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Does strategic alignment really matter in firm sustainability?: A survey of manufacturing firms

Ajaya K Swain
Greehey School of Business
St. Mary's University
Email: aswain@stmarytx.edu

ABSTRACT

Sustainable development has drawn an enormous worldwide interest in the past decades from a wide range of academic disciplines and practice. Although sustainability is studied from different angles such as corporate responsibility, corporate social responsibility, corporate environmental responsibility, there are no comprehensive studies that take a holistic view of corporate sustainability and investigate the impact of corporate sustainability strategy on the firm's sustainability performance and its relation with other functional level strategies. Specifically, relatively less attention has been given to the role of operations strategy on the sustainability drives of a firm and its interface with corporate sustainability strategies.

Integrating these disparate streams of research, this study attempts to investigate the question "How a firm can be successful at integrating sustainability concerns into strategic decision-making processes on various levels while still meeting its traditional business goals". The key objectives of this study are to explore conditions that influence the choice of corporate sustainability strategies and operations strategies of a firm and to analyze the impact of an alignment between corporate sustainability strategy and operations strategy of a firm on its sustainability performance. The findings of this study can potentially provide significant implications for operations management researchers and practitioners.

KEYWORDS: Corporate sustainability strategy, Operations strategy, Strategic alignment, Sustainability performance

INTRODUCTION

Sustainability, in a broad sense, integrates economic, environmental, and social responsibilities (Gimenez, Sierra, & Rodon, 2012). Although corporations have been dealing with economic, environmental, and social issues for past several decades, emergence of corporate sustainability as an integrated concept and its implication on sustained corporate performance is relatively new. In the strategy literature, studies have articulated the relationship between a firm's corporate strategy and its economic and non-economic contributions to its stakeholders (Andrews, 1980), as well as emphasized on the need for developing societal strategies (Ansoff, 1984). There are studies that attempted to integrate the concept of corporate responsibility into the traditional strategic model from an angle of stakeholder interests and stakeholder management (Carroll et al, 1987; Freeman, 1984), and explored strategic relationship between socially responsive policies and the economic performance of the firm (Carroll & Hoy, 1984; Porter & Kramer, 2006). Recent studies have also reported how the degree of a firm's proactivity in developing and implementing corporate environmental strategy can impact its performance (Starik & Rands, 1995; Sharma & Vredenburg, 1998; Buysse & Verbeke 2003; Worthington & Patton, 2005; Ketola, 2009). Although sustainability aspect has been studied from different angles such as corporate responsibility, corporate social responsibility, corporate

environmental responsibility, there are no comprehensive studies that take a holistic view of corporate sustainability and investigated the impact of corporate sustainability strategy on the firm's sustainability performance and its relation with other functional level strategies.

The sustainability-oriented practices adopted by firms affect their design of strategy on corporate, business, and operational level (Shrivastava, 1995; Starik & Rands, 1995). Corporate activities based on corporate visions and strategies are crucial actors in their sustainability (Schaltegger et al, 2012). While appropriate strategies and decisions can help the corporations, the economy and the society; unsustainable management decisions based only on economic terms that neglect social and environmental issues can impede the corporation's progress in sustainability terms. Therefore, developing and implementing compatible corporate sustainability strategies is extremely essential not only for sustainable development but also for the corporations' own sustainability related social, environmental and economic requirements (Schaltegger et al, 2012). Corporate sustainability strategies therefore must recognize all three aspects of sustainability: economic, social, and environmental equally (Parnell, 2008).

While the debate on the interrelationship of these three dimensions has continued for some time, the implications of these relationships in operations management have not been fully explored (Seuring & Muller, 2008; Swain & Cao, 2014b). Furthermore, study of social dimension of sustainability is still lagging behind economic and environmental dimensions in the sustainability research literature. As Seuring & Muller (2008) point out, the understanding of sustainable development is fragmented and mostly environmentally based. This calls for an analysis of social issues in particular and the interrelationship among the three dimensions in general. The extant literature presents modest evidence of a positive relationship between the corporate financial performance and corporate social performance. Researchers call for more studies to fully understand this relationship in order to obtain a comprehensive evaluation of the effectiveness of corporate sustainability strategies (Surroca et al, 2010; De Giovanni & Vinzi, 2012). In summary, sustainable development and corporate sustainability depend on all three dimensions of firm performance: economic, environmental, and social. For a comprehensive evaluation of effectiveness of corporate sustainability strategy, it is necessary to consider all these dimensions, their impacts and their interrelations.

