

IT Business Value and Competitive Advantage: Integrating a Customer-Based View

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Abstract: Value is a nebulous term in information technology (IT) science. In the IT literature, definitions for IT (business) value and categories for IT value are diverse. This research attempts to find a universal definition for IT value and concise categories of IT value. IT-value activities were systematically searched in the IT literature and used as data for template analysis. As a result, four categories of organizational value were inductively developed. The template analysis also shows in deductive ways that the three customer-value disciplines “operational excellence”, “product leadership”, and “customer intimacy” are applicable to the IT realm. This paper suggests an integrated definition for IT (business) value consisting of two complementary facets: customer value resulting in cash inflows and organizational value that is non-monetary. We propose that IT value can have direct or indirect effects on firm performance. Direct effects result from product/services that create customer value, while indirect effects result from organizational value that are needed for production. Based on the findings, this research also discusses the relationship between IT (business) value and competitive advantage. Competitive advantage requires both high customer value and scarcity of competing products/services with equal value (differentiation strategy by product leadership or customer intimacy). If such scarcity is low, firms must compete on low costs for comparative advantage (cost leadership strategy by operational excellence). Overall, this article expands the prevalent resource-based view (RBV) with a customer-based view (CBV).

Keywords: IT/IS business value; customer-based view; resource-based view; competitive advantage; strategic IT/IS planning; firm performance

1 Introduction

There is broad consensus that information technology (IT)¹ is a capability for value creation and is central to a firm's strategy for gaining competitive advantage (Clemons & Row, 1991; Drnevich & Croson, 2013; Luftman, 2003; McAfee & Brynjolfsson, 2008; Mentzas, 1997; Peppard & Ward, 2004, 2005; Venkatraman, Henderson, & Oldach, 1993, Weill & Aral, 2006). Since the 1990s, it has commonly been acknowledged that value can be created by IT; for example, by increasing the productivity of a firm or by providing advantages to customers (Hitt & Brynjolfsson, 1996; Mata, Fuerst, & Barney, 1995). Although the notion of IT value is referred to frequently and has been discussed for a few decades in the IT-strategy literature (Hitt, Brynjolfsson, & Walsham, 1994), it remains necessary to clarify exactly what it means and how it is generated (Lieberman, Balasubramanian, & Garcia-Castro, 2018). Even substantial research has not resulted in an established understanding of the strategic value of IT (Oh & Pinsonneault, 2007). Numerous studies in the IT-management and IT-strategy arenas have sought knowledge on the value created for businesses as a result of investments in IT (Drnevich & Croson, 2013). Even influential and comprehensive review articles from the 2000s (Kohli & Devaraj, 2004; Melville, Kraemer, & Gurbaxani, 2004; Piccoli & Ives, 2005) could not sufficiently contribute to a generally accepted concept of IT value (e.g., Oz, 2005). Approximately 15 years later, scholars still lack an understanding of the concept of IT value, while numerous contemporary studies concentrate on the measurement of value from IT investments (Gandelman, Cappelli, & Santoro, 2017). After having studied almost 300 papers on IT value, Schryen (2013) concluded that there were no appropriate theories on IT

¹ The terms information technology (IT) and information systems (IS) are used synonymously for ease of readability (e.g., to avoid slashes like "IT/IS"). IT can be considered as assets and IS may be understood as a capability from the use of IT (Wade & Hulland, 2004); here, IT implies both aspects.

value. Although value generation by IT is recognized in the literature, there is no common understanding of the strategic value of IT (Oh & Pinsonneault, 2007; Oz, 2005; Schryen, 2013). Thus, there is a need to illuminate the notion of IT value and to suggest a definition for wider acceptance and for consistency in research and practice, not only for measurements but also for further IT-value discussions.

The main purpose of this paper is to find a universal and meaningful definition for IT value and unitary IT-value categories. Further, this paper attempts to clarify the theoretical relationships between IT value, firm performance, and competitive advantage. The search for the IT-value definition and the categorization of IT value was carried out using qualitative analysis, and the relationships between IT value, performance, and competitive advantage were theoretically examined based on the qualitative findings.

A qualitative method was applied in this research. We conducted *template analysis* (King, 2004) in accordance with the procedure from Brooks et al. (2015). Textual data were gathered from influential articles about IT value and then coded in a deductive and an inductive way. The customer-value disciplines (operational excellence, product leadership, customer intimacy) from Treacy & Wiersema (1993, 1995) were employed for the deductive way: Textual data were assigned to these customer-value categories if their meaning matched. The inductive analysis was performed by applying *open coding* according to the grounded theory approach (Strauss & Corbin, 2008), i.e., categories were developed from the textual data.

From the template analysis we propose an IT-value definition comprising four categories of organizational value (strategic planning/informed decision-making, flexibility/agility, strategic alliances/supplier relationships, enhanced skills and capabilities) and three categories of customer value (operational excellence, customer intimacy, product leadership). These categories of customer value directly impact firm performance, whereas

categories of organizational value are non-monetary and preconditions to the creation of customer value. Further, we suggest always viewing customer-value creation and competitive strategies in context. Achievement of competitive advantage requires conditions of both high value perception by customers and few equivalent offerings from competitors.

This research provides new concepts for evaluation of firm performance and selection criteria for IT investments in practice. Readers of this article gain a deeper understanding of the components of IT value and its relationships to firm performance and competitive advantage. From the conceptual discussion, we propose relationships displayed in figures that increase explanatory power. Foremost, we contribute to IT-value theory and competitive-advantage theory (Reay & Whetten, 2011) by adding a customer-based view (CBV) to the RBV.

This article starts with reviewing the notions of IT value, firm performance, customer value, and organizational value. Then, we present the problems in the IT literature and the research objectives. By coding of IT-value activities from previous research, the applicability of the customer-value disciplines from Treacy and Wiersema (1993, 1995) is deductively examined, while categories for organizational value are inductively developed. Thereafter, the relationships between customer value, firm performance, and competitive advantage are examined. We conceptually expose that the CBV complements the RBV regarding both IT-value theory and competitive-advantage theory. Finally, contributions and limitations of this study are shown and options for future research are offered.

