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ISN’T MONEY GREEN? ICT, RESOURCE-BASED VIEW AND THE BROADER MEANING OF SUSTAINABILITY

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Abstract: In the face of global warming, environmental degradation and other social and economic challenges, the dawn of the 21st century has sparked a renewed search for more meaningful ways of defining, gauging and nurturing progress, development and prosperity. Consequently, many leading corporations and municipal organizations now actively embrace the principles of corporate sustainability - a major, ongoing paradigm shift in business strategic thinking. Corporate sustainability seeks to advance the larger goals of social, economic and environmental justice through conservation, advocating that businesses look beyond their immediate profit margins and aspire toward their economic goals with minimum compromise to the ability of future generations to do likewise. The resource-based view (RBV), widely regarded as the touchstone for IT competitive strategy, stresses the importance of sustainable competitiveness primarily through acquiring rare, inimitable and unsubstitutable resources. Can we reconcile RBV-based IT strategy to embrace both interpretations of sustainability? This paper outlines a framework for strategic IT deployment that promotes the attainment of sustainable competitiveness while embracing the broader tenets of corporate sustainability in the new, green economy.

INTRODUCTION

Corporate sustainability is rapidly becoming the mantra of the “next industrial revolution.” The philosophy of corporate sustainability challenges companies to look beyond immediate economic gains and profits to include environmental and social costs as part of their decision-making process. The objective is to encourage new products and services designed for maximum efficiency, while incurring minimum waste. One important trajectory for achieving this end is through concisely meeting market demand, thusly conserving both the environment and the finite resource-base of our planet. Operationalizing the principles of corporate sustainability would require revising established codes, theories and practices by which businesses develop and deploy technology, many of which were established in the mid-20th century at the height of the Industrial Age and are overdue for revision. Indeed, many leading corporations (including Wal-Mart, Unilever, Toyota, Ford, Subaru) in recent years have given increased priority to the concept of supply chain sustainability, leveraging their influence to extend and proliferate their sustainability strategies throughout their (global) supply chains (Metcalfe, 2011). Although its philosophy focuses on organization level policy, the concept holds important ramifications for the wider industry or economy of which the organization is a compositional unit, especially
given the ongoing trend of globalization and the rate at which the concept seems to be perpetuating itself. And in support of these initiatives, a growing selection of software offers the ability to conduct life cycle assessment (LCA) which analyzes the potential environmental impact of new products and ensures compliance with sustainability-related international standards (ISO 14040, 14042). Clearly, this change in vision from seeing the economy as a separate entity to seeing it as part of a wider entity – the ecology, represents a major ongoing paradigm shift in business strategy (Daly and Farley, 2011).

In responding to the challenge, many corporations have come to realize that beyond anthropocentric values and altruistic rewards, or mere compliance with environmental regulations, adopting the philosophy of sustainability could be economically advantageous. Thus, even as governments’ revised legislations assign increasing accountable for the environmental impact of their products, many leading organizations are demonstrably embracing the notion that corporate sustainability and the quest to enhance financial performance are not mutually exclusive in the modern business world and that pursuit of the former can even yielding new avenues to prosperity. It would appear, therefore, that many corporations and municipal organizations view these requirements as impetus for exploring new, potential business opportunities that can, of themselves, yield competitive advantages to economic entities willing to devise and implement economically sustainable business strategies. The concepts discussed herein should be of particular relevance to managers in developing countries that grapple daily with the paradoxes of development within the constraints of often severely limited resource endowments. A steadily growing, emergent stream of research focuses on the contributions of ICT in promoting sustainability-related, socio-economic themes such as reducing urban poverty or rural underdevelopment through digital inclusion and improved access to information (Labelle 2007; Pade-Khenne et al, 2011; Armente et al, 2012). In this paper, we promote the concept of corporate sustainability, proposing and outlining a revision to prevailing theory governing the strategic deployment of information and communication technology (ICT) that potentially could enhance market performance while simultaneously advancing a greener approach to attaining and retaining a competitive edge.