The literature asserts that operations, and more specifically operations strategy is the "missing link" in corporate strategy (Anderson et al, 1989). Although the operations function, manufacturing in particular, has been cited as central and critical to an organization's role in sustainability, often it has been treated only as an external input to strategy (e.g., Anderson et al, 1991). Recognizing the interactions of multiple stakeholders and expanding manufacturing's strategic role in the firm (Klassen & Whybank, 1999), research has attempted integrating manufacturing strategy issues with the various environmental management approaches and tools such as, waste reduction and remanufacturing (Sarkis, 1995). Contextual factors such as: corporate strategy and size, market demands, industry sector, product life-cycle characteristics, and process improvement programs influence both the content and process of strategy (Klassen & Whybank, 1999). As these factors also influence the configuration of operations strategy and alignment of internal and external systems (Bozarth & McDermott, 1998), the degree of alignment of operations strategy with corporate strategies such as corporate sustainability strategy can be crucial in enabling a firm a sustained competitive advantage. However, to date, there are no such studies looking at the alignment between corporate sustainability strategies and operations strategies of a firm in the context of sustainability.

Corporations, because of their resources, capabilities, and reach, can significantly influence the economy and societies. Therefore, the notion of sustainable development must include a

sustainable development of corporations (Schaltegger et al, 2012). However, during the last couple of decades, corporations especially large ones, have been in the center of the sustainability debate as they are perceived to be responsible for a number of activities with adverse impacts on the natural environment and societies in general (Lozano, 2012; Elkington, 1997; Hart, 1997). Given the impact of the manufacturing industry on the environment, it makes sense to study sustainability issues facing this industry (Gimenez et al, 2012).

In an effort to fill the gap in the extant literature, we aim to examine corporate sustainability issues in manufacturing industry. Gaining theoretical support from resourced-based view, stakeholder theory, dynamic capabilities theory, and the contingency theory literature, this paper attempts to explore how a firm can be successful at integrating sustainability concerns into its strategic decision-making processes on various levels while still meeting its traditional business goals. Researchers in strategic management have identified factors such as industry, market share, and competitive strategy to explain variation in firm performance. Contingency theorists, on the other hand, have emphasized on the significance of alignments involving environment and structure in performance variance. Combining these two perspectives, we investigate the relationship among corporate sustainability strategy, operations strategy, and sustainability performance of a firm. The key objectives of this paper are to explore conditions that influence the choice of corporate sustainability strategies and operations strategies of a firm and to analyze the impact of a strategic alignment between these two strategies on firm sustainability performance.

The remainder of the paper is organized as follows. In the following section, we review the literature on sustainability related to OM and firm sustainability performance. We then use resource-based view (RBV) as the underpinning theoretical base to develop our research model and hypotheses. We describe our research methodology in the next section. The contributions and limitations of the study are included in the final section along with suggestions for future research.

LITERATURE REVIEW

Corporate Sustainability, Corporate Social Performance, Corporate Social Responsibility

Despite the importance given to the social and environmental issues, there has been a lot of confusion about the meaning of corporate social responsibility (CSR), corporate social performance (CSP), and corporate sustainability (CS). This confusion about the definitions and constructs of CSR, CSP, and CS often lead to an incorrect identification of CSR and CS goals for an organization (Bansal, 2005; Carroll, 1999).