2 Literature Review

2.1 Synonyms and Categories for IT Value

The words “value” and “benefits” have been occasionally used synonymously in the literature (Laursen & Svejvig, 2016). For example, Chan (2000) signified IT value as benefits from IT investments. Some authors applied the term “benefits” (e.g., Mirani & Lederer, 1998; Ross,

2006; Shang & Seddon, 2002), while other IT strategy scientists used “IT value” (e.g., Chan, 2000; Davern & Kauffman, 2000; Hitt, Brynjolfsson, & Walsham, 1994) or “IT business value” (e.g., Armstrong & Sambamurthy, 1996; Sambamurthy & Zmud, 1994; Tallon, Kraemer, & Gurbaxani, 2000), or, similarly, “business value of IT” (e.g., Fink & Sukenik, 2011; Hitt, Brynjolfsson, & Walsham, 1994; Nevo & Wade, 2010). Other academics used both the terms “benefits” and “value” concurrently throughout a paper (e.g., Jurison, 1996) or merged them into the phrase “IT business value benefits” (e.g., Daulatkar & Sangle, 2016).

IT value manifests itself in numerous ways: profitability, productivity, process improvements, and more (Kohli & Grover, 2008). Not surprisingly, IT value has been classified very differently, for example, in strategic dimensions (Oh & Pinsonneault, 2007), as value drivers (Jarvenpaa, 2002), business functions (Tallon, Kraemer, & Gurbaxani, 2000), flow directions of products/services (Lankhorst et al., 2013), or other categories (Chan, 2000; Gammelgård, Ekstedt, & Gustafsson, 2006). Chan (2000) reviewed IT-value articles in prestigious journals between 1993 and 1998 and found five main aspects in terms of which IT value was discussed: environment, strategy, objectives, structure, and culture. In contrast, Oh and Pinsonneault’s (2007) strategic dimensions comprised three different aspects: cost reduction, revenue growth, and quality improvement. Two dimensions were linked to firm performance (lower costs, higher revenues), while quality addressed external market aspects (e.g., value perception and differentiation from competitors). The “drivers” for IT value that Jarvenpaa (2002) indicated include efficiency increase, resource and capability enhancements, buyer-supplier relationships, and transaction mechanisms and structures. Thus, classifications of IT value are inconsistent in the literature (Fink & Sukenik, 2011). Beside the need for a universal definition of IT value, a unitary categorization is useful.

2.2 Firm Performance

Firm performance (synonyms: performance, organizational performance) is a term that has

frequently been used in the context of IT value, particularly when measurements of IT value have been presented. Nevo and Wade (2010) and Melville, Kraemer, and Gurbaxani (2004) regarded IT value as the impact of IT on organizational performance; it includes process efficiency, the entire organization, and competitive effects. There are various IT-value objectives that can be achieved in distinct ways. However, overall, IT investments strive to improve a firm's performance (Kohli & Devaraj, 2004).

A firm's performance may be measured in financial terms, such as sales growth and profitability (Croteau & Bergeron, 2001) or returns on sales, returns on investments, and profits (Hazen, Bradley, Bell, In, & Byrd, 2017). Zhu (2004) explored the links between e-commerce and performance by considering inventory turnover in addition to return on assets, reduction of costs, and increase in revenues. Schryen (2013) also considered stock market performance for IT valuation. Similarly, Ramirez, Melville, and Lawler (2010) regarded market value (i.e., value of total stocks) and production efficiency (i.e., value from products/services sold) as two measures of firm performance. IT valuation can also apply financial measures such as net present value, payback period, or discounted cash flow analysis (Bardhan, Bagchi, & Sougstad, 2004). Thus, performance refers to manifold numeric indicators of IT value but there is no consensus among academics regarding what kind of performance measure reflects IT value in the best manner. Research on IT value measurement becomes problematic if the concept of IT value is disputed (Brynjolfsson, & Yang, 1996). The conceptual inconsistencies of IT value explain the divergent means employed to evaluate the economic outcomes of IT investments (Schryen, 2013).

A few researchers have noted that numeric performance data (as presented in the previous paragraph) do not mirror all kinds of value that IT may provide. Kuiper, Gangadharan, and Janssen (2011) found that most IT valuation approaches in practice are quantitative and founded on financial theories, while intangible value (e.g., organizational

aspects) is not covered. For example, process improvements or supplier relationships are types of intangible IT value that are distributed over organizations (Chan, 2000). The value of information, knowledge, and usage rights are other examples of non-monetary value that are also not reflected in performance data (Lankhorst et al., 2013). In contrast, revenues directly affect performance data. They result from the monetary value in terms of the price paid by the customer.

From this discussion on previous literature, a distinction may be suggested between types of IT value that directly impact a firm's performance and other types of IT value that do not immediately, but do indirectly, affect monetary outcomes.

2.3 Customer Value from IT

The relevance of customer value from IT has been indicated by Hitt and Brynjolfsson (1996). In an empirical study on 370 firms from 1988 to 1992 based on databases and surveys, the authors found that IT investments generated extensive customer value. Bowman and Ambrosini (2000) remarked that revenues from customers (exchange value) do not fully reflect the value that individual customers perceive (use value). In competitive markets, customer value consists of the price paid and the "consumer surplus" (Bowman & Ambrosini, 2000; Peteraf & Barney, 2003). In their research, Hitt and Brynjolfsson (1996) took into consideration "consumer surplus"—that is, the part of the customer value that is created but not captured by the firm—and found that it was growing significantly over time.

Customer value from IT can be achieved by organizations with different strategic directions. Firms with strong market orientation utilize IT to provide greater value to their customers, whereas firms that focus on operations pursue IT goals for operational effectiveness (Avison, Jones, Powell, & Wilson, 2004; Tallon, 2007). Increase in productivity from IT efficiency also increases customer value (Baldwin & Curley, 2007). Thus, both market- and operations-focused organizations provide IT value to customers.

Treacy and Wiersema (1993, 1995) suggested a general, not IT-specific, typology for customer value that has gained recognition in marketing theory (Day, 1994) and in the IT strategy literature (e.g., Peppard & Ward, 2016; Ross, Weill, & Robertson, 2006; Tamm, Seddon, Shanks, & Reynolds, 2011). This typology has been fruitfully applied in a survey on IT value with 241 executives by Tallon (2007). These customer-value disciplines from Treacy and Wiersema (1993, 1995) broadly describe three different means to offering exceptional value to customers: product leadership, operational excellence, and customer intimacy. Product leaders deliver new products with outstanding features, functions, design, innovation, etc. Operational excellence focuses on providing cost advantages through process efficiency, economies of scale, etc. Organizations may also concentrate on customer relationships by solving complex client problems or by being highly responsive to customer requests (customer intimacy). Excellent organizations should be superior in one customer-value discipline and pretty good in the other two (Treacy & Wiersema, 1995). A content analysis of annual reports from market-leading IT vendors (Author, 2019) reflected the applicability of the customer-value disciplines from Treacy and Wiersema (1993, 1995); eighty-four percent of the sample contained references to one or more of the three customer-value disciplines.

