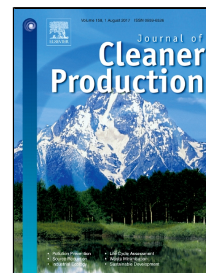


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Integration and Organizational Change Towards Sustainability

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Integration and Organizational Change Towards Sustainability

Abstract

This interdisciplinary study examines why and how corporate leaders operationalize sustainability in organizational strategy, systems and activities. Through interviews with sustainability professionals using a cross-industry sample of multinational organizations recognized as top performers by multiple sources (Dow Jones Sustainability Index, Newsweek Green Rankings, GRI, and KLD), the research identified drivers, enablers, evaluation methods and change management practices for corporate social, environmental and financial initiatives. Using multiple coders, and an analysis of responses to structured interview questions, we determine how sustainability professionals influence the alignment of sustainability goals, mission and values at leading organizations. Scholarly contributions include insight into how top performing companies manage change involving social and environmental responsibility. Insights come from primary research with the individuals who anchor those corporate sustainability initiatives providing a foundation for further theory development and testing of propositions. The key findings include integration as a systems-based approach to sustainability, change management, innovation, and corporate strategy. Integration takes place through the alignment of performance metrics within and across business units and functions with a call for Integrated Bottom Line performance measurement throughout organizations and value chains to inform management decision-making, transparency, and external reporting. Predictions are that integration and change management are critical success factor for the advancement of strategic sustainability initiatives.

Key Words

Best-Practice; Integration; Integrated Bottom Line; Multinational Companies; Organizational Change; Sustainability; Sustainability Professionals

1. Introduction

As more organizations elevate sustainability to a strategic priority, the challenges associated with execution of these activities have escalated (Kolk and Pinkse, 2007). Simultaneously, there is a research void in understanding how integrated systems leverage financial, social and environmental benefits (Asif, et. a., 2013). The research presented in this study responds to a growing need to understand how sustainability is operationalized (Dahlsrud, 2006; Marrewijk, 2003; Garcia, et. al., 2016). This research explores who is involved in the integration of

sustainability initiatives by focusing on two primary questions: (1) What do sustainability professionals in leading companies do to operationalize sustainability practices in their organizations? (2) How does the ever-changing sustainability paradigm affect the evolution of management systems and decision-making?

The findings from a series of global sustainability studies by McKinsey suggest that a majority of multinational corporations have yet to operationalize sustainability. In a 2010 global survey of 2,000 CEOs, over half described sustainability as “very” or “extremely” important to their organizations, yet only 30 % reported actively seeking opportunities to invest in sustainability or embed sustainability in business practices (Bonini, Gorner, and Jones, 2010). The 2011 McKinsey survey found low integration of sustainability in budgeting, supply chain management, and employee engagement processes (Bonini and Gorner, 2011). More recently, 58 % of respondents claimed that sustainability was integrated into company culture, yet only 38 % reported that sustainability was a factor in performance management (Bonini and Bové, 2014). The 2017 survey results show 90 % of executives see sustainability as important, but only 60% of companies have a sustainability strategy (Kiron, et. al., 2017).

There are many explanations for the gap between intent and implementation. By focusing on sustainable development and the transition to a sustainable society (Broman and Robért, 2015) help us to see that sustainability itself should be the end goal. Yet, the language involving sustainability, organizations, and initiatives is confusing. Competing definitions of sustainability (Lankoski, 2016) and nonspecific claims about environmental or efficiency practices suggested as “sustainable” (Carcia et. al., 2016) add layers of confusion. For most organizations, leveraging sustainability for corporate advantage invokes the cliché, it is easier said than done: “As sustainability rises in significance, capturing its full value grows more

challenging – perhaps because the more that companies prioritize sustainability, the more it needs to be integrated into (and even change) the core business” (Bonini and Bové, 2014).

By examining practices in exemplary, multinational organizations, this study gathers insight from sustainability practitioners who play central roles in operationalizing strategic initiatives and performance reporting. This study builds on prior academic research while developing context for further research and propositions for operationalizing sustainability. The contributions of this study uncover best practices, identifies common roadblocks, and helps to develop theory regarding integrated organizations. Insights shed new light on opportunities to leverage innovation and improve decision-making when integrating sustainability activities within an organization. Figure 1 presents a conceptual model for the research.

Insert Figure 1 about here

2. Background

Despite the myriad of scholarly articles and published reviews on corporate sustainability (Peloza and Yachnin, 2008; Salzmann, et. al., 2005; or Goyal, et. al., 2013; and Engert et. al., 2016), confusion persists about why and how corporations engage in, evaluate progress toward, and signal their commitment to sustainability goals. Some companies evoke images of wind turbines, children in developing countries, and solar panels to highlight selected initiatives while masking behind-the-scenes project challenges (Martens and Carvalho, 2015) and less than transparent reporting to internal and external stakeholders. In an attempt to cut through the confusion surrounding sustainability, a goal of this study was to learn from recognized corporate leaders in sustainability known for operationalizing activities within and across the

organizations. This approach allows for the assessment of how and why sustainability affects management systems, integration efforts, and decision-making.

The level of “integration” is an often-overlooked sustainability construct in management systems and change management design (Lozano, Nummert, and Ceulemans, 2016) and, as such, presents opportunities for scale development and further empirical validation.

For the purpose of this study, “integration” broadly describes environmental and social sustainability-related activities, including the actual processes of acquiring, managing, decision-making, measuring, and reporting related to company resources used to create value. This definition recognizes that integration is fundamental to vertical and horizontal alignment of sustainability activities as well as measurement of performance on many dimensions.

We know that individuals, businesses and government entities, to some extent, are all involved in integration practices (Labuschagne, et. al., 2005; Bonilla, et. al., 2010). While the extent of integration will vary by organization, we can posit that integrated organizations and management systems will perform better than non-integrated organizations and systems. This assertion is supported by the work of Iraldo, et. al., (2009) and Gates and Germain, (2010). Further support for sustainability \Leftrightarrow integration \Leftrightarrow performance relationships comes from Rebelo, et. al., (2016).

Since the focus of this research is exploratory in nature, research questions utilize case study field research, interviews and grounded theory methodologies. Research questions focused on how and why sustainability professionals, and companies for which they work, have operationalized sustainability. The methods followed were based on a structured approach to grounded theory development from case studies by Eisenhardt (1989), Eisenhardt and Graebner

(2007), and Yin (1994); strategies for qualitative research by Glaser and Strauss (1967); and qualitative data analysis by Miles, Huberman, and Saldaña, (2014), and (Saldaña, 2015).

Subsequent sections of this study review the relevant literature and the drivers of sustainability, organizational change management, and the evolution of management systems before discussing methods used for a structured approach to data collection, coding and synthesis. Additional sections review results and research propositions, and discuss outcomes in relation to prior work in the field before summarizing conclusions and calls for further research.

3. Drivers of Change and Evolving Systems

Understanding the integration of sustainability and organizational change management builds on prior work involving a number of external and internal drives. The resulting integrated management systems, transparency, and data provide a foundation for sustainability and organizational change and set the context for the role of management practitioners, i.e., sustainability professionals responsible for managing the integration movement.

The drivers that help us understand how and why organizations integrate sustainability are dynamic. These drivers are both externally and internally motivated. Lozano, (2015) found *external drivers* include but are not limited to organizational reputation, customer demand for transparency, regulation, societal awareness, access to resources and collaboration with external parties. Institutional theory suggests that organizations pursue legitimacy by conforming to external isomorphic pressures in their environment (DiMaggio and Powell, 1983). Engert and Baumgartner (2016) reported that drivers vary greatly by firm size, structure and industry, with drivers of transparency include compliance, competitive advantage, innovation, environmental responsibility, and social factors such as stakeholder demands. Epstein and Roy (2001) also highlight social and environmental issues, industries, labor practices, and geographic locations as important. As multinational organizations attempt to respond to consumer and stockholder

demands, they face a number of drivers that now include the valuation of environmental and social performance, growing sensitivity of local communities to environmental impacts, and increasing resource costs (Kielstra, 2008). Matten and Moon (2008) looked at external drivers of corporate social responsibility and found them to be explicit in an American context, and implicit for a European context.

Internal drivers of sustainability include but are not limited to the ability to have proactive leadership, a business case for change, the precautionary principle of not harming the environment, company culture, moral obligations, sustainability reporting, and avoiding risk (Lozano, 2015). Internal drivers affect corporate and business unit strategy, actions, plans, programs, structure and systems, along with sustainability performance (Epstein and Roy, 2001) including Triple Bottom Line (TBL) impacts (Elkington, 1997) recognizing environmental and social performance. The recognition of a TBL and shared value are important drivers of performance measurement (Kramer and Porter, 2011). Internal motivations also include the need for management to synthesize complex paradigms such as sustainability and shared value into actionable performance metrics. PUMA's application of the TBL concept to an environmental profit and loss account (EP&L) is an example of this synthesis. Other important factors include transparency, enabling information systems, change management and the ability to report performance to internal and external stakeholders.

The importance of *transparency* cannot be overlooked as Elkington (1997) argued that technology would no longer enable companies to be secretive about their practices. Internal dynamics call for decision-making guided by wider access to accurate, relevant and timely information (Zeng, et. al., 2007; Reuter, et. al., 2010). In calling for increased transparency in reporting sustainability practices, Elkington, among others (e.g., Kolk, 2003, 2008; Schaltgger

and Wagner, 2006), stress the importance of performance measurement and disclosure, as drivers of change. Given the complexity of organizations, effective integration of sustainability data with other operating metrics and systems has the potential to align diverse aspects of global operations.

Integration connects broadly distributed personnel and associated expertise with vast amounts of distributed, isolated, and *heterogeneous data*. It links accessible, current, actionable information from multiple data sources. Across the information systems literature, researchers highlight integration itself as a driver of change while finding trends of increased collaboration and connectivity of systems used for reporting (e.g., Weber and Pliskin, 1996; Prencipe et al., 2003; Leidner and Kayworth, 2006; and Melville, 2010). It is the access to this information that supports Epsetin and Roy's (2001) call for "quantifying the link between sustainability actions, sustainability performance and financial gain" in making the business case for sustainability.