The resource-based view (RBV) holds that the ability of a firm to develop a sustainable competitive edge in its industry is determined by its endowment of resources. Some of those
resources, the theory holds, enable the firm to achieve competitive advantage in their industry while a further subset, valuable and rare resources, yields *sustained* (perpetual) superior performance (Barney 1991; Grant 1991). The theory also argues that isolating mechanisms can protect such valuable, rare resources from being easily imitated, replicated or disseminated, thereby ensuring sustained superior performance for the firm. But RBV proponents also concede that mere possession of valuable, rare resource is no guarantee of superior performance (Barney and Arikan, 2001). Thus, many important questions remain to be explored. For example, how is a competitive advantage actually attained? What transformation process needs to take place within a firm’s resource endowment in order to generate such a competitive edge? What strategic role do IT resources play in that process? In fact, to begin with, on what basis do we deem a resource strategically “valuable”? Moreover, the ongoing “Sustainability Revolution,” recognizes, among other concerns, the finiteness of the planet’s resources and the need for preservation and austerity. A competitive strategy based primarily on *ownership* of resources, however “valuable and rare,” seems inadequate, since it does not convey the social and environmental constraints that many now see as looming crises and concerns of the 21st century (Sirmon, Hitt and Ireland, 2007; Newbert, 2007).

There are many definitions of the term “sustainability” (Hopwood et al, 2005). However, in the context of business strategy, clearly there is some divergence between the term “sustainability,” as used in defining the strategic objectives of RBV vis-à-vis the broader philosophy of economic or corporate sustainability. But is this divergence reconcilable? In this paper, we argue that adopting the principles of corporate sustainability potentially can in itself contribute to attaining a sustainable competitive edge, as defined by RBV, although some suggested modifications to established theory are necessary (Daly, 1990; Edwards, 2005; Haigh and Griffith, 2008). We also suggest a framework for ICT deployment that would support a sustainable approach to building a competitive edge.

**THE RESOURCE BASED VIEW (RBV)**

Business strategy researchers consider the works of Wernerfelt (1984) and Barney (1991) seminal to the RBV research stream (Priem and Butler, 2001(1)). While Wernerfelt emphasizes resources and diversification, Barney detailed, well-articulated depiction of the business-level
resource-base has become a foundation and touchstone for many subsequent RBV studies either seeking to validate his framework or extend it. Barney structures his thesis around the central tenet that "resources that are valuable, rare, difficult to imitate and non-substitutable can yield sustained competitive advantage" (Meyer, 1991: 823). The “valuable and rare” sub-category enables a firm to achieve competitive advantage in their industry; whereas, a further subset – those that are “imperfectly imitable and without substitutes” - confers sustained superior performance (Barney 1991; Grant 1991). Isolating mechanisms – the theory further states - protects such valuable and rare resources, once acquired, from being easily replicated or disseminated, ensuring superior performance for the firm over an extended period (Dierickx and Cool, 1989; Peteraf, 1993). In summary, therefore, rarity and value are each necessary but not sufficient conditions for competitive advantage; whereas non-imitability, non-substitutability, and non-transferability are each necessary for sustainability of an acquired competitive advantage (Priem and Butler, 2001(2)). Note that sustainability here simple meaning “long-lived.”

Prior to the 1980’s early conceptual work in strategic management generally focused equally on firms’ strengths and weaknesses (internal characteristics) versus the (external) opportunities and threats in the competitive environment (e.g., Ansoff, 1965; Learned et al., 1971). Porter’s (1980) influential book, Competitive Strategy, shifted the emphasis toward external, industry-based competitive issues with the proposition that firms enjoy higher than average returns from their investment in resources that possess certain strategically valuable characteristics as identified earlier. The significance of this contribution to the research stream of management strategy was that it redirected scholars back toward resources as important antecedents to products and, ultimately, firm performance (Priem and Butler, 2001).