2.4 Organizational Value from IT

Aral and Weill (2007) found that powerful organizational IT capabilities leverage firm performance. For example, governance—that is, structures and mechanisms for decision-making—can influence firm performance. Increase in profitability from IT investments may be delayed due to the dependence of decision-making on IT infrastructure and IT applications. Thus, governance is an organizational value that has an indirect effect on firm performance.

IT infrastructure was denoted as an organizational capability to create value (Bhatt & Grover, 2005; Fink & Sukenik, 2011). IT infrastructures constitute shared resources that function as bases for IT applications (Duncan, 1995; Zhu, 2004). Sharing of resources across

an organization offers synergies (Bharadwaj, 2000). These synergies provide cost advantages to an organization and can, therefore, be regarded as organizational value. IT infrastructures are also viewed as flexible platforms for organization-wide future initiatives (Weill & Aral, 2004). Flexible IT infrastructures also enable cost efficiencies by introducing new products/services (Bharadwaj, 2000). IT enables flexible structures between and within organizations (suppliers, human resources) that potentially speed up product/service delivery and improve firm performance (Sambamurthy & Zmud, 1994). Flexibility and synergies are highly valued organizational features, although they do not directly generate cash inflows. Cash flows originate from customers, as they value the products/services and pay for them.

Other examples for non-cash-generating but valuable organizational conditions and attributes are intellectual capital and knowledge, which are inherent in an organization's human resources and processes, policies, and databases (Bharadwaj, 2000). Organizational value in context with digitalization can be customer information or partner business models (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013).

Organizational value is essential but do not have direct influence on an organization's performance because profits depend on revenues that is realized in terms of money from customers. Following the idea from Woodruff (1997), organizational value is distinguished from customer value; they quantify a firm's value to owners in contrast to value that buyers perceive in the firm's products/services.

2.5 Previous Research has been Focused on Internal Aspects

In the IT literature internal facets of IT value have been emphasized as the following examples reflect. Olszak and Zurada (2020) recently investigated business value from "Big Data," with the RBV serving as the theoretical platform. Accordingly, value from "Big Data" was mainly presented using internal characteristics, although codes for customer value were found in the interviews. Thus, the value spectrum was not exhaustive because customer value

was neglected.

Cao (2010) claimed to present a holistic understanding of IT value. From the review of 18 papers, four categories were derived: organizational process, structure, culture and power, and politics. However, he did not draw upon customers, except for the remark that organizational processes support creation of products for customer value.

Collis (1994) declared three types of organizational capabilities for value creation. One of them refers to “basic functional” tasks, such as brand marketing, plant design, or logistics. Collis (1994) interpreted the customer-value disciplines from Treacy and Wiersema (1993, 1995) as such standard activities in a firm. Thus, in Collis’ (1994) view, customer value is embedded in a firm’s internal capabilities.

Most researchers have focused on internal/organizational aspects of IT value; little attention has been paid to customer perspectives. The predominance of organisational value and the underrepresentation of customer value is also reflected in the discussion section.

2.6 Research Objectives

The literature review shows that there is no generally accepted definition for IT (business) value. IT-value terms are confused and categories for IT value are diverse in the IT literature. It has been reflected that both organizational value and customer value from IT are significant. However, organizational/internal aspects are dominant in the IT literature, and customer perspectives are neglected. Further, the meaning of firm performance and its relation to IT business value is indistinct.

This research has several objectives. First, it aims to provide a definition for IT value that integrates organizational and customer-based views. Second, unitary categories for organizational value and customer value are searched. Third, it tries to clear up the theoretical relationships between organizational value, customer value and firm performance as well as customer value and competitive advantage.

To find an appropriate integrative definition and categories for IT value (first and second objective), IT-value types/activities from the IT literature were coded by template analysis as described in the following method section. The third objective was achieved by conceptual analysis in the discussion section.

3 Methods

The methods of data collection and evaluation are founded on the philosophy of pragmatism. Pragmatists concentrate on results and may select methods as they fit the purpose (Creswell, 2013; Van de Ven, 2007).

Template analysis as presented by King (2004) was the chosen qualitative research method. A template consists of a list of collected data that is coded into different categories. These categories represent units of meaning assigned to data. Template analysis allows deductive and inductive coding. The deductive way uses categories pre-determined by a theory, whereas the inductive approach develops categories from data.

The procedure from Brooks et al. (2015) were followed. Preliminary coding resulted in the initial coding template, which was then applied to further data in the final coding template. Deductive and inductive coding was carried out on both templates. Consequently, the analysis was performed in four steps: First, initial, deductive coding. Second, initial, inductive coding. Third, final, deductive coding. Fourth, final, inductive coding.

Step 1: The preliminary coding was carried out using data from a literature review (Gammelgård, Ekstedt, & Gustafsson, 2006), which identified 25 types of IT value. The customer-value disciplines of product leadership, operational excellence, and customer intimacy from Treacy & Wiersema (1993, 1995) were used as pre-determined categories for deductive analysis. The IT-value types from Gammelgård, Ekstedt, and Gustafsson (2006) were exclusively allocated to one of the three customer-value disciplines (Treacy &

Wiersema, 1993, 1995) if their meaning matched to the attributes from the coding scheme (Table 1); it was the case for ten out of the 25 IT-value types (Table 2).