Carroll (1979) has provided the most cited definition of corporate social responsibility that states “the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time” (p. 500). A wide range of other definitions of CSR reflecting its ambiguous perspectives can be found in Montiel (2008). Corporate social performance (CSP) is another concept found in the literature that appears close to CSR. The CSP involves social issues before the organization and the responsiveness of organization to those issues (Wood, 1991). Of late, the CSP has been referred to as overall social responsibility of business, evolving from the principles of legitimacy, public responsibility, and managerial discretion (Montiel, 2008). Corporate sustainability (CS) has its origin from the concept of sustainable development. Most of the CS research is based on the popular Brundtland (1987) definition that assumes the development to be sustainable if companies’ present needs can be met “without compromising the ability of future generations to

meet their own needs” (p. 43). CS has been identified as a tridimensional construct that includes environmental, economic, and social dimensions (Bansal, 2005; Gladwin & Kennelly, 1995).

While CS is strategically eco-centric, CSR is anthropocentric (Winter, 2007). The CS scholars describe CS as a nested system that acknowledges economy as part of society and society as a part of the larger ecological system. The CSR and CSP research considers social and economic performance as independent constructs (Montiel, 2008). CS and CSR also differ in terms their theoretical approach. Whereas, CSR research has mostly adopted stakeholder theory, researchers in CS have used resourced based view (Hart, 1995), motivation theory (Ramus & Steger, 2000), and institutional theory (Delmas & Toffel, 2004) to support their studies. There are also differences in conceptualization, operationalization, and assessment of economic, social, and environmental constructs by researchers in these fields (Bansal, 2005; Carrol, 1979; Orlitzky et al, 2003; McWilliams & Siegel, 2001; Sharma & Henriques, 2005).

In summary, albeit several differences, researchers in both CS and CSR fields agree that contemporary businesses must address economic prosperity, social equity, and environmental integrity before they can claim socially responsible behavior or sustainable practices (Montiel, 2008). As CS is more explicit in its approach in balancing three elements of the triple bottom line to achieve long-term sustainability and social responsibility, in this paper, we consider CS in our analysis of corporate sustainability strategy.

Corporate Sustainability Strategy

In broad terms, corporate sustainability strategy refers to how corporates can contribute to the goals of sustainable development and how to integrate the sustainability view of challenges and opportunities into corporate sustainability activities. The notion of business case of sustainability in organizations has been studied by firms, regulators, government and non-government agencies to seek justification for sustainability strategies in organizations. Ketola (2010) proposes that corporate sustainability “encompasses strategies and practices that aim to meet the current needs of stakeholders while seeking to protect, support and enhance the human and natural resources that will be needed in the future” (p. 322). Corporate sustainability strategy also can be defined as “a strategic and profit-driven corporate response to environmental and social issues caused through the organization’s primary and secondary activities” (Salzmann et al, 2005, p. 27).

There are different typologies of sustainability strategies suggested in the literature. Two types of sustainability strategies: process-driven; and market-driven sustainability strategies were suggested during early part of last century (Stead & Stead, 2008). The process-driven strategies mainly focused on pollution prevention approaches such as: redesigning pollution control systems; using recycled materials from a firm’s own production processes and/or outside sources; using renewable energy sources (Hart, 1995). The market-driven sustainability strategies focused on product stewardship (Hart, 1995; Dutton, 1998) that is based on the notion of minimizing the adverse environmental impacts in every stage of its life cycle including design, development, production, distribution, and disposal, and also the life cycle costs of products and services.

Baumgartner (2009) describes four types of sustainability strategies: introverted; extroverted; conservative; and visionary. An introverted strategy is a risk mitigation strategy with a focus on the regulatory compliance concerning environmental and social aspects in order to avoid risks for the company. An extroverted strategy is a legitimating strategy that focuses on the external relationship of a company and on public acceptance. A conservative strategy is an efficiency

strategy that focuses on eco-efficiency to provide products and services are provided at low costs by consuming less materials and energy, and avoiding emissions and waste. A visionary strategy is a holistic sustainability strategy that focuses on sustainability issues within all business activities.