Challenged by the expanding management of sustainability initiatives, organizations are continuously updating their *environmental management systems* (EMS) and information system functionality to quantify actions and costs. This integration of sustainability into management systems is not new. Early attention to systems was devoted to how corporate EMS grew out of removing waste while improving quality (Miles, and Russel, 1997; Corbett and Kirsh, 2001). More recent work by Cherrafi et al. (2016), calls for the continued integration of lean manufacturing, and sustainability. To this end, an EMS has become a more comprehensive systems approach to historical Environmental Health and Safety (EH&S) functions (Melnik et al. 2003; Sroufe, 2003) and foundation of evolving management systems integration of environmental performance.

The evolving management system landscape presents an opportunity to investigate the design and use of *integrated management systems* (Rebelo et al., 2016; Jørgensen, Remmen, and Mellado, 2006). Successful integration within organizations enables change management with the help of information systems and technology (Prencipe, et. al., 2003; Leidner and Kayworth, 2006). The need for research in this area is growing in importance. Trends indicate annual sustainability and financial reporting becoming one integrated report (Eccles and Serafeim, 2013; and Eccles and Kruzs, 2014), with greater reliance on organizational systems to support this reporting.

Sustainability calls for *organizational change management* beyond technical efficiency changes to raw materials and processes (Doppelt, 2010). It should include organizational systems, i.e., leadership, visions, employees and policies (Henriques, and Richardson, 2005; Benn, Dunphy, and Griffit, 2014). Organizations that are not receptive to change invite more risk and can be at the mercy of external forces. Organizational change management involving sustainability has been looked at as top-down; and inside-out (Henriques and Richardson, 2005; Doppelt, 2010). A top-down approach emphasizes measurement, management, and control; while inside-out is enabled by internal change and innovation. A hybrid approach to change management comes from Lozano (2012, and 2013) in the form of an “orchestrated change for corporate sustainability”. During a time of change, the organizational system has a transitional period before reaching a more sustainability-oriented state (MSOM). This iterative process provides an opportunity to foster drivers and enablers of change and to apply strategies to overcome barriers to sustainability and new reporting requirements.

Prior research has found *sustainability reporting* and organizational change management for sustainability have reciprocal and reinforcing relationships (Lozano, Nummert, and Ceulemans,

2016). Lozano et al. (2016), find sustainability reporting drives changes in organizations, data, performance metrics, strategy, reputation, stakeholders and even the next reporting cycle.

While many organizations have developed their financial and sustainability reports in parallel, integrated performance reporting is becoming an area of opportunity (Eccles and Kruzs, 2010; 2014) that extends well beyond large multinationals. Yet this reporting requires further scrutiny as Stacchezzini, Melloni, and Lai (2016) have perceived bias in the emerging field of integrated reporting.

For many organizations, the infrastructure for sustainability reporting is in place and evolving. Integration efforts within organizations consider recommended social and environmental metrics from the Global Reporting Initiative (GRI), the Carbon Disclosure Project (CDP), etc., and the capacity for reporting both sustainability and financial information. More recent calls for integration efforts provide frameworks for organizations to strategically move towards sustainability, and provisions for integrating social sustainability principles (Robért et al, 2015) of personal integrity, influence, competence, impartiality, and meaning-making.

In trying to deal with this increasing complexity of sustainability initiatives and evolving management systems, a new driver has come onto the scene. Forward thinking leaders within organizations have created a new management professional tasked with the integration opportunity. *Sustainability professionals* function as change agents (Visser and Crane, 2010; Hesselbarth and Schaltegger, 2014). They can influence vision, strategy, new products, processes, and supply chain integration by fostering collaboration and innovation across functions and throughout a value chain. The question for both practitioners and researchers is; how do we effectively enable complex, interrelated measurement and management requirements

involving sustainability? In other words, how are the drives of sustainability leveraged to enable change management and the integration of the sustainability paradigm into organizations and performance management?

The literature suggests that large organizations have managers and management systems ready for capturing data involving sustainability practices, financial performance, and change management. Given the pace of change in technology and performance measurement, many organizations may be missing an opportunity to better leverage emerging sustainability opportunities, integrate company-wide risks, enhance decision analysis, and to enable a more dynamic approach to measuring, managing and reporting overall performance.

4. Methods – Research Process

As outsiders looking into organizations' capabilities, insights have been drawn from publicly available sustainability reports (Tate et. al., 2009; Montabon et. al., 2007) and the use of secondary data sources such as KLD (Waddock and Graves, 1997), and GRI and CDP data used by Trucost (Marquis and Toffel, 2016), to name a few. Yet, understanding sustainability initiatives in multinational companies is ripe for new research that collects primary data from an emerging group of individuals, sustainability professionals charged with managing the company's sustainability efforts.

The systematic research described in this study provides a unique ability to capture empirical descriptions of phenomena such as integration. To this end, we used a grounded theory development methodology utilizing interviews supported by Eisenhardt (1989), Yin (1994), and McCutcheon and Meredith (1998) to explore why and how individual sustainability professionals integrate sustainability within large organizations. The approach used is consistent with a call for more studies on the integration of corporate sustainability into strategic

management from Engert et. al. (2016). A key objective was to characterize different types of best practices among multinational companies recognized for leadership in sustainability.

When using case study research, Eisenhardt (1989) calls for the use of multiple data collection methods, multiple investigators, flexible and opportunistic data collection methods, within- and cross-case analysis, comparison to the literature, and, when possible, theoretical saturation. Our “analysis” involved the collection, cumulative coding cycles, and reduction of qualitative data. We looked for reflective themes and tried to “search for patterns in data and for ideas that help explain why those patterns are there in the first place” (Bernard, 2011).

We coded data from transcripts of interviews and compared interviewee responses to publicly available data to understand how each organization operationalized sustainability and how sustainability relates to performance. We also cross-referenced the organization’s sustainability activities with reported drivers of change in publicly available information. We then looked for patterns and themes in the data (Saldaña, 2015) and for evidence of sustainability-related enablers that enhanced performance and integration (Fereday and Muir-Cochrane, 2006). Next, we isolated activities and programs within themes that involved measurement. Finally, we identified which activities were important for change management within the organization. The result was a description of sustainability and its operationalized activities as well as identification of opportunities for further integration.

Cross-case comparison was used to reflect on and identify patterns across organizations. This process was facilitated by QSR Nvivo software to help reduce the volume of data and display data in meaningful ways (Miles, Huberman, and Saldaña, (2014). First, we used spreadsheets to categorize and match patterns as we reviewed transcripts of interviews. Our approach progressed from the particular to the general by inferring transfer – what we observed

in these leading companies may also be observed in other organizations as they progress toward and integrate sustainability initiatives (Saldaña, 2015).

4.1 Data Reduction Process

Relying primarily on the methods of qualitative data analysis from Miles, Huberman, and Saldaña, (2014), Eisenhardt (1989), and Eisenhardt and Graebner (2007), we employed anticipatory conceptual model development, and theoretical sampling. For this approach, we started with purposeful sampling of recognized companies and used insights from early interviews to establish who to interview next (Bryman and Bell, 2015). We used simultaneous data collection, reduction, display, and conclusions testing. Open coding of transcribed interviews with subjects in the sample was performed by four graduate student raters. We utilized QSR Nvivo software for the consolidation of information. Graduate students and the primary investigator performed coding of keywords, phrases and themes (Braun and Clarke, 2006) of transcribed interviews concurrently and independently. We addressed limitations associated with internal and external validity due to coding response bias through separate and multiple rounds of coding.

Prior to coding responses from the interviews with companies in the sample, a first round coding of four interviews with subjects from multinational companies outside the sample was conducted as a pretest. In this preliminary round, the researchers compared and contrasted individual coding approaches, challenged assumptions, and compared results for each interview while initial codes were set. After the pretest, responses from subjects at the 17 organizations went through two rounds of blind coding that included confirming of initial codes. Next, we performed a review of findings and supplementation with insight compiled and enabled by the qualitative data analysis software until an agreed-upon convergence of all coding for all individual interviews was reached.

To better enable meaning making, the consistency of our results, and applicability after the coding process, results were summarized and early conclusions were shared with an expert panel of a dozen regional managers (who were not employed by organizations in this study). We tried to reduce threats to the rigor of the study, while supporting neutrality as suggested by Dellinger and Leech (2007). In doing so, our analysis strategy included a preview of findings, the process, our decisions regarding the findings, etc., with this expert panel of managers, all of whom were involved in corporate social responsibility. These interactive sessions with the pretest panel included all researchers involved in coding. The panel discussions confirmed our thematic findings as relevant and gave us no reason to question our approach to coding or analysis.

We organized similarly coded data into categories or “families” that shared some characteristic – the beginning of a pattern. When facilitating cross-case analysis, the coding and recognition of categories compiled across organizations provides synthesis, layers of insight, and new meaning. Synthesis is a multistep, iterative process that combines different things to form a new whole and the primary heuristic for qualitative data analysis. When applying and reapplying codes to qualitative data, it permits the division of data, grouping, reorganizing and linking in order to consolidate meaning and develop explanation (Grbich, 2013). Coding enables moving from the real to the abstract within a model of qualitative inquiry and grounded theory development (Figure 2). Assertions also progress from the particular to the general by predicting patterns of what may be observed and what may happen in similar present and future contexts (Saldaña, 2015). Within-case analysis confirmed several categories related to integration of sustainability for organizations in the study.

Insert Figure 2 about here

4.2 The Sample

Organizations in this sample had been explicitly recognized for “embracing” sustainability within business operations (Boston Consulting Group, 2011). Organizations from different industries and of different sizes were solicited based on reporting from multiple published sources, specifically, inclusion on the Dow Jones Sustainability Index (DJSI), the Newsweek’s listing top firms by industry sector, and publication of organizational information within what was formerly known as Kinder Lydenberg and Domini (KLD) and is now called MSCI Global Socrates. We did not begin with a target sample size; instead, purposeful sampling continued until reaching theoretical saturation.

Several industries are included in this study since single industry studies do not provide a strong basis for generalizability. Miles, Huberman, and Saldaña, (2014), suggest using greater than case studies for multiple-case sampling adequacy. To this end, validity and reliability is more easily achieved in cross-industry studies with multiple respondents, multiple researchers, and the use of publicly available information for selected companies. A triangulated approach to analyzing findings from multiple industries supports the development of understanding and the generalizability of results (Eisenhardt, 1989; Yin, 1994). The use of multiple researchers helps to control for the biases of individual researchers, yet we fully recognize that a limitation of this study was reliance on a single respondent from each organization.