Conceptual research work in this stream generally has sought to identify characteristics of firm resources that can contribute to a sustainable competitive advantage. From these initial core concepts have emerged arguments that single-business firms can achieve sustainable competitive advantage from resources such as ICT that meet certain criteria (Mata et al, 1995; Powell, 1997; Jeffers, 2008). However, as we shall argue later, the notion of corporate sustainability requires that we reflect even further back, preceding the act of acquiring these strategic resources, to the
very catalyst that triggered the firm’s need to acquire these resources that may eventually prove strategic.

**SUSTAINABLE DEVELOPMENT**

A report on the 1983 summit of the World Commission on Environment and Development (WCED), titled ‘Our Common Future’, was published in 1987 and defined “Sustainable Development” thus:

“...Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

The report highlighted three fundamental components to sustainable development: environmental protection, economic growth and social equity, focusing attention on finding strategies to promote economic and social advancement in ways that avoid environmental degradation, over-exploitation of natural resources and pollution (Giddings et al, 2002; Hopwood et al, 2005). Essentially, this document nullified less productive and contentious debates over whether to render precedence to economic development or the environment by proposing that these were not mutually exclusive options for progress, that it was not inconceivable to pursue both objectives simultaneously. The concept argues for a more conscientious attempt at preserving the earth’s resources, promulgating a need for firms to focus on broader goals beyond the bottom line.

**Corporate Sustainability as Business Strategy: Lean Production**

“Corporate sustainability” conceptualizes a dynamic process with the stated aim of allowing single-business entities to realize economic objectives that potentially can improve the quality of life for its stakeholders, while simultaneously protecting - even enhancing - the earth’s life support systems (Daly, 1990). Modern-day concepts of business and industrialism, conceived at the heights of the Industrial Age generally are much less considerate of the planet’s fragility or the finiteness of our resources. Today, problems such as global warming, political conflicts, environmental pollution and looming scarcities of vital resources signal the urgency and imperativeness with which we must proactively address these issues. There is little doubt that ICT holds significant potential as a catalyst for innovation that could prove invaluable for the
overall promotion of the goals of sustainability (Benitez-Amado et al, 2010) or greener ICT practices (Piotrowicz and Cuthbertson, 2009; Molla and Abareshi, 2012). Here we focus on how ICT can be actively deployed to promote a policy of corporate sustainability as an integral part of its market strategy.

The cornerstone and guiding principles of any organization’s effort to implement a program based on corporate sustainability are known as the three R’s of environmental preservation: reuse, recycle and reduce (Edwards, 2005). Strategic usage of information is central to the operationalization of each of these three principles. In the case of reusing and recycling, information technologies, such as bar-coding and radio frequency identification tags (RFID), provide the visibility and tracking capabilities that facilitate more efficient product life-cycle management. In both instances, the ultimate objective is to promote “cradle-to-cradle” process planning and development (Braungart and McDonough, 2005), allowing full reintegration into the processing stream after a product’s useful life has expired, even replenishment of our resource endowment. This is a radical departure from the currently dominant, one-way “cradle-to-grave” processing in which products are designed with limited lifespan and reusability the dominant manufacturing paradigm of the Industrial Age (see Figure 1). The program is essentially operationalized through an emphasis on the importance of measuring performance from three critical perspectives - those of its customers, internal business processes, and learning and growth (Kaplan and Norton, 2007).