Taking a natural resource based view, Hart (1995), proposed three interconnected sustainability strategies: pollution prevention, product stewardship, and sustainable development. Pollution prevention strategy refers to both control of emissions and effluents using appropriate equipment, and preventing emissions and effluents through process improvement and/or process innovation. Product stewardship involves integrating the external stakeholder perspectives, into product design and development processes so that the product-in-use must have a low environmental impact and be easily decomposed, reused, or recycled at the end of its useful life. A sustainable development strategy refers to both development of new low-impact technology and products, and a long-term commitment to new market development. In short, pollution prevention strategy mainly aims for reducing emissions, whereas product stewardship guides the selection of raw materials and disciplines product design with an aim of minimizing the environmental impact of production systems. Sustainable development strategy refers to a long-term vision to leverage an environmentally conscious strategy. Sharma and Henriques (2005) in their study analyzed various corporate sustainability strategies such as: pollution control, eco-efficiency, recirculation, eco-design, ecosystem stewardship, and business redefinition. Defining an industrial eco-system as a group of “organizations that jointly seek to minimize environmental degradation by using each other’s waste and by-products and by sharing and minimizing the use of natural resources” Shrivastava (1995, p. 128), recommends that the firms must operate within industrial eco-systems.

In sum, there are several substantial overlaps of conceptualizations of corporate sustainability strategies. For this study, we will conceptualize corporate sustainability strategy in terms of four dimensions: corporate environmental strategy, strategic proactivity, stakeholder management, sustainability vision. We chose these dimensions because, taken together these four dimensions include most of the dimensions described in the literature to conceptualize corporate sustainability strategies.

Sustainability and Operations management

The field of operations management has considered sustainability mostly from ecological perspective. The environmental issues related to sustainability have been well documented. For example, Sarkis (2001) presented some evolving environmental programs, initiatives, and research from the perspective of the manufacturing and operations functions. Hill (2001) provided operations managers and strategists with specific information on environmental sustainability and emphasized the importance of various political decisions in international operations strategy formulation. Daily and Huang (2001) identified human resource factors as of the key elements of the implementation process (Swain, 2016) of an environment management system. One important thing to note here is that most of the studies in OM on sustainability including these did not incorporate the social aspect of sustainability. Carter and Rogers (2008) note that organizational definitions of sustainability in the engineering literature are more comprehensive and they have explicitly considered the social, environmental, and economic dimensions of organizational sustainability. There are a number of reports on social performance in supply chain management (Swain & Cao, 2014a, 2017). Cantor et al (2006) investigated safety technology adoption practices among the largest firms in the U.S. motor carrier industry to determine firm’s adoption patterns of available and leading-edge safety technologies. Weener and Wheeler (1992) conducted similar studies related to safety in airline

industries and Crum et al (1995) focused on safety issues in rail road sector. To summarize, although many studies in operations management and especially supply chain management have focused on economic and environmental issues in firm's pursuit of sustainable development, social issues have not been investigated in depth and require further attention.

Operations Strategy

Even though operations strategy encompasses both manufacturing and service operations strategy, most attention in the literature has been devoted to analyze the manufacturing aspect of it (Boyer et al, 2005). As Anderson et al (1989) point out, many terms are loosely used and sometimes in conflicting ways to describe operations strategy. While Skinner (1978) used the term manufacturing task to describe the broad concept of manufacturing strategy, Booz Allen & Hamilton (1982) used the term manufacturing mission to present the same concept. Anderson et al (1989) describe an operations strategy as "a strategy for the operations function of an organization which is a part of the business strategy or strongly integrated with the business and corporate strategies" (p. 137). This definition of operations strategy will be used in this paper for its comprehensiveness and clarity.