Customer-value discipline	Attributes
Product leadership	<ul style="list-style-type: none"> - Best product (superior quality and/or high performance) - Product differentiation (distinguished characteristics) - Newness of function and/or technology - Innovation (novel features/functions) - Early market launch (e.g., first mover)
Operational excellence	<ul style="list-style-type: none"> - Lowest (total) costs - Operational competence - Process efficiency - Organizational efficiency - High productivity
Customer intimacy	<ul style="list-style-type: none"> - Best solution fitting to a customer's needs - Responsiveness to customer demands - Customization (adaptation to customer needs) - Solving specific customer problems

Table 1. Coding Scheme for the Deductive Approach (Source: Treacy & Wiersema, 1995)

Step 2: Preliminary coding was inductively carried out, i.e., the categories evolved from template analysis of the data. The remaining 15 IT-value types from Gammelgård, Ekstedt, and Gustafsson (2006), were logically categorized and labelled according to the open coding method from the grounded theory approach (Strauss & Corbin, 2008). That is, the names of these categories were given as they appeared in the data. Fourteen IT-value types were assigned to four organizational IT-value categories that were developed from data: strategic planning/informed decision-making, flexibility, external relationships, and knowledge and control. The IT-value from “Lock-in effect/switching costs” was not attributable to any IT-value category; however, switching costs are a source of competitive advantage for vendors (Mata, Fuerst, & Barney, 1995).

taken from scientific publications that describe activities for achieving business value from IT. Influential articles were searched in Scopus that met the following criteria:

- The article title had to contain one of the keywords “business value,” “value,” or “benefits.”
- “Value” or “benefits” had to refer to IT in general (not specific to an IT process, system, role, etc.).
- At least ten IT-value activities should have been presented based on empirical methods.
- The article must have been cited more than 100 times.
- The article must have been published in a highly respected journal (top 30 either in subject area/category “Computer Science/Information Systems” or subject category “Information Systems and Management” of the Scimago journal rankings).

Table 3 displays the selected articles in reverse chronological order. Gregor et al. (2006) used the same IT-value activities as Mirani and Lederer (1998) but added five so-called transformational benefits. The overlap of 25 IT-value activities was considered for Mirani and Lederer (1998) only.

Authors	Year of publication	Number of IT value groups	Number of IT value activities	Citations (Scopus, 11.01.21)	Basis for IT value activities
Gregor, Martin, Fernandez, Stern, & Vitale	2006	4	5 (+25 from Mirani & Lederer, 1998)	110	25 items from Mirani & Lederer (1998), survey with 1050 organizations, 50 structured interviews
Shang & Seddon	2002	5	21	502	Literature review, system feature analysis, 233 vendor publications, 34 interviews
Tallon, Kraemer, & Gurbaxani	2000	6	12	656	Literature review, survey of 304 executives
Mirani & Lederer	1998	3	25	178	Literature review, survey of IT practitioners, 178 IT projects

Table 3. Data Sources for IT-Value Activities (Source: Authors)

The categories from the initial coding template (Table 2) were applied to 63 unique IT-value activities from the sources in Table 3. Deductive and inductive coding was applied as described before: The collected IT-value activities were coded into the customer-value categories and the organizational-value categories. The latter have been revised in step 4. The final coding template, comprising 25 IT-value types from initial coding and 63 IT-value activities from renowned publications, is displayed in Appendix A. Table 4 provides an overview of the procedural steps and the results from each step. The results from final coding are presented in the next section.

Step	Template	Data	Approach	Goal
1	Initial coding	25 IT-value types from a literature review (Gammelgård, Ekstedt, & Gustafsson, 2006)	Deduction	Initial test of pre-determined categories (customer-value disciplines)
2			Induction	Preliminary coding: Creation of categories for organizational value from open coding
3	Final coding	63 IT-value activities from the IT literature (as per table 3)	Deduction	Verification of pre-determined categories (customer-value disciplines)
4			Induction	Verification and refinement of categories for organizational value from preliminary coding (step 2)

Step	Result
1	All (three) customer-value disciplines (Treacy & Wiersema, 1993, 1995) were found.
2	Four preliminary categories were developed from data: Strategic planning/informed decision making; Flexibility; External relations; Knowledge and control.
3	All (three) customer-value disciplines (Treacy & Wiersema, 1993, 1995) were found.
4	Final categories (changes on preliminary categories): Strategic planning/informed decision making (unchanged), Flexibility, agility ("agility" added), strategic alliances/supplier relationships (renamed), Enhanced skills and capabilities (renamed).

Table 4. Overview of Methodological Steps (Source: Authors)

4 Results

Codes for the three customer-value disciplines were found in all articles (step 3). The categories for organizational value from preliminary coding were also recognized in these articles but needed refinements regarding the naming (step 4).

Finally, the following categories of organizational value were identified in the final coding template (Appendix A):

- strategic planning/informed decision-making (the same name as in the initial coding template)
- flexibility/agility ("agility" was added to "flexibility")

- strategic alliances/supplier relationships (formerly “external relations”)
- enhanced skills and capabilities (formerly “knowledge and control”)

In total, 82 out of the 88 IT-value activities/categories (i.e., 25 IT-value types used for preliminary coding plus 63 IT-value activities used for final coding) were allocated to either one of the three customer-value disciplines or one of the four organizational-value categories. Just one activity matched two organizational aspects. Further, five out of the 88 IT-value activities/categories from the data collection could neither be allocated to a customer-value type nor to an organizational-value type. The activities “Enhance competitiveness or create strategic advantage” and “Enable the organization to catch up with competitors” were not applicable—they refer to competitiveness but not to value. The transactional benefit from Mirani and Lederer (1998) “Increase return on financial assets” represents a performance indicator, which is not a value, but a result of value creation. “Performance improvement” remained unallocated for the same reason. From a customer’s viewpoint, vendor lock-ins do not create value; on the contrary, they may generate extra costs when switching to another vendor’s products due to long-binding contracts, license costs, or proprietary technology. However, the means to lock-in a customer may relate to the value discipline “customer intimacy.” For example, the lock-ins displayed from Amit and Zott (2001) clearly indicate relationship attributes of “customer intimacy”: customers gain value from a larger customer network or from trust and customization.

Based on the results from the template analysis, the following definition for IT (business) value is suggested: *IT (business) value results from IT investments that provide benefits to customers and to the organization (i.e., firm).*

Customer value from IT refers to the three disciplines from Treacy and Wiersema (1993, 1995):

- *Product leadership* provides functional benefits characterized by superior products/services, high quality, novel features, innovative functions, and early market launch.
- *Operational excellence* provides economic benefits characterized by lowest costs, process efficiency, organizational effectiveness, and high productivity.
- *Customer intimacy* provides benefits from relationships characterized by specific solutions to customer problems, responsiveness to customers, and customization.

Categories for organizational value are:

- *Strategic planning/informed decision-making*: data and process flows for strategic planning and informed decision-making, including business development (i.e., growth opportunities) and IT-business alignment.
- *Flexibility/agility*: ability to quickly adapt resources and capabilities to change the product/service offering (e.g., as a response to changes in the environment (flexibility) and/or the competitive position (agility)).
- *Strategic alliances/supplier relationships*: business linkages to other firms that are part of the value chain (inbound and outbound).
- *Enhanced skills and capabilities*: increased skills among human resources or improvement of organizational capabilities.