The third principle is “reduce.” It is considered the most effective of the three and is the main thrust of this paper. It propagates the attainment of productivity goals using minimal inventory - including raw materials, work-in-process (WIP) and finished goods. Known as “lean production,” it is usually associated with the popular 1970s “just-in-time” (JIT) tactics of Toyota’s assembly plants; but its true origin goes as far back as the early 1900s, when Henry Ford used similar measures to streamline production processes and eliminate waste. “JIT,” in this context, refers to the delivery system that supports the execution of lean production.
In the 1930s, the Japanese adopted various elements of JIT and the philosophy generally remained unchanged until the 1970s, when Toyota integrated the approach into their production line to improve delivery-time and quality. In the 1990s, the term “lean” replaced JIT to emphasize the objective of waste eliminating throughout the supply chain (Jacobs, Chase and Aquilano, 2009). It principal objective is an all-pervading, value-based preoccupation with ensuring that the goods and services delivered are the closest possible match to consumers’ signaled needs, as the first of two important tenets relevant to our discussion that emanate from

**Figure 1: ICTs and Corporate Sustainability**
the underlying principles of lean production. The second important tenet is implicit in this approach and is the premise that the end-consumer ultimately determines the value of a product as manifest in the market-determined price paid. The Learning and Growth perspective focuses on the intangible assets of an organization, mainly the internal skills and capabilities of the employees that are required to support the value-creating internal processes.

Together these tenets summarily define the predominant market conditions of the current Information Age. Standardized products and services, even those of superior quality, have proven no longer sufficient to satisfy customers’ desire for uniqueness and functionality. Strategically, firms now must think in terms of delivering solutions rather than mere products, defining markets in terms of customer activities and outcomes rather than products and services, in order to ensure that they deliver the highest yielding value proposition (Galbraith, 2002; Sawhney, Balasubramanian and Krishnan, 2004). Nurtured relationships of customer intimacy facilitate high levels of anticipation and positioning, greatly favoring the execution of customer-centric marketing concepts (Kogut and Zander, 1992; Yoo, Boland and Lyytinen, 2006). Such customer-centric strategies call for simultaneously eliminating internal distinctions among the functional processes comprising the firm’s value chain and bringing to bear the strengths of all of its primary activities, most notable marketing and operations (Wheelwright and Hayes, 1985; Roth and van der Velde, 1991).

Value

RBV seeks to explain how a particular firm can acquire a “competitive advantage” over its peers. Barney defines competitive advantage as a firm "implementing a value-creating strategy which is not simultaneously being implemented by any current or potential competitors." In this respect, Barney specifies two defining criteria for resources that can prove valuable: (i) they should enable a firm to devise or implement strategies that improve its efficiency and effectiveness, and (ii) they should enable the firm to exploit opportunities or neutralize threats in the environment (Barney, 1991; Priem and Butler, 2001). The argument that valuable and rare organizational resources, as presented in this thesis, can generate competitive advantage seems circular in its logic. Competitive advantage is defined in terms of value and rarity of the firm’s endowment of resources, but the resource characteristics which are thought to lead to
competitive advantage are value and rarity; thus, the tenet presents the flaw of presupposing what it is attempting to prove (Priem and Butler, 2001(1, 2); Jeffers and Joseph, 2009; Jeffers 2010). Moreover there is no mention of the end objective in acquiring certain resources, which would explain why their rarity is of such value to the firm.

There is also the question of the transformational process by which ownership of certain resources can generate the value that creates a competitive advantage. According to RBV, if a firm consistently outperforms other firms in its industry in creating value, this suggests it must have at least one rare resource. However, proponents of the theory readily concede that ownership of rare resources is no guarantee that the firm will outperform its competitors. Indeed, in a truer sense, rather than ownership of a rare resource, per se, it is the relative efficiency in generating value from certain resources vis-à-vis its competitors that is the basis of competitive advantage (Schoemaker, 1990). In addition, RBV clearly asserts that the value of each of the firm’s resources depends on market conditions which are determined by the nature of prevailing opportunities and threats in the market for factors of production at any given time, which is influenced by demand in the product market; yet, product demand remains external to the RBV. By omitting product- and customer-related factors the RBV model effectively holds constant market forces that would otherwise imply variations in resource values, unpredictable changes of which will result in indeterminate outcomes in resource-based analyses. By so doing, RBV effectively simplifies strategic analysis by implicitly assuming that product markets are homogeneous and immobile (Priem and Butler, 2001). As a result, the ability of the theory to prescriptively predict a path to attaining a competitive advantage is constricted, with the criteria for value emanating mysteriously from a "black box," remaining exterior to the model. In summary, therefore, the concept of "value" remains outside the RBV although elemental to the model (Sirmon, Hitt and Ireland, 2007; Newbert, 2007).