Strategic Alignment

Strategic alignment is the degree of consistency between corporate level strategy and functional strategy. In operations strategy literature, alignment or fit has been classified as: internal fit and external fit. While internal fit refers to the alignment between manufacturing tasks and manufacturing policies and practices, external fit refers to the alignment between operations strategy and corporate and business strategies (Skinner, 1969, 1974). While strategic management studies have established the existence of a correlation between strategic alignment and firm performance (Hoffman et al, 1994; Lingle & Schiemann, 1996; Dawley et al, 2002), similar reports are found in the OM literature as well (Joshi et al, 2003, Cao & Schneiderjans, 2004, Tarigan, 2005, Schneiderjans & Cao 2009, Cao et al, 2011). The firm performance has also been found to be strongly related to the fit between the environment and the choice of firm's operations strategy (Ward et al, 1995). The fit and alignment literature on strategy, structure, and business is vast in organizational studies and also in OM. With the sustainability concept being relatively recent and corporate sustainability practices not that rampant across the globe, the empirical evidence on alignment or fit between the corporate sustainability strategy and operations strategy is not exhaustive. This research attempts to empirically test the impact of the strategic alignment between the corporate sustainability strategy and operations strategy on the firm sustainability performance.

Firm Sustainability Performance

On a broad level, corporate sustainability contains three components: the natural environment, society, and the economic performance. Carter & Rogers (2008) visually represented these three components and identified sustainability at the intersection of environmental, social, and economic performance. Elkington (1997) coined the term "triple bottom line" (TBL) that corresponds to these three components of sustainability and involves the reconciliation of the economic, social, and environmental performance of an organization. TBL considers and balances the environmental, social, and economic goals of the organization from a microeconomic view. Simply put, triple bottom line suggests that it is possible for a firm to pursue certain practices and activities that can have positive impact on environment and society and long term economic benefit. All these three interacting dimensions need to be considered for developing a comprehensive corporate sustainability strategy.

THEORETICAL BACKGROUND AND HYPOTHESES

This research draws upon four main theories: the resource-based view of the firm, stakeholder theory, dynamic capabilities theory, and contingency theory. While the resource-based view of the firm determines how the strategic resources available to firm contribute to its competitive advantage, the stakeholder's theory tries to explain why firms should pursue sustainable goals. The dynamic capabilities theory explains how the firm's ability to integrate, build, and reconfigure its competences to address rapidly changing environments can enable it achieve competitive advantage. On the other hand, the contingency theory argues that there should be an alignment or fit between various strategies in a firm to achieve superior performance.

Resource-based View

Criticizing the neoclassical assumptions of firm homogeneity and resource mobility and by assuming resource heterogeneity and resource immobility of a firm, Barney (1991) delineated the characteristics of resources necessary for a sustainable competitive advantage as valuable, rare, inimitable, and non-substitutable, usually referred as VRIN resources. According to Barney (1991), firms' resources "include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. [. . .]. In the language of traditional strategic analysis, firm resources are strengths that firms can use to conceive of and implement their strategies" (p. 101). This theoretical stance differentiated the role of internal firm resources as the source of its competitive advantage from the earlier emphasis on external factors such as industry position as sources of competitive advantage (Porter, 1980) in strategy literature. In essence, the resource-based view of the firm highlights links between resources, sustained competitive advantage and superior economic performance. By assuming resource heterogeneity and resource immobility, RBV examines why some firms manage to achieve competitive advantages in an industry while others fail to do so.

Stakeholder Theory

Building on a number of ethical theories, stakeholder theory maintains that the purpose of a firm is to serve the interests of its stakeholders (Freeman, 1988). This theory suggests that companies produce externalities that affect many stakeholders of a firm causing stakeholders to increase pressures on firms to reduce negative impacts and increase positive ones (Sarkis et al, 2011). Freeman (1984) defines stakeholders as those individuals who can affect or affected by the achievement of a firm's goals and the firm's long-term success depends on how the firm fulfills the interests of its various stakeholders. In the context of sustainability, stakeholder theory has been applied to analyze specific stakeholder influences on green purchasing (Bjorklund, 2011; Maignan & McAlister, 2003); life cycle analysis (Matos & Hall, 2007); environmentally oriented reverse logistics (Sarkis et al, 2010); 'closing the loop' for green supply chain management (Zhu et al, 2008) and green supply chain practices (González-Benito & González-Benito, 2006).