For this study, interviews with sustainability professionals from the following 17 multinational companies were conducted in 2012: 3M, Alcoa, Applied Materials, Bayer Material Science, Baxter, Dow, DuPont, EMC, FedEx, Ford, Herman Miller, H.J. Heinz, Honeywell, IBM, Johnson & Johnson, Office Depot, and Procter & Gamble.

Insert Table 1 about here

The goal was to construct a diverse enough sample of organizations to capture variances in practices across organizations and products that could be overlooked in single industry samples. Industries represented include but are not limited to: aerospace and transportation manufacturing; design and manufacturing technologies; consumer goods manufacturing; diversified technology; electronics; distribution; healthcare; information technology; medical equipment; mining, refining and manufacturing; mining and manufacturing; nuclear services; office furniture; prepared foods; retail; semiconductor fabrication; shipping and logistics. Caution was taken to minimize extraneous variation by interviewing high-ranking sustainability professionals from companies recognized by multiple organizations (DJSI, GRI, Newsweek, and MSCI Global Socrates). Of the 17 participating companies, 14 appeared in the DJSI, and 15 were included in Newsweek's green ranking.

4.3 The Respondents

After identifying potential companies using a series of screens, senior and top management executives were identified within each company, and interviews were solicited by email, phone, and personal contact. The interviews were conducted with high-ranking sustainability professionals at each of the organizations, specifically with individuals responsible for portions, if not all of the company's overall sustainability strategy. (See Table 2 for a list of the respondents' titles.) With some respondents in the study asking for anonymity, we have provided respondent and company information in a general way to help enable this request.

Interviewed executives had experience with their given organizations ranging from 4 to 36 years, with an average of over 10 years' experience. Full-time equivalent employees (FTEs) ranged from 6,000 to 426,750, with an average of 88,330 for the sample. We confirmed that 82 % of the respondent organizations were involved in GRI reporting, 100 % participated in the Carbon Disclosure Project, 94 % had ISO 14001 certification of facilities, 88 % had at least one

LEED certified building, 82 % were listed on the DJSI, and 88 % were included in Newsweek rankings of top organizations by industry.

 Insert Table 2 about here

4.4 Interview protocol

The development of an interview protocol was based on the research team's general understanding of the literature, sustainability, and industry trends. The protocol was pre-tested with sustainability managers from five MNCs outside the sample, and small adjustments were made after the pre-test prior to conducting interviews with organizations in the sample.

Interviews were conducted by phone or in person at the respondents' locations, with multiple researchers working through the following questions:

1. How and why is sustainability operationalized within your company?
2. How is compliance (achieving objectives) with sustainability measured?
3. Relate a story of how your organization changed its strategy, product line, or a process deployment using sustainability to guide that change process?
4. What IS/IT projects are underway to help sustainability initiatives?
5. Have we missed anything?

See Table 3 for a top level summary of the parent and child node coding of respondent information.

 Insert Table 3 about here

5. Findings

In this section, we summarize responses to each interview question in tables followed by discussion and analysis of key learning points and implications. Since dedicated sustainability managers are relatively new roles in major corporations, primary research with these individuals revealed practical insights for operationalizing a sustainability vision that had not been articulated in earlier published surveys with CEOs and other corporate executives.

Findings from content analysis and inductive reasoning support a grounded theory methodology and are positioned to illustrate “how” and “why” in unexplored areas of research. The challenges of presenting rich qualitative insight from field research are addressed by presenting a relatively complete rendering of the story as suggested by Eisenhardt and Graebner (2007), and representative verbatim quotes are included throughout the section. Content analysis of participant interviews yielded coded references to why and how, and responses were grouped into recurring themes or categories that could serve as constructs and measurement items for further examination and testing of proposed research propositions.

5.1 Analysis of Responses to Question 1: Operationalizing Sustainability

The combination of internal and external drivers helps to answer the question of “why”

companies operationalize sustainability as summarized below:

Question 1: How and why is sustainability operationalized in your company?		
Categories: Why - Internal Drivers	# of organizations commenting (out of 17)	Total # of references from all respondents
<u>Sustainable Growth:</u> <ul style="list-style-type: none"> • Systems thinking • Competitive advantage from innovation • Profitability = shareholder value + societal value 	16	31
<u>Leadership:</u> <ul style="list-style-type: none"> • CEO leadership • Supportive corporate culture • Strong foundation of EH&S success • Aligns with organizational mission and vision 	14	38
<u>Long Term:</u> <ul style="list-style-type: none"> • Evolution/history of internal environmental actions • Corporate citizenship • Social responsibility 	7	21
<u>Environmental Impacts:</u> <ul style="list-style-type: none"> • Waste reduction • Zero waste to landfills • Risk mitigation 	7	12
<u>Change Initiative:</u> <ul style="list-style-type: none"> • Define sustainability in own terms and vision 	7	8

<ul style="list-style-type: none"> • Ability to market green product attributes 		
Categories: Why - External Drivers		
<u>Stakeholders:</u> <ul style="list-style-type: none"> • Customers • Supply chain audits • Community • License to operate 	10	17
<u>Minimize Environmental Impacts:</u> <ul style="list-style-type: none"> • Regulatory pressure • Do what's right for the environment • Sense of urgency 	7	12
<u>Reputation:</u> <ul style="list-style-type: none"> • Evolution/history of environmental actions • Corporate citizenship • Social responsibility 	6	9

Question 1 insights: “Sustainable growth” is perceived as related to innovative sustainability activities and value creation that includes social value (consistent with work of Boons, Montalvo, Quist and Wagner, 2013). Our respondents reinforced the *importance of senior leadership* as strongly influencing an organization’s attention on sustainability (Haanaes et. al., 2011). We learned that sustainability has a long history in many of these organizations, and *historical roots make it easier to align and integrate sustainability* with strategic initiatives and long-term goals. For example, one organization’s vision statement has not changed in over 70 years (Johnson and Johnson, 2015).

We found strong support for a TBL approach to measuring and managing performance that includes social and community responsibility, reducing environmental impacts, sustainable growth for the organization, and risk mitigation. While generally aligned with Porter and Kramer’s approach (2011) to creating shared value, these organizations define the value of sustainability in their own terms and relative to their own mission and vision.

Key *internal drivers* of integration towards sustainability include leadership, a history of environmental activities, and the presence of activities managing social performance. These

internal drivers are motivations for change and related to other enablers of sustainability (Lozano, 2015). Significantly, *respondents reported that they see sustainability as a change initiative and an “integration opportunity” to change processes, performance measurement, and practices*. We found evidence that combination and alignment of internal drivers and stakeholder pressure are powerful attributes of and antecedents to successful integration as suggested by the literature (Engert, and Baumgartner, 2016).

The top *external drivers* are stakeholders, environmental impacts, and reputation confirming work by Lozano (2015). We expected stakeholder pressures to provide sufficient grounds for integration initiatives (Lee, 2011) for both organizations and suppliers (Foerstl et al. (2015), and leadership and customers to be the most important stakeholders influencing an organization’s attention on sustainability (Haanaes, et al., 2011). Respondents acknowledged the importance of stakeholders, with a focus on customers: “We make thousands of products; all the challenges and obstacles are different due to the diversity of the product range, and our biggest challenge is trying to make sure we are serving our customer’s needs.” Customer requests for environmental and social information were a factor as well; for example, as one respondent remarked, “Developing parts of the world are more interested in the social performance (with Latin America, Asia Pacific wanting to know about human rights and social aspects of the business.” Respondents indicated that signaling the importance of sustainability throughout supply chains works best with requests for details in audits and Requests for Proposals (RFPs). However, *complying with external requests for detailed sustainability information is challenging*. As one respondent put it, “The growth in the number of information requests and the lack of conformity of those requests creates a strong need for a standardized approach to all external organizations.” Calls for integration included inter-organizational and cross-sector

alignment of performance measurement and reporting involving key stakeholders (Antolin-Lopez, et. al., 2016).

A final node of significance involves protecting the organization's reputation. One respondent noted that "protecting organizational reputation from risk while promoting brand image through rankings" is one way to differentiate. Others noted that *sustainability was part of a license to operate* that increasingly includes social responsibility. Respondents suggested that leading companies serve as an example for other organizations by making visible the prerequisite activities to become more sustainable supporting normative pressures and elements of institutional theory.

Question 1 implications for research and practice: Sustainability professionals' perceptions bring new insight to researchers and practitioners alike for understanding which external and internal drivers are important. Insights reveal numerous processes, metrics, and enabling activities support sustainable growth, profitability, and reporting to stakeholders. This research sets the stage for further inquiry and empirical work involving construct development and testing of propositions while also sharing insight to best practices and challenges with academics and practitioners alike.

Integration of sustainability in strategic decision systems and new product development is an important driver of change management and performance via goals, incentives, and tools (Hallstedt, et. al., 2010; Garcia, et. al., (2016). This same trend with the integration of Environmental Social and Governance (ESG) metrics, and growing evidence of the measurement of the social value created (e.g., MSCI Global Socrates, and the GRI). Thus, inclusion of sustainability professionals on strategic management teams – e.g., climate scientists on Ford design teams – may improve performance across multiple dimensions.

Proposition 1: A positive capacity toward sustainable growth, leadership, long-term perspective and the reduction of environmental impacts is required to develop integrated organizations.

External drivers for operationalizing sustainability activities include minimizing impacts, the influence of stakeholders, and increased customer requests for more transparency. Sustainability practitioners have responded to these drivers by integrating measurement and reporting to better manage and protect brand reputation while working with internal stakeholders across disciplines. Although there is no shortage of environmental indicators, there is a difficulty in deciding on which ones to use, when, and how (Hervani et al., 2005).

Proposition 2: Stakeholders, environmental impacts and reputation have a positive impact on the development of enabling capabilities.