Indeed, the absence of the consumer as a stakeholder group is a noticeable prevalent omission in existing ICT strategy research. However, Levitt’s 1960 treatise in cautioning against “market myopia” contends a more intricate relationship between products, consumers and profitability. He argues that every industry begins with a consumer and views productivity as the firm’s response to the signaled or implicit needs of its targeted market. Thus, he recommends that, in order to best prevail against competitors, a firm needs to clearly understand the nature of its
ICT Strategy and Sustainability

business, not from its own perspective, but from the perspective of its customers – i.e., what it does for its customers. Ultimately, those firms that can tailor their operations toward addressing customers’ recognized or anticipated needs are best able to sustain their profitability over time, by delivering the most attractive value proposition: maximum utility delivered efficiently in their products and services. From this assertion it follows logically that resources are deemed strategically valuable to the extent that they advance the firm’s efforts to conduct the business of satisfying customers’ needs and these efforts are rewarded by the market determined price paid for the products and services delivered. We need not digress into the domain of economic theory to assert that competitive sustainability in this customer-centric paradigm comes from the ability of the firm to establish and maintain the closest possible customer relationship over time, allowing the firm to systematically meet, even anticipate and exceed customers’ needs. The more concise the firm in its enterprising efforts at addressing customers’ needs, the more efficient it is at reducing wastage. Thus we adopt the premise that competitive advantage comes from the ability to create value, “value” as defined by the consumer.

TOWARD A SUSTAINABLE IT STRATEGY

The above discussion returns us to the core question of this paper: Can ICT be deployed in a manner that promotes a broader policy of corporate sustainability, while simultaneously helping to attain a sustainable competitive advantage? In fact, many corporations profess to enjoy direct economic benefits from adopting the broader tenets of corporate sustainability. How is it possible? First, while there may be notable shortcomings with RBV as it exists, there can be little dissent with the assertion that ownership of valuable resources can be an important antecedent in building a competitive advantage. But how should the firm deploy these resources? The argument presented in this paper seeks to enhance the existing model by suggesting a framework for decisions regarding the strategic deployment of resources. Moreover, in doing so the model lends a more dynamic perspective to the discussion on how ICT contributes to attaining a (sustainable) competitive strategy, suggesting that the firm could proactively nurture such capabilities over time as an alternative to inheriting them through ownership of certain resources. By embracing the consumer as a central stakeholder, the model reintroduces the important notion that the firm exists because of the demand for its products and services (Levitt, 1987), reminding us of why, to begin with, the firm needs to own valuable resources and what makes them...
The essence of the firm’s existence is to create maximum value for its customers (Sirmon et al., 2007). Thus, it is more important strategically to nurture a culture of market-orientation as the driver of internal operations, ensuring minimal divergence between the products and services customers need and those actually supplied by the firm (Kohli and Jaworski, 1990; Narver and Slater, 1990). Ultimately, the firm focuses its operations fully on delivering the highest levels of customer satisfaction, as an important element of market orientation, rather that maintaining a more prosaic focus on internal cost efficiencies. Through internalized “market-sensing and customer-linking” capabilities, the firm is able to focus all of its functional processes competitively, toward anticipating and quickly responding to market changes (Day, 1994). Ultimately, all parties would benefit: customers enjoy maximum utility from the products and services they consume, which secures their patronage and sustains the
firm’s long-term viability and (financial) performance (Fornell et al., 1996; Rinehart et al., 1989).