Dynamic Capabilities Theory

In order to have a sustained competitive advantage, firms need to demonstrate timely responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competences (De Bakker & Nijhof, 2002). How some firms first develop firm-specific capabilities and how they renew competences to respond to changing business environment are closely related to the firm's

business goals. De Bakker & Nijhof (2002) refer to this ability to achieve new forms of competitive advantage as 'dynamic capabilities'. While the term 'dynamic' refers to the capacity to renew competences in order to achieve congruence with the changing business environment, the term 'capabilities' emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment. Teece et al (1997) defined dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p. 516).

Contingency Theory

The basic premise of contingency theory is that "no strategy is universally superior, irrespective of the environmental or organizational context" (Venkatraman, 1989, p. 424). Ever since Burns and Stalker (1961) coined the idea that there is not a single best way of managing an organization, the contingency approach has become a major theory for studying organizations in many disciplines including operations management (Lawrence et al, 1967; Thompson, 1967; Skinner, 1969, 1974). This articulation of strategies emphasizes the importance of strategic fit or alignment among various strategies of a firm on different levels. Venkatraman's (1989) study has been a pioneering work in this field in which, making a case that the concept of fit is an important building block for theory construction, he developed a classificatory conceptual framework and identified six unique perspectives of fit: fit as *moderation*, fit as *mediation*, fit as *matching*, fit as *gestalts*, fit as *profile deviation*, and fit as *covariation*. This framework of six distinct perspectives of fit has provided definitional clarity to the fit concept and translated theory into analytical and empirical level.

Hypotheses

According to the resource-based view, from its attempt to mobilize its available resources and capabilities a firm can derive enhanced efficiency (Penrose, 1995), and drive innovation and strategic change (Peteraf, 1993; Rumelt, 1997). Over the years, different views have been expressed as to how concern for the natural environment could enhance a firm's economic performance. For example, a proactive approach to environmental issues can reduce a firm's costs of compliance with environmental regulations (Dechant & Altman, 1994; Hart, 1995; Shrivastava, 1995) and environmental responsiveness can enhance firm efficiencies and lower its operating costs (Russo & Fouts, 1997; Shrivastava, 1995). Shrivastava (1995) suggests that by adopting appropriate strategies aimed at sustainability performance, firms can create distinctive, ecofriendly products that appeal to customers, thereby creating a competitive advantage for the firm (Li et al, 2015). Furthermore, being environmentally proactive and pursuing proactive environmentally friendly practices, a firm can not only avoid the costs of adverse reactions from the key stakeholders, but also it can lead to an enhanced corporate image of the firm thereby maintaining the sustained loyalty of its stakeholders (Dechant & Altman, 1994; Hart, 1995; Shrivastava, 1995).

Firms experience various types of pressures from their key stakeholders in terms of the social related requirements and environmental expectations. These pressures differ with the environmental awareness of the stakeholders, particularly consumers. Carter et al (2000) report that an estimated one third of the consumers in the U.S. considers the firm's environmental reputation to be a major factor in their purchasing decisions and about four in five consumers are willing to pay more for environmentally friendly products. The consumers in the developing countries, by enhanced awareness to environmental sustainability, have also started to opt for eco-friendly products (Harris, 2006). Furthermore, as Christmann and Taylor (2001) report,

global sales and export are more and more getting scrutinized by the sustainable products offered and practices adopted by the firms. This indicates the consumers' ethical values and ecological thinking impacting their purchasing behavior and ultimately firm's economic performance (Ball & Craig, 2010). Therefore, firms need to develop and implement long-term sustainability strategies to retain the customer and consumer loyalty.

Based on a resourced based view of the firm, Benitez-Amado and Walczuch (2012) argue that a proactive environmental strategy leads to superior firm performance. They support their arguments from these following points: 1) As the proactive environmental strategy capability enables a firm to implement proactive strategies that generate financial, operational and marketing benefits, this capability is valuable; 2) Due to the skepticism about derived business benefits from environmental approaches, the implementation of these strategies is not a common practice in firms, and hence implementing them is a rare resource; 3) A first mover advantage can be derived from this implementation; 4) The implementation of this strategy requires the presence of other resources acquired due to a unique path through history and developing this capability is people-intensive, decentralized and it depends on tacit skill development through employee involvement. Therefore, the development of this capability is difficult to imitate and has low substitutability.