5.2 Analysis of Responses to Question 2: Translating Sustainability into Action

The next question focuses on “how” these same sustainability professionals translate sustainability into action, grouping *enablers* and *evaluators* into the most frequently coded categories and actions as follows:

Question 2: How is compliance (achieving objectives) with sustainability measured?		
Categories: How - Enablers	# of organizations commenting (out of 17)	Total # of references from all respondents
Integrated into Decision Making: <ul style="list-style-type: none"> • Aligned with corporate values • Value creation • Part of all businesses, geographies, and functions • Part of reporting structure 	13	45
Triple Bottom Line: <ul style="list-style-type: none"> • Financial Capital • Environmental Capital • Social Capital • Measures extend to suppliers 	10	22
Goals: <ul style="list-style-type: none"> • Included in KPIs • Provide context for what is important 	9	17
Defined: <ul style="list-style-type: none"> • Build off of Brundtland definition 	9	10

<ul style="list-style-type: none"> • Aligned with specifics of the organization • Includes specifics beyond meeting needs 		
Makes Business Sense: <ul style="list-style-type: none"> • Has to be profitable • Payback • ROI 	8	19

Question 2 insights: The integration of sustainability, decision making, goals, defining what it means for an organization, and a business case for activities are important to enabling and evaluating success.

Enablers include *goals that signal the “what and how” of performance measurement*. Such signals help professionals and their organizations develop a common foundation and definitions for sustainability activities. This importance of measurement is drilled down into organizations (Antolin-Lopez, Delgado-Ceballos, and Montiel, (2016), and into supply chains as new scrutiny is put on the design and development of services and new products. Often noted was the importance of “regularly scheduled meetings of cross-functional teams” to integrate thinking, review performance and new initiatives through the lens of sustainability. Sustainability “should be part of everyone’s job” and aligned with corporate values and value creation processes, e.g., “we collaborate across industry and with our suppliers directly; this helps to enable change”.

Respondents suggested that sustainability initiatives improve bottom line performance. These insights align with 30 years of research and with the 63 % of studies that show a positive relationship between sustainability investments and financial performance (Network for Business Sustainability, 2011). For example, one respondent said, “I spent a lot of time with our suppliers collecting the chemical data and now looking for where and how we can reduce impact, footprint, and save dollars.” In our search for patterns in the data and explanations for

those patterns, we found a paradox. Respondents talk about a TBL, yet focus on profitability and use terms such as paybacks and return on investment. Given more recent trends in shadow pricing and social cost of carbon (SSC) (CDP, 2014; EPA, 2016), we hoped to find a more comprehensive approach that considered forms of natural and social capital in financial analysis.

There is a commitment to growing the profitability of the organization in the organizations studied. This is where we see TBL screens for business case development while cultivating new opportunities to value and show benefits. These benefits (natural and social capital) have potential as new line items on a balance sheet as companies adopt Integrated Bottom Line (IBL) reporting practices. IBL is defined here as analysis and disclosure of financial, social, and environmental assets and liabilities to internal and external stakeholders of an organization. This definition takes IBL beyond an accounting practice to an evaluator of management solutions. The formal and informal systems required for IBL measurement and reporting already exist in processes for reporting financial, organizational behavior, sustainability and corporate social responsibility activities. However, many businesses struggle to quantify the intangible assets and liabilities that affect profitability and liquidity, even though intangibles account for up to 80 % of a typical company's valuation (Barry 2013). Pagell and Wu (2009) have recognized this limitation in studies that attempt to link noneconomic components of sustainability within organizations.

This call for integration is worth noting because prior synthesis of the operations and supply chain literature (two areas with critical impact on organizational performance) has found no study comprehensively addressing the integration of the three dimensions of sustainability, i.e., financial, natural, and social “simultaneously” (Hassini, et. al., 2012) and across organizations

(Pagell and Chevchenko, 2014). However, outside of this study, we find integrated reporting (Eccles and Kruzs, 2010; 2014) is a growing trend, and have confirmed that one company in this study is practicing this approach.

Half of the participants expressed frustration with the “ambiguity of sustainability.” Despite past difficulties in defining sustainability (Toman, 1992), and the different interpretations as a contested concept found by Lankoski (2016), the most often used definition by organizations comes from the World Commission on Environment and Development’s Brundtland Report, i.e., “meeting the needs of the current generation without compromising the needs of future generations.” With the Brundtland definition as a foundation, these organizations align sustainability with business practices and operationalize it for their organizations, consistent with the call for use of multiple criteria and strategic alignment in support of informed decisions (Garcia, et. al., 2016).

Question 2 implications for research and practice: Practitioners should understand that sustainability is a mission-critical goal aligned with corporate values and value creation so that it can be customized to meet the needs of the organization. Researchers need to help identify and explain how all types of organizations can enable internal actions that align with value creation and sustainability.

Integration is an iterative process, providing opportunities for training and communication of intentions. The Brundtland report provides a commonly used starting point for defining sustainability, but offers no guidance for defining sustainability and operationalizing practices for unique organizations. Customization of a sustainability strategy that aligns with corporate value creation requires identifying and allocating natural and social capital. (For an in-depth example, see Garcia et. al., 2016.) These newer forms of capital need to be relevant to the

company mission and strategy (Blackburn, 2005). The act of defining sustainability as aligned with strategy and vision (Broman and Rob ert, 2015) and with a customized approach is a critical part of organizational integration toward sustainability. Integration is critical for moving practitioners and organizations closer to realizing the scale across industries needed to achieve the larger goal of a sustainable society.

Proposition 3: The extent to which sustainability is integrated into decision-making and value creation through the use of a customized definition of sustainability, goals, and triple bottom line measurement positively impacts change management, organizational performance and sustainability.

5.3 Measuring Sustainability

Even noble goals lack meaning without metrics and monitoring. As Pagell and Chevchenko (2104) found, there are a number of potential issues with research involving performance measurement, including: “a focus on a limited number of stakeholders and outcomes; measures that are artificially limited to amounts of harm; and measures that do not account for the entire value chain.” Coding of the second interview question responses resulted in 214 references to measuring sustainability and yielded insight to performance measurement. The top 186 references for the primary categories and activities include the following:

Question 2: How is compliance (achieving objectives) with sustainability measured?		
Category: How - Evaluators	# of organizations commenting (out of 17)	Total # of references from all respondents
<u>Measurement:</u> <ul style="list-style-type: none"> • Sustainability focused goals and KPIs • GHG emissions and CO₂ • Energy efficiency • Ecological footprint • Water consumption • Solid waste 	15	114
<u>Stakeholder Engagement:</u> <ul style="list-style-type: none"> • Part of everything • Stakeholder feedback 	11	33
<u>Sustainability Report:</u>	9	14

<ul style="list-style-type: none"> • Reporting • GRI • Report to Board 		
<u>Auditing:</u> <ul style="list-style-type: none"> • Internal • Suppliers • Includes TBL 	8	9
<u>Compliance with Regulations:</u> <ul style="list-style-type: none"> • Live according to all laws and standards • Beyond compliance 	7	16

Question 2 measurement insights: Participants highlighted the importance of setting *sustainability focused goals*. Our respondents are monitoring over 20 different performance metrics and usually a smaller number of KPIs (the top five are noted in the table above). These metrics function as enablers for gauging if activities and processes are producing progress toward sustainability goals. Leading organizations are involved in assessment beyond financial performance and *see opportunity to capture benefits through integrated reporting*.

There was consensus that “compliance” is not the right approach to sustainability, and that sustainability can be included in all decision making. Employee engagement is important, and “bringing together organizations around the annual reporting process helps to get everyone on board.” Many of these organizations extend this internal integration to work sustainability into supply chains and their management. In addition, external stakeholder reviews and working with NGOs are mainstream. Respondents recognize the importance of understanding “how” to measure integrated sustainability and strategic activities.

Sustainability professionals are calling for commonly accepted methods of measuring and reporting to sustainability indexes and rankings. One respondent expressed frustrations with rankings this way: “It is too easy for companies to pick and choose what to report and at what level.” The three primary rankings or indices highlighted in this study, in order of frequency mentioned, were Newsweek, the Carbon Disclosure Project, and the Dow Jones Sustainability

Index. In addition, the Davos rankings garnered attention. The GRI was the leading approach to measuring and disclosing information, and evaluators such as the GRI making an effort to emphasize materiality and alignment within and across business units and organizations.

Auditing is important for assurance and verification of performance. Audits of TBL performance are becoming more common and include supply chains. To this end, a respondent talked about collaboration throughout the value chain, “If you look at our outsourced components purchased, we make sure that you have traceability of data from raw materials, through final parts to the end customer. We are going upstream to suppliers to do this.”

Finally, compliance with regulations is an important (yet challenging) minimum level of engagement (Mazzi et al., 2016). Living according to all laws globally is perplexing for these MNCs, but a driving force in ensuring compliance within given geographies. Regulations and laws often address symptoms and not problems, so managers see compliance as a first hurdle. A “zero tolerance approach to ensuring compliance” within supply chains is viewed as critical by some; if something goes wrong, the organization does not want to be seen as criminal or to have the issue escalate.

Question 2 measurement implications for research and practice: As varied stakeholders demand more and more information, better methodology for assessing the value of sustainability has become an imperative. Traditional financial measures -- Net Present Value (NPV), return on investment (ROI) and payback cycles – do not capture the short- or long-term importance, value or risks associated with natural and social capital. This gap between the perception of importance and actual use of dynamic performance metrics confirms work on the integration of sustainability into project management by Martens and Carvalho (2015). The managers in our study reported that their companies are measuring natural and social resources

throughout the organization, yet they do not fully utilize the information. There appears to be a disconnect from the capture of mostly environmental efficiency efforts and some social activities, and the use of this new accounting data to inform holistic approaches to financial planning and decision analysis aligned with both sustainability and strategy.

Successful integration considers the drivers and enablers of activities aligned with both sustainability and organizational attributes to inform performance measurement. The number of performance measures is growing, and the collection and dissemination of this information is expected to continue to expand as organizations such as the CDP, GRI, MSCI Global Socrates, Trucost, Standard & Poor's, and Bloomberg track hundreds of sustainability measures for individual organizations, their supply chains, and their investors. Leading organizations are likely to be the ones with higher levels of natural and social performance as signaled publicly through transparency and integrated reporting.

Customer requests for information, levels of stakeholder engagement and the importance of third party rankings provide pathways (mediating and moderating effects) for companies to understand what is important to measure. From this, practitioners should focus resources on the integration of activities that align with sustainability, strategy, operations, and supply chains.

Proposition 4: A positive capacity toward evaluating sustainability, engaging stakeholders, auditing and report results is required to develop integrated organizations.

Proposition 5: Drivers, enablers, and evaluators positively impact change management in the form of process improvements, design, innovation, and stakeholder engagement.