This notion that the firm could leverage its operations to generate strategic marketing competencies has attracted increased attention in both the manufacturing and service industries over the years (Wheelwright and Hayes, 1985; Roth and van der Velde, 1991). Fully integrated operations and marketing functions manifest an internalization of an in-depth knowledge of the firm’s most valued customers, the basis of path-dependent relationships that can yield a sustainable competitive edge (Tallon et al., 2000; Wade and Hulland, 2004; Rai, Patnayakuni and Seth, 2006; Jeffers, 2010).

The Role of Information Technology

The value chain concept sees value activities of a firm as having two components: a physical component, comprised of the operational tasks required in creating the product and an information-processing component, comprised of the steps involved in capturing, manipulating and channeling the data necessary to direct the performance of the operational tasks (Porter and Millar, 1985). As the bases of the “operations-as-marketing” paradigm, these two components represent a broad categorization of the contributions of ICT resources to the overall functioning of the firm. The market-oriented functions of ICT resources address the question of what to produce, while the operations-related functions help to coordinate the production process, or how to produce it, thus ensuring maximized form delivery in the finished product delivered to the consumer.

Indeed, ICT also plays an integral role in ensuring time and place utility as important dimensions of customer satisfaction (Coyle et al, 2003). Availability of products and services at the time and place needed is critical to the functioning of market economies and the success of the firms that comprise them. Visibility and transparency across supply chains facilitate coordination and timeliness, important strategic capabilities that a firm can achieve relatively easily and thus significantly enhance and reinforce its relationship with customers. In fact, in supply chain relationships, information itself possesses significant strategic value. The overriding supply chain aspiration to “replace inventory with information” speaks for its importance. Thus the acquisition, sharing and dissemination of pertinent data and information are essential supportive
elements in nurturing a market-oriented focus (McGinnis and Vallopra, 2001; Min, Song and Keebler, 2002; Cousins, Lawson and Squire, 2008).

The ability to track swiftly changing conditions is another key enabler of superior firm performance in today’s volatile market environment (Bharadwaj, 2000). Technologies such as the Internet also allow managers greater advantage and accuracy in ensuring customers’ satisfaction by enhancing the firm’s ability to offer a more personalized, reliable experience and by reducing order-processing errors and response time (Leigh and Marshall, 2001; Sameer and Petersen, 2006; Sharif, Irani and Lloyd, 2007; Borges, Hoppen and Luce, 2009). By facilitating the acquisition and processing of before-, during- and after-transaction information, digital technologies enable more insightful responses to customers’ needs. As such, the firm can compete more effectively by “combining its products with information systems” (Porter, 1985: p. 155) as a means of increasing buyers’ utility and thus differentiating itself from competitors, which could lead to market gains (Porter and Millar, 1985; Glazer, 1991; Day, 1994; Sawhney et al., 2006).

DISCUSSION

The proposed model in this paper articulates the role of ICT in a customer-centric, lean production strategy, supportive of the tenets of corporate sustainability. The model was tested using a sample of 61 third-party logistics (3PL) providers, firms that provide support services to a clientele on a contractual basis. (For full data description and analysis, see Jeffers and Joseph, 2009; Jeffers, 2010). This dataset proved appropriate to the discussion for several reasons. First, the outsourced logistics services industry is by its very nature, ICT-intensive. Second, clients view 3PL firms as providing a means of extending their logistics function beyond the boundaries of the firm and the ability to create value for the client is an important strategic asset in this context (Lieb and Maltz, 1999; Bowersox, 1990). As such, 3PL management typically seeks to nurture long-term relationships as a key corporate asset (Kanter, 1994) which is fundamental to the economic well-being of the firm (Rinehart et al., 1989; Fornell et al., 1996). Retention of valued customers is cost-efficient, but also provides a disproportionate boost to overall profits (Reichheld and Sasser, 1990; Reichheld, Markey jr. and Hopton, 2000; Copacino, 2001). Third, ICT is critical for providing personnel of both the provider and clients with the information they
need to build engaging relationships. Much of the strategic value created by the 3PL firm is based on inventory visibility and management, and the functional transactions it affords (Leigh and Marshall, 2001; Liang and Tanniru, 2007). Finally, in the 3PL industry there is a high degree of variance in the reported ability of firms to satisfy their customers, suggesting that some may enjoy comparative advantages in executing their business strategy. This variability in size and capabilities was clearly borne out in the data sample used. Collectively, these characteristics make it possible to test the model at the level of the basic value chain process, as articulated in the model.