The presented definition integrates organizational and customer perspectives. The following section demonstrates conceptually how customer value is related to organizational value, performance, and competitive advantage.

5 Discussion

5.1 Relationships: Organizational Value, Customer Value, and Firm Performance

The organizational-value view does not compete or intersect with the customer-value view; rather, each complements the other. The first considers the internal value of the organization, while the latter addresses the external value for customers. We believe that organizational value is a precondition to generating customer value. Core processes are required to provide customer value (Tallon, 2007). For example, effective supplier relationships and lean production processes affect operational costs that, in turn, impact the customer-value discipline of operational excellence.

Money from customers flows in exchange for the perceived customer value. Thus, performance measured in terms of profitability, sales growths, or return on assets is a consequence of customer value. In other words, performance is not an IT value in itself but a result of organizational value and customer-value delivery. However, increases in organizational value may not immediately be reflected in a firm's performance. For example, certain investments in IT infrastructure (e.g., server hardware) may not enrich customer value because they provide necessary technical preconditions for new functions that will be subsequently delivered with a software application (Aral & Weill, 2007).

IT can have direct or indirect effects on firm performance (Rivard, Sraymond, & Verreault, 2006): direct effects result from product/services that create customer value, while indirect effects result from organizational value that are needed for production—that is, producing goods and/or delivering services. Figure 1 displays the relations between organizational value, customer value, and firm performance as described before.

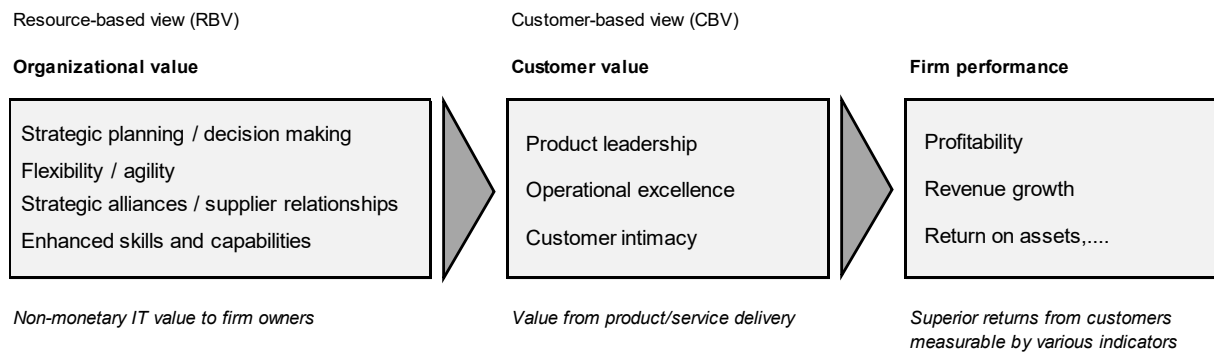


Figure 1. Model for Organizational Value as Preconditions for Customer Value and Firm Performance (Source: Authors)

The papers from Singh (2009) and Clemons (1986) support the relationships that are displayed in Figure 1. Singh (2009) presented a case study that mirrors how organizational value from IT can translate into customer value. By applying the “employee first, customer second” principle, the company HCL Technologies had introduced an Intranet-based transaction model for employees (organizational value) that was later transformed to customers. Customer value resulted from responsiveness to customers and their loyalty, operational efficiencies, and innovation. So, all customer-value disciplines were targeted and realized. Clemons (1986) discussed IT applications and distinguished them in terms of their internal or external value focus. Externally focused IT applications provide customer value and increase profits and market share, while internally focused IT applications provide value to the firm by reducing costs and improving quality without a connection to customers. Value from internal IT applications is found in scale advantages, experiences, skills, infrastructure, etc. Value from internal and external IT applications must fit the firm’s strategy (Clemons, 1986). Both types of IT applications—one with an internal focus and the other with an external focus—are needed because both create value. External customer value from IT can

be converted into monetary value reflected in the firm performance, whereas internal IT value improves organizational capabilities to achieve subsequent customer value.

The consideration of customer value is insufficient for making conclusions about competitive advantage. The perceived values generated by competitors are also relevant. Customer value in context with competitive advantage is discussed in the following subsection.

5.2 Customer Value and Competitive Advantage

The role of IT in value creation and its relation to competitive advantage has a long research history (Piccoli & Ives, 2005). Academics agree that IT capabilities can be built for value delivery and competitive advantage (Clemons & Row, 1991; Drnevich & Croson, 2013; McAfee & Brynjolfsson, 2008; Venkatraman, Henderson, & Oldach, 1993) and value creation is the key to profitability and competitiveness (Dranove & Marciano, 2005). However, value from IT is not the same as gaining or sustaining competitive advantage (Kohli & Grover, 2008; Peppard & Ward, 2004), even if it increases a firm's performance by lowering costs and/or revenue growth (Mata, Fuerst, & Barney, 1995). The achievement of value is a necessary but not sufficient condition for competitive advantage (Bhatt & Grover, 2005). Another necessary factor is the number of available products from other firms that provide the same kind and extent of value to customers. Thus, competitive advantage depends on the higher value that customers perceive from a firm's product/service relative to the competitors' products (Christensen, 2010).

Competitive advantage is a state of superior performance in which a firm creates more customer value than competitors (Mohr, Sengupta, & Slater, 2005). Ives and Learmonth (1984) stated that the strategic use of IT can provide competitive advantage by dedicated support of each of the generic strategies from Porter (1980). Thus, competitive advantage is achieved by creating customer value from differentiation strategies (Porter, 1980) if

equivalent products/services from competitors are scarce. The equivalence of products/services depends on customer perception of benefits from superior features/functions or from close vendor-relationships. The corresponding customer-value disciplines are product leadership and customer intimacy (Treacy & Wiersema, 1993, 1995). In case of competitive advantage, a firm's offering is highly valued by customers and only few (or no) competitors provide comparable products. The more competitors that offer the same or similar product/service characteristics, the higher the pressure on prices, according to the rules of supply and demand. Customers are not willing to pay a higher price to a particular vendor when competing vendors provide equivalent products at lower prices. As the willingness of customers to pay premiums shrink, the differential customer value decreases. Consequently, the competitive advantage of a product leader disappears.