The above argument can easily be extended to the notion of corporate sustainability strategies which can be considered as a dynamic capability of the firm and adoption of these strategies can enable a firm have sustained competitive advantage. Based on the preceding discussion, we hypothesize:

Hypothesis 1: *Firms that pursue corporate sustainability strategies deliver superior firm sustainability performance.*

Hypothesis 1a: *Firms that pursue environment-focused sustainability strategies deliver superior environmental and social performance.*

Hypothesis 1b: *Firms that pursue stakeholder-focused sustainability strategies deliver superior economic and social performance.*

Hypothesis 1c: *Firms that pursue proactive sustainability strategies deliver superior financial and environmental performance.*

Operations strategy is generally viewed as the relative weighting of manufacturing capabilities, including low cost, quality, flexibility, and delivery (Boyer & Lewis, 2002). The effectiveness of an operations strategy is determined by the degree of consistency between emphasized competitive priorities and corresponding operational infrastructure (Leong et al, 1990). Operations strategy is closely linked to operational capabilities that can be sources of competitive advantage (Prahalad & Hamel, 1990; Miller & Roth, 1994). Therefore, firms need to prioritize their strategic objectives and accordingly allocate resources to improve those operational capabilities. For instance, cost-focused operations strategy seeks to reduce waste and improve productivity via designing of efficient systems and standardized tasks. On the other hand, flexibility focused operations strategy may involve a job shop design, seeking rapid response to changing customer demands and product specifications. To achieve a sustained performance there is often a pressure on firms to improve on all dimensions of operations strategy and develop capabilities that reinforce one another. For example, high quality can

enable firms to become more responsive to customer needs, more reliability, and lower costs (Szwejczewski et al, 1997).

The link between operations strategy and business performance has long been conceptually affirmed (Skinner 1969). The operations strategy has been reported to be positively associated with business performance (Smith & Reece, 1999; Ward et al, 1995). There is empirical support for flexibility positively affecting business performance (D'Souza & Williams, 2000) and product design and process technologies influencing environmental performance (Schmidheiny, 1992). Furthermore, an operations strategy that effectively integrates environmental management can establish barriers to entry for competitors thereby creating a competitive advantage for the firm (Dean & Brown, 1995).

The preceding discussion highlights the importance of various competitive priorities in different aspects of sustainability performance. As such we hypothesize:

Hypothesis 2: *A firm's operations strategy is positively associated with its sustainability performance.*

Hypothesis 2a: *A firm's cost-focused operations strategy is positively associated with its economic and environmental performance.*

Hypothesis 2b: *A firm's quality-focused operations strategy is positively associated with its environmental and social performance.*

Hypothesis 2c: *A firm's flexibility-focused operations strategy is positively associated with its economic and social performance.*

Alignment or fit has been identified as a key essential antecedent of firm performance (Skinner, 1969; Wheelwright, 1984; McAdam & Brown, 2001). Day (1984) and Whipp et al (1989) observed that alignment between strategic and operational aspects is more prominent in successful firms and suggested that business strategy should be integrated with functional strategies to achieve a sustainable competitive advantage. The empirical evidence of alignment having a positive relationship with firm performance can be found elsewhere (Dess, 1987; St. John & Rue, 1991; Ianquinto & Fredrickson, 1997). Wheelwright (1984) states that an effective manufacturing strategy is not necessarily one that promises the maximum efficiency, or engineering perfection, but rather one "that fits the business, that is, one that strives for consistency between its capabilities and policies and the business's competitive advantage" (p. 83). Swamidass (1986) recommends that manufacturing strategy should be developed and should be in total alignment with the firm's goals and strategies. A support for alignment of manufacturing strategy being in alignment with business strategy is provided by Schroeder et al (1986).