5.4 Change management

Final questions posed to participants explore how companies successfully used sustainability to change strategy, launch a new product, and/or deploy a new process. We asked for examples and probed for insight to how sustainability initiatives had benefited from information systems

integration. Responses resulted in coding 66 change management references and yielded the following categories and activities:

Question 3: Relate a story of how your organization changed its strategy, product line, or a process deployment using sustainability to guide that change process?		
Categories: Change Management	# of organizations commenting (out of 17)	Total # of references from all respondents
<u>Process Audit/Improvements:</u> <ul style="list-style-type: none"> • Energy • Packaging 	11	27
<u>Innovation:</u> <ul style="list-style-type: none"> • Remove hazardous materials • New processes • New Products • R&D • Include climate change 	9	18
<u>Work with Stakeholders:</u> <ul style="list-style-type: none"> • Employee engagement • Work with competitors • Community 	8	11
<u>Design:</u> <ul style="list-style-type: none"> • Less hazardous alternatives • Renewable energy • Design for Environment (DfE) • LCA, life cycle thinking • Align with strategy 	8	10

Question 3 insights: Sustainability was broadly used as a successful “catalyst for change” process improvements and innovation. Sustainability as a *catalyst for change* provided examples that reduced costs, create value, reduce risks, and supports prior work toward the integration of strategic decision systems by Hallstedt, et. al., (2010). *Process improvements* enabled by auditing led to energy conservation, energy management systems, and reductions in waste. *Innovations* ran a gamut of *material changes to lesser hazardous alternatives* to material substitution with new process and the ability to bring to market new products. Investments in R&D are important, and *some companies included climate scientists on product design teams*.

The design of new products with the use of LCA was a common theme (supported by research combining product design and a TBL by Lacasa et al., 2016). Some include sustainability screens in every new product development process. One manager put it this way: “Tracking the chemical content and definitively knowing what you have in your product from your supply chain. It is a bigger and bigger deal.”

There is evidence of that a sustainability vision may be guiding the development of new technologies, markets, products and processes as described by Hart (1997). Thematically, we find efficiency improvements were important to demonstrating the success of sustainability initiatives.

Question 3 implications for research and practice: Where are the opportunities for impactful change? Here we see opportunities for improved dynamic capabilities (Reuter et al., 2010), providing a basis for innovation and eventually adoption of integrated reporting practices within and across organizations (Lozano et al., 2016). Better information is an important component of decision-making, yet accepted measurement by accounting and financial organizations remains in its infancy. A recent focus on materiality (Eccles and Serafeim, 2013) and the GRI G4 standards support this trajectory toward integrated measurement and materiality. The integration of LCA in product design and supply chains identifies what management systems of the future will integrate (Hagelaar and Van der Vorst, 2001), and creates opportunities to differentiate products and services from industry peers. There is also a continued need to explore bigger *effectiveness* opportunities where strategic sustainability moves organizations into new opportunities for radical resource productivity within service and flow economies (Lovins, Lovins, and Hawkin, 2007).

Proposition 6: A positive capacity towards the development of sustainable operating systems and enterprise systems integration is required to develop integrated organizations.

Proposition 7: Integrated organizations will outperform industry rivals with less integration. The propositions help explain how sustainability provides new integration opportunities for organizational management, change management and strategic alignment. Through the lens of integration, sustainability managers can operationalize this paradigm while also stressing the importance of collaboration within their own organizations and across a value chain. To create competitive advantages for the organization *and* contribute to sustainable development, integrated management systems (Rebelo et. al. (2016) will need to expand to include the whole value chains and all the stakeholders (Jorgensen et al., 2006).

5.5 IT/IS projects in support of sustainability

Near the end of the interviews, respondents were asked to discuss any IS/IT projects underway in support of sustainability initiatives. Coded information from this question provided the following categories and actions.

Question 4: What IS/IT projects are underway to help sustainability initiatives?		
Categories: IS/IT- Enablers	# of organizations commenting (out of 17)	Total # of references from all respondents
<u>Environmental Management Systems:</u> <ul style="list-style-type: none"> • Energy Management • GHG Management 	10	19
<u>Systems Integration:</u> <ul style="list-style-type: none"> • Enterprise Systems • Real time reporting 	8	14

Question 4 insights: Participants identified key systems for enabling and leveraging sustainability. The systems receiving the most attention by the participants in this study were the *Environmental Management Systems (EMS)* and the evolution of *enterprise systems* to include *energy management, GHG management, life cycle assessment (LCA), and sustainability performance*.

We found an important and growing need for cloud computing, and for real-time availability of data for reporting up and down the organization. It was noted that a global, integrated information repository is needed to link knowledge management and actions in meaningful ways within and across business units and organizations. “There is a huge need overall in industry, for systems to talk to other systems.”

Question 4 implications for researchers and practitioners: Our structured approach to theory development that progresses from the particular (the data) to the general (categories) infers “transfer” by predicting themes, categories and patterns that may also be observed in comparable organizations, setting the stage for future studies. The information systems literature has long called for systems integration to enable business performance (Zeng et al., 2007; Rebelo et. al., 2016). Paradoxically, the very systems that help connect sustainability professionals to their organizations, if not designed and managed properly, can hinder further integration, which underscores the value of knowledge sharing with practitioners.

6. Discussion – The Integration Opportunity

An outcome of the analysis was the recognition of sustainability as an integration opportunity for change management. An objective of his study is to answer the questions of how and why sustainability professionals, and the companies that they work within, have operationalized sustainability, and adopted best practices. We examined these questions via an applied approach to grounded theory research during a dynamic and evolving time for organizations, performance measurement, and reporting.

The findings of this study suggests large organizations and their sustainability professionals have the capacity to integrate distributed, isolated, and heterogeneous data evolving environmental and social activities. The systems within this sample of exemplars enable an evolving capacity to synthesize the data required for internal and external sustainability

reporting. There is anecdotal evidence that integrated organizations, i.e., those acknowledged as leaders in environmental and social activities, perform better than nonintegrated organizations. This performance involves change management across a dynamic frontier of organizational performance. The findings support institutional theory in that mimetic processes, normative pressure and isomorphism influence why organizations behave in socially responsible ways (DiMaggio and Powel, 1983). The findings also support earlier evidence by Matten and Moon (2008) that corporate social responsibility is explicitly articulated in US firms, continued trends involving transparency (Kolk, 2003, 2008), along with calls for wider access to accurate and relevant information by (Zeng, et. al., 2007; Reuter, et. al., (2010)). These systems and professionals provide a necessary foundation for integrated organizations, change management and improved performance.

The findings highlight the importance of internal drivers, i.e., organizational systems (Henriques, and Richardson, 2005) with leadership and especially culture reducing environmental impacts by reducing waste and risk. These findings confirm prior work by Haanaes et. al., (2011); Lozano, (2015); Benn, Dunphy, and Griffit, (2014); and Engert and Baumgartner, (2016). Important internal drivers include the need for sustainable growth and systems thinking. Sustainable growth can be a new competitive advantage from sustainability initiatives and profitability that includes societal values. Other drivers include a long-term perspective that includes a social responsibility. Integration provides a change management opportunity (supporting Lozano's 2012, 2013 hybrid approach) for organizations and sustainability professionals. It helps define what the sustainability paradigm means to an organization and how to differentiate culture, practices, and products. A hybrid, iterative

approach to integration fosters drivers and enablers of change while cultivating strategies to overcome barriers to environmental and social activities (Lozano, 2012).

External drivers, i.e., stakeholders, regulations, customers and reputation confirm earlier work by Lozano, (2015) with the caveat that size, industry, and stakeholder demand will cause drivers to vary in their degree of importance (Engert, et. al., 2016). Nuanced external drivers are customers calling for supply chain audits, and including the community as a material stakeholder with customers and communities calling for more integration (Antolin-Lopez, (2016). There is a sense of urgency to change practices, reputation management and a recognized importance in corporate citizenship that now includes social responsibilities.

Integration comes when sustainability is part of decision-making, value creation, and part of all business units, functions and reporting structures (Hallstedt, et. al., 2010; and Garcia et. al., 2016). Capturing TBL benefits (Elkington, 1997), asking for TBL information from suppliers along with developing a business case provides a foundation for integration. Yet, there is a TBL paradox in that most of the focus in decision-making is on financial capital and evaluation using measures such as NPV. Activities involving sustainability now provide an opportunity to enable environmental and social capital within decision analysis and financial reporting supporting prior calls for comprehensively addressing all dimensions of the TBL (Hassini, et. al, 2012; Martens and Carvalho, 2015). Other important enablers include KPIs, goal setting and defining sustainability efforts that align with the mission of the organization (Hervani et. al., 2005; Garcia, et. al., 2016).

The findings highlight how achieving objectives goes beyond compliance with regulations to include the critical importance of measurement, engaging stakeholders, auditing and sustainability reporting (Lozano et. al., 2016) that includes integration of financial and

sustainability reports (Eccles and Kruzs, 2010; 2014). Finally, the integration of sustainability means alignment of strategy and vision supporting Borman and Rob ert's, (2015) calls for this same alignment within their framework for strategic sustainable development.

The research and results show successful integration of sustainability and change management rely on process audits and improvement with a focus on both environmental and social performance. These changes spur innovation, and inside-out change management in removing waste and the development of new products and processes supporting Doppelt, (2010). Organizations in this study even consider climate change when looking at R&D decisions. Additionally, practices are inclusive, engaging stakeholders within and outside the organization. Integrated practices provide design alternatives based on tools such as LCA and a TBL review of products supporting work by Lecasa et. al., (2016). We also find LCA used in supply chains, and including stakeholders is important to successful change management (extending work by Hagelaar and Van der Vorst, 2001; and Jorgensen et. al., 2006).