If there are numerous comparable products from competitors on the market, then there is a high competition on prices. In this situation, cost pressures on firms are high and customers receive economic advantages that stem from low prices. Then, *comparative advantage* over competitors (Bakos & Treacy, 1986) results from the cost leadership strategy (Porter, 1980). The corresponding customer value discipline is termed operational excellence (Treacy & Wiersema, 1993, 1995). Bakos and Treacy (1986) described comparative advantage as comparative efficiency—that is, organizations possess capabilities to offer a product at a lower price compared to competing products that customers perceive as equivalent. Successful firms must produce at lowest costs; business process flows must be highly efficient (Anupindi et al., 1999). Johnston and Vitale (1988) enumerated a series of activities for comparative efficiency. In the literature, comparative advantage (Bakos & Treacy, 1986) is frequently referred to as competitive advantage that results from low costs.

Rareness of competitors' products and customer value are two dimensions that must be concurrently considered for analyzing competitive advantage. The customer-value/product-

rareness matrix (Figure 2) integrates the described theoretical concepts: customer-value disciplines (Treacy & Wiersema, 1993, 1995), competitive advantage (e.g., Barney, 1991, Porter, 1985), comparative advantage (Bakos & Treacy, 1986), generic strategies (Porter, 1980), and the economic rules of supply and demand. The dotted squares symbolize the strategic areas of superior performance. Both competitive and comparative advantage yield performance data above the industry average. The customer-value/product-rareness matrix (Figure 2) can be applied to an entire industry or to a specific market segment.

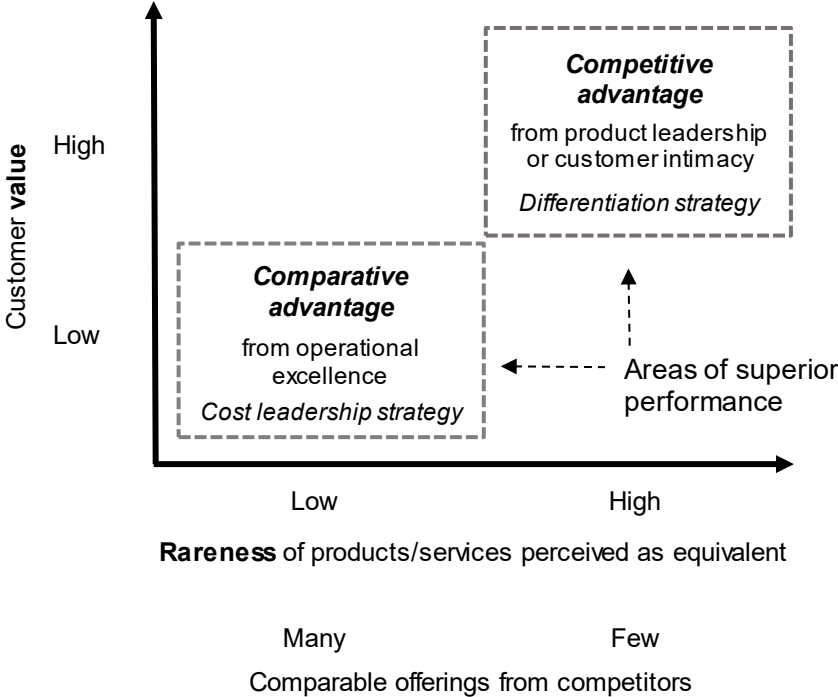


Figure 2. Customer-Value/Product-Rareness Matrix (Source: Authors)

Researchers have made different suggestions regarding the relationships between IT value, performance, and competitive advantage. Hereafter, the conclusions of earlier papers are briefly compared to our ideas.

Newbert (2008) surveyed micro- and nanotechnology firms to examine the connections between resource value/rareness, competitive advantage, and performance. Among others, he demonstrated empirical evidence that resource value is clearly related to competitive advantage but is unrelated to performance. Newbert (2008, p. 750) noted that products and competitors are relevant to determine the value-performance dependency. However, these variables were not part of his investigation; his research failed to include the customer-based view between resources and performance.

Lately, Baia, Ferreira, and Rodrigues (2020) pursued the same research objective as Newbert (2008) but with data from Portuguese firms. Their results did also not indicate relationships between resource value and performance. Yet, in contrast to Newbert (2008), resource value and competitive advantage were found to be unrelated. From our perspective, the latter link has little significance. The customer's value perception is significant to competitive advantage, not the resource value itself.

Grahovac and Miller (2009) discussed competitive advantage and performance impacts for innovators and imitators based on demand-curve models. They clearly distinguished the constructs of competitive advantage, resource value, and performance (i.e., superior returns). They concluded that value from resources depends on outputs generated from the use of resources (i.e., products) and the customers' willingness to pay for products; it is more relevant than the production costs. Grahovac and Miller (2009, p. 1207) used the phrase "spread between the variable cost and the customer's willingness to pay," which is equal to "value created" (i.e., the sum of producer surplus and consumer surplus) (Peteraf & Barney, 2003). By translating Grahovac and Miller's (2009) expressions, they confirm our suggestion: A firm possesses competitive advantage if their products create more value to customers than the products from the competitors (Adner & Zemsky, 2006). Yet, Grahovac

and Miller (2009) paid little attention to customers; instead, their theoretical framework concentrated on RBV constructs.

The generic competitive strategies from Porter (1980) and the customer-value disciplines from Treacy and Wiersema (1993, 1995) were allocated by Tallon (2007), as displayed in the upper portion of Table 5. Three modifications to the mapping from Tallon (2007) are proposed as follows. First, a modification of the original terms from Porter (1980): “focus” instead of “niche,” “overall-cost leadership” instead of “low-cost leadership.” Second, use of “focus” strategies to distinguish from other generic strategies by addressing a specific market segment instead of an entire industry (Porter, 1980). Differentiation and cost leadership strategies can be applied to a particular target segment or to the entire industry. Third, the value discipline “customer intimacy” is not bound to a niche segment of a market: it can be fulfilled industry-wide. The resulting mapping is presented in the lower portion of Table 5.