The contingency theory assumes that performance is mainly determined by the level of fit. In OM, it has been proposed that there are three main sources of performance better known as the three paradigms of manufacturing strategy: best practices, fit and the development of capabilities (Voss, 1995). Consistent with contingency theory, sustainability performance is seen as being mainly determined by the level of fit of various strategic practices within the organizational context. In summary, alignment is important not only in developing strategies but also in their implementation and implementation is fostered by aligning and adjusting key systems, processes, priorities and decisions within the firm on various levels (Joshi et al, 2003).

While an alignment is presumed to enhance organizational performance, misalignment can undermine performance (Ward et al, 1996). The importance of coordinating the corporate, business and functional priorities and strategies of the firm has been emphasized in the literature (Likert, 1961) and the fit between business strategy and the decision categories or operational elements leads to improved business performance (Smith & Reece, 1999). Based on this literature support, we hypothesize the following:

Hypothesis 3: *The degree of alignment between a firm's corporate sustainability (CS) strategy and its operations strategy is positively associated with the firm's sustainability performance.*

Hypothesis 3a: *The degree of alignment between the environmental-focused CS strategy and cost-focused operations strategy impacts firm's economic and environmental performance.*

Hypothesis 3b: *The degree of alignment between stakeholder focused CS strategy and quality focused Operations strategy impacts firm's environmental and social performance.*

Hypothesis 3c: *The degree of alignment between proactive CS strategy and cost focused operations strategy impacts firm's economic and social performance.*

METHODOLOGY

Measures

Corporate sustainability strategy, operations strategy, and strategic alignment

The theoretical constructs for our research model are developed with literature support. Corporate sustainability strategy is assessed in terms of four dimensions: environmental strategy, stakeholder management, strategic proactivity, and sustainability vision. The operations strategy of firms is assessed in terms of four competitive priorities using 16 Likert scale questions from the literature (Miller & Roth, 1994; Boyer, 1998; Boyer & Lewis, 2002). Strategic alignment is measured as matching (Venkatraman, 1989). The misalignment score is calculated using the Euclidean distance formula. The greater the Euclidean distance, lower is the degree of alignment between the two strategies.

Sustainability performance

Sustainability performance is assessed in terms of firm's economic, environmental, and social performance. We measured firm profitability for economic performance (De-Burgos-Jimenez et al, 2013). Traditionally, environmental performance of a firm has been measured in terms of firm's toxic pollution emission (Molina-Azorín et al, 2009). For this study, the environmental performance measure is created using the Kinder, Lydenberg, and Domini's (KLD) dataset.

Control Variables

Firm size, risk, and industry have been identified as potential factors affecting both economic and social performance of firms (Ullman, 1985). In this study, each of these characteristics: size, risk attitude, and industry, are operationalized as a control variable for potential differences between the firms.

Data Gathering

The sample for this study consists of 1100 publicly traded firms in the metal-working industries (SIC codes 33-37; both inclusive) in the USA. These industries were chosen primarily because of their potential to create substantial negative impact to the natural environment. The final list of sample firms was decided after searching for the contact details of the proposed respondents. As focus of this study is on strategies on both corporate and the functional level, we believe a firm level data is appropriate for our study. The unit of analysis in this study is a manufacturing business unit that is defined by the level in the organization where a manufacturing/operations strategy was formulated. Data for this study are being collected via a mail survey.

POTENTIAL CONTRIBUTIONS

This study can potentially provide both theoretical and managerial contributions. Although previous studies have analyzed alignment between various strategies and its impact on business performance, the current study is one of the first attempts exploring the impact of a strategic alignment on firm sustainability performance taking an OM perspective. Additionally, we consider all three dimensions of sustainability performance: economic, environmental, and social in our analysis which is rare in OM studies. For practitioners, contingency knowledge is important because the failure to acknowledge the limits of applicability of sustainable practices may lead to their application in inappropriate contexts. Contingency research can provide guidelines for selection of the operations strategy that is compatible with the corporate sustainable practices in a broad organizational context. These guidelines can inform the implementation of certain OM improvement programs based on the adoption of corporate sustainable practices. From a managerial perspective, it is important to know that alignment pays off under certain conditions and firms should use practices which are effective in their context considering the strategic fit.

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