Findings from this study build upon prior management systems work to help explain and propose important relationships in emerging sustainability management systems. The sustainability paradigm shift is more than simply being efficient. Rather, it is about "integration" and change. Integrated organizations explicitly differentiate their practices while aligning mission, vision, and sustainability. This integration is taking place with new product and service offerings valued by stakeholders and rewarded by evaluators through rankings and indices. These developments, often treated as discrete activities, are interrelated and have reinforcing effects supporting prior work by (Lozano, et. al., 2016). These interrelationships help the development of theory and inform the following model (See Figure 3) and insights:

Insert Figure 3 about here

Building on these trends and the findings from this study, we propose a new path forward in understanding the integration of sustainability within organizations, and opportunities for IBL measurement. Integrated organizations consists of a number of interrelated categories and attributes that parallel prior work by Blackburn's (2005) recognition of drivers, enablers, evaluators and pathways, and relationships to performance. These evolving environmental management systems, now positioned as integrated systems help sustainability professionals while supporting change management and reporting (Lozano, et. al., 2016). The practical application for practitioners who want to see their own organizations become more integrated will find internal and external (*Drivers*) exert their force on keeping an organization focused on "why" it should be moving toward strategic sustainability. (*Enablers*) allow organizations to understand "how" change will take place with support in the form of teams, systems, and new integrated performance measurement. (*Evaluators*) validate the importance of measurement and reporting, along with the assessment of an organization's progress as reflected in rankings and stakeholder engagement. This combination of measurement, and collaboration, highlight capabilities and interrelationships among activities. Finally, (*Performance*) within integrated organizations is not a traditional approach to assessment based on only financial performance. Instead, it is the ability of management to utilize resources and activities aligned with strategy, vision, and sustainability for change management and new forms of innovation from systems (Iraldo, et. al., (2009). Through the use of systems that integrate new environmental and social actions, (Hallstedt, et. al., (2010), there lies an effective approach to management. These systems go beyond EH&S of the past to enterprise management systems supporting knowledge management, and real-time visibility of IBL performance and data. Some leading organizations

are already pushing the bounds of this integrated performance frontier (Eccles and Serafeim, 2013). Predictions are that integration will only continue across business functions, entire networks of organizations, value chains, and entire cities.

We are quickly approaching a more dynamic performance frontier where environmental and social impacts and benefits enhance financial valuations. From the use of CO₂ shadow pricing to reporting the social cost of carbon (SSC), organizations are rethinking how they monetize assets and risks (CDP, 2014; EPA, 2016). Auditing and assurance organizations are preparing for integration predicting this type of reporting to be one of the most significant changes in years (Eccles and Kruzs, 2014). Integrated reporting extends beyond changing report formats: “Corporate reports—whose growing sophistication and range have been a reflection of the development of the global economy over the past two centuries—are in some sense the rulebook that investors and stakeholders at large use to “keep score.” Change the rulebook and you will almost certainly change the game” (Main and Hespeneide 2013).

7. Conclusions

Limitations of our methods include typical caveats of subjectivity, replicability, generalizability, researcher bias, less statistical power than quantitative research in verifying trends, reliance on a single respondent, and an in-depth approach to data gathering limits the scope of the study and sample. To mitigate these limitations, several industries are included in this cross-study to support validity and reliability with multiple respondents, multiple researchers helping to control for the biases of individual researchers, and the use of publicly available information for selected companies. These attributes of our methods and triangulated approach to analyzing findings from multiple industries supports the development of an understanding of the phenomenon studied and the generalizability of results.

Conventional approaches to environmentally focused efficiency practices can discourage organizations from developing more innovative approaches to solving complex problems. The opportunity provided by integration is of fundamental importance to any organization because it connects the need for both vertical and horizontal alignment of sustainability initiatives. To better align cleaner production within business and society, organizations can enable sustainability activities as a catalyst for change. Managers can design and develop an integrated and shared understanding and vision of our common future. Sustainable development and the transition to a sustainable society (Broman, and Robért, 2015) should be a reminder that a sustainable society is the goal, and the activities an organization engage in are actually the measurable characteristics of an organization's integration toward this goal.

Utilizing existing data and management systems, there is a new opportunity to push for further evolution of the concept of a TBL, into an IBL. Based in part on the findings of this study and this research team's own inductive insights in the field, we call for a change in management systems to ensure they include natural and social performance factors. With the availability of this data comes an evolving approach to performance measurement. In addition to evaluating projects via NPV, we propose consideration of a new integrated future value (IFV). This approach should include the value of environmental impacts and social performance building on earlier attempts of EP&L statements. A future value will enable enhanced decision analytics considering accrued environmental and social impacts and benefits (shared value) of a given activity (Porter and Kramer, 2011). Risks increase when assessment of a company within a supply chain or industry appears profitable on paper because environmental and social assets and liabilities are not part of the assessment. With an IFV, decision makers can evaluate the future value of assets and risks accrued and compounded over

time, benefits, and dynamic long-term valuation of a capital expenditure beyond myopic costs and cash flow.

There is now a critical opportunity for organizations to enable new valuation practices, further integrate company-wide risks with an integrated approach to managing and reporting overall performance. Innovation is possible with the capabilities of management systems and technology (Iraldo, Testa and Frey (2009) and enhanced by proactive leaders, culture, and sustainability professionals leveraging change management and integrated performance. The movement toward integrated reporting proposes merging financial and sustainability reports sets the stage to capture sustainability-related assets and liabilities on the balance sheet (Eccles and Krzus, 2010; 2014; IIRC). This integration of organizational change toward sustainability will lead to improved risk management, IBL performance, new research opportunities with sustainability professionals, along with construct measurement and testing.

Within this study, primary research with sustainability professionals at leading multinational corporations offers novel insights for academics and practitioners. “Integration” and “organizational change” toward sustainability are important to practitioners tackling the challenges of enabling environmentally and socially responsible activities in their own organizations. For scholars, further research is needed to demonstrate dynamic capabilities and reinforcing effects of performance measurement aligned with sustainability to go beyond prior work by Rebelo, et.al., (2016) and Eccles, et. al., (2014). There is a continued need for primary data collection and engagement of sustainability professionals in academic research.

Engert, et. al., (2016) calls for more research focusing on the integration of corporate sustainability into strategic management. Understanding the progression of integrating sustainability into organizations calls for continued theory development, research, and

management systems that redefine the bounds of a new performance frontier (Eccles and Serafeim, 2013) while aligning strategic objectives of an organization. The integration opportunity builds on the existing work of business leaders and researchers to develop management systems that align strategy and the goal of sustainability. This study provides a foundation for a new theory of integrated organizations. Insights from sustainability professional helps us understand what it means to integrated sustainability initiatives within an organization, looks at performance through the lens of change management, and provides IBL performance opportunities for corporate sustainability. We conclude that more integration will be a critical success factor for the advancement of business practices and a transition to a sustainable society.

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References

- Antolin-Lopez, R., Delgado-Ceballos, J., & Montiel, I. 2016. Deconstructing corporate sustainability: a comparison of different stakeholder metrics. *J. Clean. Prod.* available on-line, in press.
- Asif, M., Searcy, C., Zutshi, A., & Fisscher, O. A. (2013). An integrated management systems approach to corporate social responsibility. *Journal of Clean Prod*, 56, 7-17.
- Barry, J.S. 2013. The Future of Sustainability Reporting Needs CPAs, *The CPA J.* vol. 83, no. 4, pp. 7.
- Benn, S., Dunphy, D., and Griffit, A., 2014. *Organizational change for corporate sustainability*, 3rd ed. Routledge, London England.
- Bernard, H. R. 2011. *Research Methods in Anthropology: Qualitative and quantitative approaches* (5th ed.). Walnut Creek, CA: AltaMira Press.
- Blackburn, W., 2005. Sustainability as a business operating system, *Int. J. of Sust. Bus.* 12(2), p 1-11.
- Bonilla, S. H., Almeida, C. M., Giannetti, B. F., & Huisingh, D. 2010. The roles of cleaner production in the sustainable development of modern societies: an introduction to this special issue. *J. Clean. Prod* 18(1), 1-5.

- Bonini, S., Gorner, S. & Jones, A., 2010. How companies manage sustainability: McKinsey Global Survey results.
- Bonini, S., Gorner, S., 2011. The Business of sustainability: McKinsey Global Survey Results.
- Bonini, S., & Bové A., 2014. Sustainability's strategic worth: McKinsey global survey results.
- Boons, F., Montalvo, C., Quist, J., & Wagner, M. 2013. Sustainable innovation, business models and economic performance: an overview. *J. Clean. Prod* 45, 1-8.
- Braun, V., and Clarke, V. 2006. Using thematic analysis in psychology. *Qual. Res. in Psych.* 3 (2). pp 77-101.
- Brown, A. (2013). All bar one S&P 500 firms made sustainability disclosures in 2012. *IR Magazine*, posted at: <https://www.irmagazine.com/articles/sustainability/19462/all-bar-one-sp-500-firms-made-sustainability-disclosures-2012>.
- Broman, G.I., Robért, K.-H., 2015. A framework for strategic sustainable development, *J. Clean. Prod*, available on-line, in press.
- Bryman, A. and Bell, E. 2015. *Business Research Methods*, 4th ed. Oxford Press
- CDP, Carbon Disclosure Project, 2014. Global corporate use of carbon pricing, *Global Price on Carbon Report*, September.
- CDP, Carbon Disclosure Project, 2016. Available at www.cdproject.net
- Cherrafi, A., Elfezazi, S., Chiarini, A., Mokhlis, A., & Benhida, K. 2016. The integration of lean manufacturing, Six Sigma and sustainability: A literature review and future research directions for developing a specific model. *J. Clean. Prod* 139, 828-846.
- Corbett, C.J., Kirsch, D.A., 2001. International dispersion of ISO 14000 certifications. *Prod. and Oper. Manag.* 10 (3), 327-342.
- Dahlsrud, A. 2008. How corporate social responsibility is defined: an analysis of 37 definitions. *Corp. Soc. Res. and Env. Mgt.* 15.1: 1-13.
- Dellinger, A. B., & Leech, N. L. 2007. Toward a unified validation framework in mixed methods research. *J. of Mixed Meth. Res.* 1(4), 309-332.
- DiMaggio, P.J., and Powell, W. W., 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields, *Amer. Soc. Rev.*, 48, 147-160.
- Doppelt, B. 2010. *Leading Change toward sustainability*. Updated 2nd ed. Greenleaf Publishing, Sheffield.
- Eccles, R.G. & Krzus, M.P. 2010. *One Report: Integrated Reporting for a Sustainable Strategy*. John Wiley & Sons, Inc., Hoboken, New Jersey.