Mapping from Tallon (2007)

Generic strategies Porter (1980)		Customer value disciplines Treacy & Wiersema (1993, 1995)
	Differentiation	Product leadership
	Niche	Customer intimacy
	Low-cost leadership	Operational excellence

Mapping from the authors

Generic strategies Porter (1980)		Customer value disciplines Treacy & Wiersema (1993, 1995)
Industry-wide	Differentiation	Product leadership
	Overall cost leadership	Operational excellence
Focus (particular market segment)	Differentiation	Product leadership
	Overall cost leadership	Operational excellence

Table 5. Mapping of Generic Competitive Strategies to Customer-Value Disciplines (Source: Authors)

5.3 The CBV Complements the RBV in Competitive-Advantage Theory

The resource-based view (RBV) as an analytical method for competitive advantage has been dominant in IT research for decades (Peppard, Galliers, & Thorogood, 2014; Seddon, 2014). The RBV claims that a firm owns and uses resources and capabilities for achieving competitive advantage (Kohli & Devaraj, 2004; Melville, Kraemer, & Gurbaxani, 2004; Wade & Hulland, 2004). However, the RBV is incomplete for analyzing competitive advantage (Peteraf & Barney, 2003). For evaluating competitive advantage, the RBV is a complement to external theories and not a substitute. To gain competitive advantage, a firm must achieve higher benefit perceptions from purchasers than its rivals by differentiation and/or lower costs. This statement is fully in line with our propositions but partly phrased in different terms (Peteraf & Barney, 2003). Although Peteraf and Barney (2003) saw the customers' willingness to pay as an essential factor in competitive advantage, the customer-value perceptions were not given due consideration.

According to Barney (1991) resources and capabilities should be valuable and rare. These conditions are necessary but insufficient (Priem & Butler, 2001). As Martin (2014, p. 83) noted, "capabilities themselves don't compel a customer to buy. Only those that produce a superior value equation for a particular set of customers can do that." Here, the adjectives "valuable" and "rare" are transferred to a firm's products in the context of external forces—namely, customers and competitors. In order to achieve competitive advantage, the product/service offering must be "valuable" and "rare"—that is, only few competitors can deliver products with similar value perception.

Priem and Butler (2001) elaborated on the incompleteness of the RBV and noted the need for an integrative view for strategic analysis. For an integrated analytical model, the RBV (Penrose, 1959), the industry view (Porter, 1980), and the CBV are proposed. The RBV

and industry view complement each other in explaining competitive advantage (Amit & Schoemaker, 1993; Spanos & Lioukas, 2001; Teece, Pisano, & Shuen, 1997). The RBV is suitable for explaining organizational value that are preconditions to customer-value creation. The customer-value disciplines from Treacy and Wiersema (1993, 1995) are useful for strategically formulating customer value and correspond to the generic strategies given by Porter (1980). All views are necessary but insufficient if considered alone. All views complement each other and must be combined.

5.4 The CBV Complements the RBV in IT-Value Theory

The RBV is a paradigm well suited for examining IT in organizations (Daniel & Wilson, 2003). However, there is a controversy regarding the adequacy of the RBV for the strategic analysis of IT value. Wade and Hulland (2004) described the RBV as a convincing means for IT-value analysis, whereas Priem and Butler (2001) complained about the RBV's shortcomings in terms of value, which is gained outside the firm, i.e., money from customers. Priem and Butler (2001) indicated the need for a more integrative theory that should also include customer viewpoints. Zubac, Hubbard, and Johnson (2010) also recognized the limitations of the RBV and the need to additionally regard customer value. In general, investments in resources and capabilities should result in value that is perceived by customers. The authors emphasized a practical implication: "Managers need to understand customer value in order to invest in appropriate resources to attempt to create customer value" (Zubac, Hubbard, & Johnson, 2010, p. 522).

The theory from Treacy and Wiersema (1993, 1995) about the customer-value disciplines—operational excellence, product leadership, and customer intimacy—provide an external viewpoint that complements the RBV for IT-value analysis. Tallon (2007a) appreciated the academic and practical usefulness of these customer-value disciplines and recommended the use of this typology in research. However, the customer-value disciplines

from Treacy and Wiersema (1993, 1995) have not been found in IT-value definitions yet. Our integrated definition for IT value satisfies the need stated by Priem and Butler (2001) and Zubac, Hubbard, and Johnson (2010) to add the customer view to the RBV. It also complies with the idea from Woodruff (1997) to differentiate organizational value from customer value. Tallon's (2007) recommendation to use the customer-value disciplines from Treacy and Wiersema (1993, 1995) in the IT area was also followed. We have mitigated the deficiencies that Schryen (2013) pointed out by providing an appropriate definition of IT value.

5.5 Contributions

We have integrated the CBV into the IT-value theory and the competitive-advantage theory. It is a new perspective compared to previous IT-value research that is mainly founded on organizational aspects and the RBV. The incorporation of the CBV is substantial to a broad audience and will probably refresh traditional discussions (Whetten, 1989).

This paper offers important components for building new theories: a theoretical construct (universal IT-value definition including IT-value categories on pages 17 and 18) and propositions that are presented in models that are partial representations of theories (Van de Ven, 2007, p. 143). We displayed a model that comprises connections between organizational value, customer value, and firm performance (Figure 1). Another model shows the relation between customer value and competitive advantage (Figure 2). These propositions increase explanatory power, which may be considered an incremental contribution to IT-value theory (Reay & Whetten, 2011).

Our suggestions will also contribute to practice. Business analysts, business executives, and CIOs may apply the proposed IT-value definition for strategic analysis and for decision-making regarding IT investments. Cost-benefit analysis should consider monetary value only for IT projects that directly impact customer value, whereas IT investments for organizational value should calculate costs and verbally describe the benefits.

Our ideas may also improve performance evaluations, which need to be founded on a thorough IT-value definition (Brynjolfsson, & Yang, 1996).

5.6 Limitations and Directions for Future Research

The template analysis methodology has limitations. Although this research strived for objectivity, interpretations of IT-value activities and corresponding coding are value-laden. They reflect the researchers' subjective views. The same data may be understood in different ways and be mapped to other customer-value categories. The induction of the categories for organizational value was unconsciously guided by the research objectives. Researchers with other aims may develop distinct categories for organizational value (Dey, 1993).

This conceptual research is beneficial to establishing new research directions and new agendas (Buhl, Fridgen, König, Röglinger, & Wagner, 2012). For upcoming research, we suggest analyzing competitive advantage and IT value in context. We also suggest taking outside-in perspectives (CBV, industry view) alongside the inside-out view (RBV). Future research may test the applicability of the propositions by data collection and analysis; theories can be built accordingly. Upcoming empirical research may support or reject our suggestions that are summarized in the next section.