The results fully supported the assertions of the model, suggesting three areas of focus for information technology investments that would facilitate the dual objective of nurturing a sustainable competitive advantage for the firm while simultaneously promoting an agenda of corporate sustainability through lean production. First, it is necessary, though not sufficient, to ensure efficient operations and ICT has an important role to play in that regard, as was discussed earlier. However, unleashing the full strategic impact of the firm’s internal operations is only attainable by actively nurtures a culture of market orientation, the second area of focus. This ensures that the firm accurately addresses customers’ needs, remaining focused on the market as the true nexus of its existence. The objective is to develop a deep, intricate knowledge of the market addressing not only current needs, but allowing anticipation of changing needs in the future. This would enable strategic positioning in order to take advantage of market shifts as they occur and ensures a sustainable customer relationship that provides a competitive edge. It is fitting to note that marketing mediates operations in transforming ICT investment into enhanced customer service performance (see Fig. 2). Thirdly, there is the need for processes that facilitate the effective internalization of knowledge regarding the market. Collaboration and coordination across the functional units of the firm, and particularly between operations and marketing, facilitates agility – quick, accurate response to market signals. Such operational responsiveness would serve as the foundation for building sustained, path-dependent relationships with its most valued customers with the potential to transform the firm’s internal operations into a potent strategic weapon supporting and reinforcing its marketing capabilities, which includes ensuring customer satisfaction.
The strategy paradigm explored in this research is a proven theoretical concept that also brings into focus an important stakeholder group, all too often overlooked in the debate to date regarding ICT resources and firm performance. Nurturing a market orientation provides the cultural foundation of a customer-centric strategy for maintaining and gaining market share (Narver and Slater, 1990). In turn, this customer-centrism provides the basis of lean production, supportive of more austere inventory management policies on the one hand, while ensuring that required products are delivered to the consumer in the right form, at the right time and in the right place, the essence of a pure-pull marketing system.

As an empirical examination of the relationship of ICT and market orientation, this paper is timely in that it calls for revisiting the strategic importance of customer-centrism in the face of globalization and as an important trajectory for the promotion of the philosophy of corporate sustainability. As indicated, while operational efficiency is necessary for superior performance, there is also the need to attain a high degree of operational effectiveness through market orientation. Maintaining close contact with one’s customers, as well as one’s competitors, and ensuring that knowledge and insights so acquired are internalized quickly to guide operations within. This can effectively transform the firm’s operations into a strategic weapon with the potential to enhance firm (financial) performance.

CONCLUSIONS

Both RBV and the value chain are market-oriented in focus, but the value chain concept emphasizes the strategic importance of internalizing an in-depth knowledge of the customer as a way of strategically leveraging the firm’s operations and securing competitive advantages. This paper provides an empirical demonstration that the “operations-as-marketing” strategy, which has been tested empirically in both the manufacturing and service sectors, can serve to effectively mediate ICT investments and increase the probability of enhancing firm performance. Because of its inherent customer-centric focus, the model simultaneously embraces and promotes the basic tenets of sustainability. Many leading businesses now see economic sustainability as a pressing responsibility in the face of a looming crisis, but in addition, when interpreted in terms of the concept of lean production the concept could yield economic payoffs. We examined this concept in the context of the 3PL industry, an inherently customer-centric, ICT-intensive,
industrial sector. The findings largely support the motivation for the study.
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