- Eccles, R.G., & Krzus, M. P., 2014. *The integrated reporting movement: Meaning, momentum, motives, and materiality*. John Wiley & Sons.
- Eccles, R. G., Ioannou, I., & Serafeim, G. 2014. The impact of corporate sustainability on organizational processes and performance. *Manag. Sci.*, 60(11), 2835-2857.
- Eccles, R.G. & Serafeim, G., 2013. The performance frontier, *May edn, Har. Bus. Rev.*
- Eisenhardt, K. 1989. "Building theories from case study research," *The Acad. of Manag. Rev.* 14 (4), pp.532-550.
- Eisenhardt, K., & Graebner, M., 2007. Theory building from cases: opportunities and challenges. *Acad. of Manag. J.* 50 (1), 25-32
- Elkington, J., 1997. *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone, Oxford.
- Engert, S., & Baumgartner, R. J. 2016. Corporate sustainability strategy—bridging the gap between formulation and implementation. *J. Clean. Prod* 113, 822-834.
- Engert, S., Rauter, R., & Baumgartner, R. J. 2016. Exploring the integration of corporate sustainability into strategic management: A literature review. *J. Clean. Prod* 112, 2833-2850.
- EPA, Environmental Protection Agency, 2016. The social cost of carbon; Available at <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html>
- Epstein, M. J., & Roy, M. J. (2001). Sustainability in action: identifying and measuring the key performance drivers. *Long Range Planning*, 34(5), 585-604.
- Fereday, J., & Muir-Cochrane, E. 2006. Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *Int. J. of Qual. Meth.* 5(1), 80-92.
- Foerstl, K., Azadegan, A., Leppelt, T. & Hartmann, E., 2015. Drivers of supplier sustainability: moving beyond compliance to commitment. *J. of Supply Chain Manag.* 51: 67–92.
- Garcia, S. Cintra, Y., Torres, R. and Lima, F. 2016. Corporate sustainability management: a proposed multi-criteria model to support balanced decision-making. *J of Clean. Prod* in press. 1-16.
- Gates, S., & Germain, C. 2010. Integrating sustainability measures into strategic performance measurement systems: An empirical study. *Manag. Acc. Quart.* 11(3), 1-7.
- Glaser, B. & Strauss, A. 1967. *The discovery of grounded theory: Strategies for Qualitative Research*, Aldine, Chicago
- Grbich, C. 2013. *Qualitative Data Analysis: An Introduction* (2nd ed.). London: Sage.

Goyal, P., Rahman, Z., & Kazmi, A. A. 2013. Corporate sustainability performance and firm performance research: literature review and future research agenda. *Management Decision*, 51(2), 361-379.

GRI, Global Reporting Initiative, 2016. Available at www.globalreporting.org

Hallstedt, S., Ny, H., Robèrt, K. H., & Broman, G. 2010. An approach to assessing sustainability integration in strategic decision systems for product development. *J. Clean. Prod* 18(8), 703-712.

Haanaes et. al., 2011. Boston Consulting Group, Sustainability: The Embracers Seize Advantage, *MIT Sloan Manag. Rev.*, winter.

Hagelaar, G., & Van der Vorst, j., 2001. Environmental supply chain management: using life cycle assessment to structure supply chains. *The Int. Food and Agribus. Manag. Rev.* 4.4: 399-412.

Hart, S. L., & Ahuja, G. 1996. Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Bus. Strat. and the Env.* 5(1), 30-37.

Hart, S. L. (1997). Beyond greening: strategies for a sustainable world. *Harv. Bus. Rev.* 75(1), 66.

Henriques A., and Richardson, J., 2005. *The triple bottom line. Does it all add up?* Earthscan, London, England.

Hervani, A.A., Helms, M.M., & Sarkis, J., 2005. Performance measurement for green supply chain management. *Benchmark. an Int. Journal* 12 (4), 330–353.

Hesselbarth, C., & Schaltegger, S., 2014. Educating change agents for sustainability—learnings from the first sustainability management master of business administration. *J. Clean. Prod* 62: 24-36.

Hassini, E. Surti, C., & Searcy, C. 2012. A Literature Review and Case Study of Sustainable Supply Chains with a Focus on Metrics, *Int. J. of Prod. Econ.* 140, pp 69 – 82.

International Integrated Reporting Council (IIRC). Available at <http://integratedreporting.org/>

Iraldo, F., Testa, F., & Frey, M. 2009. Is an environmental management system able to influence environmental and competitive performance? The case of the eco-management and audit scheme (EMAS) in the European Union. *J. Clean. Prod* 17(16), 1444-1452.

Johnson & Johnson, 2015. Our Credo, Available at: https://www.jnj.com/sites/default/files/pdf/jnj_ourcredo_english_us_8.5x11_cmyk.pdf

Jørgensen, T. H., Remmen, A., & Mellado, M. D. 2006. Integrated management systems—three different levels of integration. *J. Clean. Prod* 14(8), 713-722.

- Kielstra, P., 2008. Doing good: business and the sustainability challenge, "The Economist Intelligence Unit, Available at: www.eiu.com/sponsor/sustainability
- Kiron, D., Unruh, G., Kruschwitz, N., Reeves, M., Rubel, H., and Meyer Zum Felde, A. 2017. Corporate sustainability at a crossroads, progress toward our common future in uncertain times, in collaboration with the Boston Consulting Group,; MIT Sloan Mgt. Rev.
- Kolk, A., 2003. Trends in sustainability reporting by the fortune global 250. *Bus. Strat. and the Env.* 12.5: 279-291.
- Kolk, A., 2008. Sustainability, accountability and corporate governance: exploring multinationals' reporting practices. *Bus. Strat. and the Env.* 17.1: 1-15.
- Kolk, A., & Pinkse, J. (2007). Towards strategic stakeholder management? Integrating perspectives on sustainability challenges such as corporate responses to climate change. *Corp. Govern.* 7(4), 370.
- KPMG, 2010. Integrated Reporting – Closing the Loop of Strategy, Available at: www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Integrated-Reporting.pdf
- KPMG, 2012. “Integrated Reporting” Issue 2. Available at: <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/integrated-reporting/Documents/integrated-reporting-issue-2.pdf>
- Labuschagne, C., Brent, A. C., & Van Erck, R. P. 2005. Assessing the sustainability performances of industries. *J. Clean. Prod* 13(4), 373-385.
- Lacasa, E., Santolaya, J. L., & Biedermann, A. (2016). Obtaining sustainable production from the product design analysis. *J. Clean. Prod* 139, 706-716.
- Lankoski, L. 2016. Alternative conceptions of sustainability in a business context. *J. Clean. Prod* 139, 847-857.
- Leidner, D.E., & Kayworth, T., 2006. Review: a review of culture in information systems research: toward a theory of information technology culture conflict. *MIS Quart.* 30.2: 357-399.
- Lovins, A., 2011. *Reinventing fire: bold business solutions for the new energy era.* Chelsea Green Publishing.
- Lovins, A, Lovins, H., & Hawken, P. 2007. A road map for natural capitalism. *Harvard Business Review*, 85(7-8).
- Lozano, R., 2012. Orchestrating organizational changes for corporate sustainability: overcoming barriers to change. *Greener Manag. Int.* 43 – 67.

- Lozano, R., 2013. Are companies planning their organizational changes for corporate sustainability? An analysis of three case studies on resistance to change and their strategies to overcome it. *Corp. Soc. Responsib. Environ. Manag.* 20 (5). 275-295.
- Lozano, R. 2015. A Holistic Perspective on Corporate Sustainability Drivers. *Corp. Social Resp. and Env. Mgt.*, 22(1), 32-44.
- Lozano, R., Nummert, B., & Ceulemans, K. 2016. Elucidating the relationship between sustainability reporting and organizational change management for sustainability. *J. Clean. Prod* 125, 168-188.
- Marquis, C., Toffel, M.T., and Zhou, Y. 2016. Scrutiny, Norms, and Selective Disclosure: A Global Study of Greenwashing. *Org. Sci.* 27.2: 483-504.
- Marrewijk, M. 2003. Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communication, *J. of Bus. Ethics* 44, 2/3, pp 95-105.
- Martens, M. L., & Carvalho, M. M. 2015. The challenge of introducing sustainability into project management function: multiple-case studies. *J. Clean. Prod* 117: 29-40.
- Matten, D., & Moon, J. 2008. "Implicit" and "explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Acad. of Mgt. Rev.*, 33(2), 404-424.
- Mazzi, A., Toniolo, S., Mason, M., Aguiari, F., & Scipioni, A. 2016. What are the benefits and difficulties in adopting an environmental management system? The opinion of Italian organizations. *J. Clean. Prod* 139, 873-885.
- McCutcheon, D. & Meridith, J. 1993. Conducting case study research in operations management, *J. of Oper. Manag.* Vol. 11 No. 3, pp. 239-256
- Melnyk, S., Sroufe, R., & Calantone, R. 2003. Assessing the impact of environmental management systems on corporate and environmental performance. *J. of Ops. Manag.* 21.3: 329-351.
- Melville, N. 2010. Information systems innovation for environmental sustainability. *MIS Quart.* 34.1: 1-21.
- Meredith, J. (1998). Building operations management theory through case and field research. *J. of Ops. Manag.* 16(4), 441-454.
- Miles, M.P., Russel, G.P., 1997. ISO 14000 total quality environmental management: the integration of environmental marketing, total quality management, and corporate environmental policy. *J. of Qual. Manag.* 2 (1), 151-168.
- Miles, M., Huberman, A., & Saldaña, J. 2014. *Qualitative Data Analysis: A Methods Sourcebook*. 3rd ed. Sage Publications, Newbury Park, CA.