6 Conclusions

IT value has been studied for several decades but its implications are broadly interpreted and numerous synonyms are used. Moreover, the IT-value categories and the relations between IT value, firm performance, and competitive advantage have been unclear. We have addressed these problems in qualitative and conceptual ways; the resulting statements are enumerated as follows.

IT value consists of two complementary types: customer value and organizational value. Organizational value (e.g. from governance, flexible IT infrastructures, intellectual

assets) indirectly impacts firm performance, is non-monetary, and is a prerequisite for customer value. Customer value results in revenues and directly impacts a firm's performance.

The customer-value disciplines of product leadership, operational excellence, and customer intimacy articulated by Treacy and Wiersema (1993, 1995) and the organizational value of strategic planning/informed decision-making, flexibility/agility, strategic alliances/supplier relationships, and enhanced skills and capabilities are suggested after coding of IT-value activities from highly recognized publications.

Competitive advantage requires both high customer value and scarcity of competing products/services with equal value (differentiation strategy by product leadership or customer intimacy). If such scarcity is low, firms must compete on low costs for comparative advantage (cost leadership strategy by operational excellence).

The theoretical relationship between IT value and competitive/comparative advantage was elaborated by combining the customer-value disciplines (Treacy & Wiersema, 1993, 1995), the generic strategies (Porter, 1980), and the notion of comparative advantage (Bakos & Treacy, 1986).

Altogether, we have introduced the CBV to define IT value and its connection with competitive advantage. It is not a new theory but a fundamental complement of the RBV to the debates on IT value and competitive advantage. We hope it might adjust scholars' perspectives on these topics and inspire new discussions (Whetten, 1989).

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Appendix A: Final Coding Template

Authors	IT-value type (preliminary coding)	IT-value category										
		Customer value			Organizational value							
		PL	OE	CI	SP/DM	FX/A	SA/SR	ESC	Other			
Gammalgård, Ekstedt, & Gustafsson (2006)	Change management									X		
	Third party relations							X				
	Technology/tools									X		
	Supplier relations							X				
	Strategy formulation and planning				X							
	Quality of products/services	X										
	Productivity		X									
	Organizational culture									X		
	New products/services	X										
	Lock-in effect/switching costs									X		
	Learning and knowledge									X		
	Integration and coordination									X		
	Information				X							
	Inbound logistics							X				
	Flow of products/services		X									
	Flexibility					X						
	Efficiency		X									
	Differentiations in products/services	X										
	Deliveries	X										
	Decision-making				X							
Customer relations			X									
Cost reductions		X										
Control and follow up									X			
Competitor relations							X					
Communication		X										
Authors	IT-value group	IT-value activity		PL	OE	CI	SP/DM	FX/A	SA/SR	ESC	Other	
Mirani & Lederer (1998)	Strategic benefits	Enhance competitiveness or create strategic advantage									X	
		Enable the organization to catch up with competitors										X
		Align well with stated organizational goals					X					
		Help establish useful linkages with other organizations								X		
		Enable the organization to respond more quickly to changes						X				
		Improve customer relations				X						
		Provide new products or services to customers		X								
	Provide better products or services to customers		X									
	Informational benefits	Enable faster retrieval or delivery of information or reports					X					
		Enable easier access to information					X					
		Improve management information for strategic planning					X					
		Improve the accuracy or reliability of information					X					
		Improve information for operational control					X					
		Present information in a more concise manner or better format					X					
		Increase the flexibility of information requests						X				
	Transactional benefits	Save money by reducing travel costs			X							
		Save money by reducing communication costs			X							
		Save money by reducing system modification or enhancement costs			X							
		Allow other applications to be developed faster		X								
		Allow previously infeasible applications to be implemented		X								
Provide the ability to perform maintenance faster			X									
Save money by avoiding the need to increase the work force			X									
Speed up transactions or shorten product cycles		X										
Increase return on financial assets										X		
Enhance employee productivity or business efficiency			X									
Gregor et al. (2006)	Transformational benefits (in addition to the benefits from Mirani & Lederer, 1998)	An improved skill level for employees								X		
		Developing new business plans					X					
		Expanding organizational capabilities								X		
		Improving business models					X					
		Improving organizational structure/processes		X								

Authors	IT-value group	IT-value activity	IT-value category							
			Customer value			Organizational value				Other
			PL	OE	CI	SP/DM	FX/A	SA/SR	ESC	
Tallon, Kraemer, & Gurbaxani (2000)	Process planning and support	IT improves planning and decision-making by improving organizational communication and coordination and by enhancing organizational flexibility				x	(x)			
	Supplier relations	Utilize IT to coordinate supplier linkages and reduce search costs						x		
		IT can improve communication, quality control, and delivery techniques, leading to competitive advantage						x		
	Production and operations	Utilize IT to deliver enhanced manufacturing techniques through computer-aided design		x						
		Improvements in the production process can lead to economies of scale in the delivery of products and services		x						
		Incorporating IT into the end product, and the use of advanced manufacturing processes can enable a greater range of products and services		x						
	Product and service enhancement	IT can be used in the development of new products and services.		x						
		IT can enable products and services to be uniquely differentiated in a variety of ways		x						
	Sales and marketing support	The development of new products and services can enable an organization to identify and serve new market segments		x						
		IT can be used to track market trends and responses to marketing programs					x			
Customer relations	IT can be used to establish, sustain, and improve relationships with customers							x		
	Improving customer relations can result in improved market share							x		
Shang & Seddon (2002)	Operational benefits dimension	Cost reduction		x						
		Cycle time reduction		x						
		Productivity improvement		x						
		Quality improvement	x							
		Customer service improvement							x	
	Managerial benefits dimension	Better resource management		x						
	Improved decision-making and planning					x				
	Performance improvement								x	
Strategic benefits dimension	Support for business growth					x				
	Support for business alliance							x		
	Building business innovations	x								
	Building cost leadership		x							
IT infrastructure benefits dimension	Generating product differentiation	x								
	Building external linkages							x		
	Building business flexibility for current and future changes						x			
Organizational benefits dimension	IT cost reduction		x							
	Increased IT infrastructure capability						x			
	Changing work patterns						x			
	Facilitating organizational learning								x	
	Empowerment								x	
	Building common vision					x				

Legend

PL: Product leadership
 OE: Operational excellence
 CI: Customer intimacy

SP/DM: Strategic planning/informed decision making
 FX/A: Flexibility, agility
 SA/SR: Strategic alliances/supplier relationships
 ESC: Enhanced skills and capabilities