- Montabon, F., Sroufe, R., & Narasimhan, R. 2007. An examination of corporate reporting, environmental management practices and firm performance, *J. of Ops. Manag.* 25 (5), 998-1014.
- Network for Business Sustainability, *Metrics for Valuing Business Sustainability*, revised, 2011.
- Pagell, M. & Schevchenko, A. 2014. Why Research in Sustainability Supply Chain Management Should Have No Future, *J. of Supply Chain Manag.* 50(1), pp. 44-55.
- Pagell, M. & Wu, Z. 2009. Building a More Complete Theory of Sustainable Supply Chain Management Using Case Studies from 10 Exemplars. *J. of Supply Chain Manag.* 45: 37–56.
- Peloza, J. & Yahnin, R. 2008. Valuing sustainability: a systematic review, *Research Network for Business Sustainability*.
- Porter, M. & Kramer, M. 2011. Creating shared value, *Harv. Bus. Rev.*, 89(1-2), pp 62-87.
- Prencipe, A., Davies, A., & Hobday, M., eds. 2003. *The business of systems integration*. OUP Oxford.
- Reuter, C., Foerster, K., Hartmann, E. & Blome, C. 2010. Sustainable global supplier management: the role of dynamic capabilities in achieving competitive advantage. *J. of Supply Chain Manag.* 46: 45–63.
- Rebelo, M. F., Santos, G., & Silva, R. 2016. Integration of management systems: towards a sustained success and development of organizations. *J. Clean. Prod* 127, 96-111.
- Saldaña, J. 2015. *The Coding Manual for Qualitative Researchers*. Sage.
- Salzmann, O., Ionescu-Somers, A., & Steger, U. 2005. The business case for corporate sustainability: literature review and research options. *Europ. Manag. J.* 23(1), 27-36.
- Schaltegger, S., & Wagner, M., 2006. Integrative management of sustainability performance, measurement and reporting. *International J. of Acct. Audit. and Perf. Eval.* 3.1 (2006): 1-19.
- Searcy, C. 2012. Corporate sustainability performance measurement systems: A review and research agenda. *J. of Bus. Ethics*, 107(3), 239-253.
- Seuring, S., & Müller, M. 2008. From a literature review to a conceptual framework for sustainable supply chain management. *J. Clean. Prod* 16(15), 1699-1710.
- Sroufe, R., 2003. Effects of environmental management systems on environmental management practices and operations, *Prod. & Oper. Manag.* 12 (3), 416-431.
- Stacchezzini, R., Melloni, G., & Lai, A. 2016. Sustainability management and reporting: the role of integrated reporting for communicating corporate sustainability management. *J. Clean. Prod.* Available on line, in press.

Tate, W. L., Ellram, L. M. & Kirchoff, J. F. 2010. Corporate social responsibility reports: a thematic analysis related to supply chain management. *J. of Supply Chain Manag.* 46: 19–44.

Toman, M. 1992. The difficulty in defining sustainability, *Resources*, Winter, 4-6.

Visser, W., & Crane, A., 2010. Corporate sustainability and the individual: Understanding what drives sustainability professionals as change agents. Available at SSRN 1559087.

Yin, R. 1994. *Case Study Research: Design and Methods*. Sage, Thousand Oaks, CA. Publications.

Weber, Y., & Pliskin, N., 1996. The effects of information systems integration and organizational culture on a firm's effectiveness. *Info. & Manag.* 30.2: 81-90.

World Commission on Environment and Development, 1987. *Our Common Future*. Oxford University Press, Oxford.

Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., & Sun, L. 2010. Impact of cleaner production on business performance. *J. Clean. Prod* 18(10), 975-983.

Zeng, S. X., Shi, J. J., & Lou, G. X. 2007. A synergetic model for implementing an integrated management system: an empirical study in China. *J. Clean. Prod* 15(18), 1760-1767.

Table 1. Organizations in Study

Company	Primary Products/Services	Sales	FTEs	GRI Report	Submit to CDP	ISO 14001	LEED
3M	Diversified technologies, consumer products, electronics, health care, industrial safety	30B	75,000	Y	Y	Y	Y
Alcoa	Mining, alumina refining, primary aluminum and fabricated aluminum	23B	59,000	Y	Y	Y	Y
Applied Materials	Services, equipment and software for manufacturing semiconductors, flat panel displays, and solar photovoltaic products	8B	14,325	Y	Y	Y	Y
Baxter	Health sciences	14B	50,000	Y	Y	Y	Y
Bayer Material Sciences	Health care, crop science, material science products	13B	14,700	Y	Y	Y	Y
Dow	Specialty chemical, advanced materials, agrosiences and plastics business	57B	50,000	Y	Y	Y	Y
DuPont	Chemicals	34B	70,000	Y	Y	Y	Y
EMS	Information technology	21B	48,500	Y	Y	Y	Y
FedEx Ground	Shipping, logistics management, supply chain management	42B	71,000	N	Y	Y	Y
Ford	Automotive, vehicles	32B	165,000	Y	Y	Y	Y
Heinz	Prepared foods	11B	35,000	Y	Y	Y	N
Herman Miller	Office furniture	2B	6,000	Y	Y	Y	Y
Honeywell	Design and manufacturer, technology, specialty materials, aerospace, automation, transportation	37B	122,000	N	Y	N	Y
IBM	Computer hardware, software, server infrastructure, technology consulting services	104B	426,750	Y	Y	Y	Y
J&J	Consumer products, health and beauty, baby, medical, medical devices, hips and knees, and pharmaceuticals	67B	114,000	Y	Y	Y	Y
Office Depot	Retailer	17B	40,000	Y	Y	Y	Y
P&G	Consumer Goods	83B	127,000	N	Y	Y	Y

Table 2. Titles of Participants**Vice President of:**

- Corporate Sustainability
- Sustainability and Environment, Health & Safety

Senior Director or Director of:

- Corporate Responsibility and Sustainability Worldwide
- Managing Director of Environmental Services
- Global Sustainability
- Sustainable Development
- Sustainability
- Environmental Health and Safety
- Strategy and Assurance
- Environmental Strategy

Other titles include:

- Global Product Stewardship & Occupational Health Risk Assessment Leader
- Sustainability and Operations Risk Manager
- Leader of Sustainability
- Corporate Environmental Health and Safety
- Manager of Corporate Citizenship & Corporate Affairs

Table 3. Tree Node Hierarchy – Parent (Child)

of Corresponding Interview Question = # of coded references across sources
Parent Nodes (# of Child Nodes for a given Parent)

1 Why Operationalized = 264 references

Why - Internal Pressure (15)
How Operationalized (9)
Importance of Measurement (3)
Why - External Pressure (9)
Systems Thinking

2 How Achieve Objectives = 214 references

Measurement (20)
Stakeholder Integration (10)
Sustainability Report (5)
Auditing (3)

3 Change Management = 66 references

Process Audit-Improvement (5)
Innovation (2)
Design (1)

4 IS/IT Projects = 33 references

Environmental Management Systems (3)
System Integration (4)

Figure 1. Conceptual Model

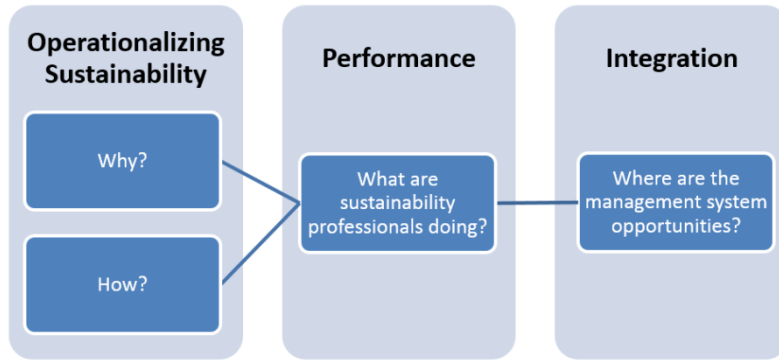
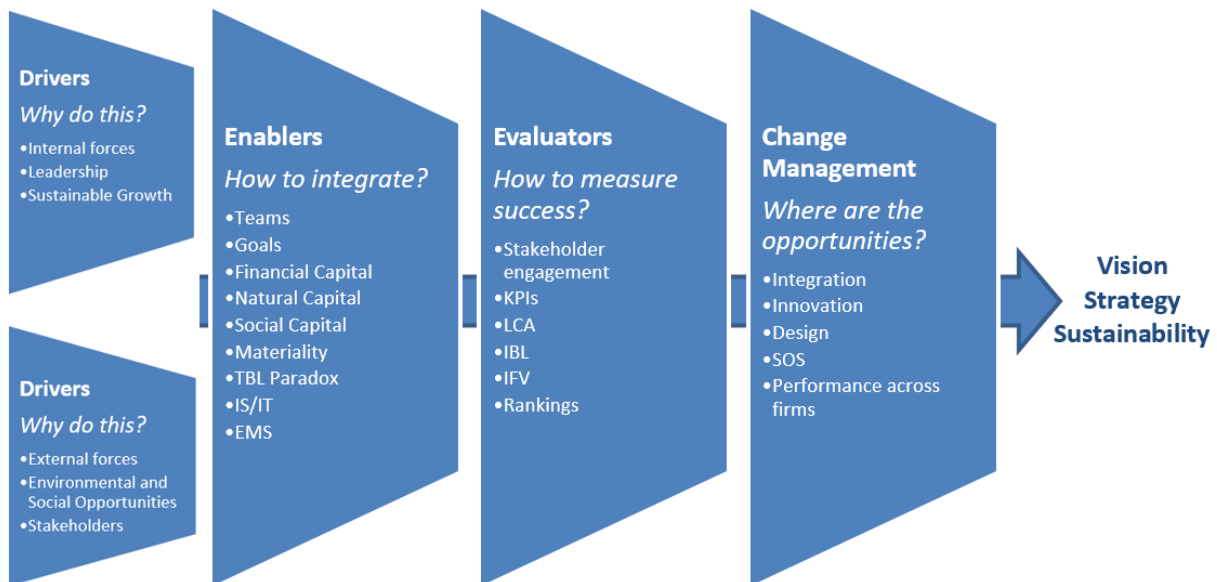


Figure 2. Qualitative Inquiry



Figure 3. Integration and Organizational Change Towards Sustainability



Integration and Organizational Change Towards Sustainability

Abstract

This interdisciplinary study examines why and how corporate leaders operationalize sustainability in organizational strategy, systems and activities. Through interviews with sustainability professionals using a cross-industry sample of multinational organizations recognized as top performers by multiple sources (Dow Jones Sustainability Index, Newsweek Green Rankings, GRI, and KLD), the research identified drivers, enablers, evaluation methods and change management practices for corporate social, environmental and financial initiatives. Using multiple coders, and an analysis of responses to structured interview questions, we determine how sustainability professionals influence the alignment of sustainability goals, mission and values at leading organizations. Scholarly contributions include insight into how top performing companies manage change involving social and environmental responsibility. Insights come from primary research with the individuals who anchor those corporate sustainability initiatives providing a foundation for further theory development and testing of propositions. The key findings include integration as a systems-based approach to sustainability, change management, innovation, and corporate strategy. Integration takes place through the alignment of performance metrics within and across business units and functions with a call for Integrated Bottom Line performance measurement throughout organizations and value chains to inform management decision-making, transparency, and external reporting. Predictions are that integration and change management are critical success factor for the advancement of strategic sustainability initiatives.

Key Words

Best-Practice; Integration; Integrated Bottom Line; Multinational Companies; Organizational Change; Sustainability; Sustainability Professionals

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