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

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This is the **accepted manuscript** of the article published by Taylor & Francis:

Gellweiler, C. & Krishnamurthi, L. (2022). IT Business Value and Competitive Advantage: Integrating a Customer-Based View. *Information Systems Management, 39* (4), 363 – 385.

https://www.tandfonline.com/doi/full/10.1080/10580530.2021.2003487

Abstract: This research expands our understanding of IT value by adding a customer-based view (CBV) to the prevalent resource-based view (RBV). Founded on a template analysis, this article suggests an integrated definition for IT value consisting of two complementary facets: monetary customer value and non-monetary organizational value. Value from IT investments can have direct or indirect effects on firm performance. This research also discusses the relationship between IT value, firm performance, and competitive advantage.

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 et al., 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 et al., 1995). Although the notion of IT value is referred to frequently and has been discussed for several decades in the IT-strategy literature (Hitt et al., 1994), it remains necessary to clarify exactly what it means and how it is generated (Lieberman et al., 2018). Numerous studies in the IT-management and IT-strategy arenas examined the value created for businesses as a result of investments in IT (Drnevich & Croson, 2013). However, substantial research has not resulted in an established understanding of the strategic value of IT (Oh & Pinsonneault, 2007). Even influential and comprehensive review articles from the 2000s (Kohli & Devaraj, 2004; Melville et al., 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 conceptual knowledge about IT value, while numerous contemporary studies concentrate on the measurement of value from IT investments (Gandelman et al., 2017). After having studied almost 300 papers, Schryen (2013) concluded that there were no appropriate theories on IT value. Although value generation by IT is recognized in the literature, there is no common comprehension 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 in research and practice, not only for measurements but also for further IT-value discussions.

The main purpose of this paper is to enhance our understanding of IT value and offer an

[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.

integrative definition of IT value. Further, this paper discusses relevant relationships to IT value.

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 three customer-value disciplines 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). We argue that customer value from IT directly impacts firm performance, whereas organizational value is non-monetary and precondition to the creation of customer value. Further, we suggest that customer-value creation and competitive strategies should always be viewed in context. We explain that 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 business value of IT. Foremost, we contribute to IT-value theory and competitive-advantage theory (Reay & Whetten, 2011) by adding a customer-based view (CBV) to the resource-based view (RBV).

This article starts with reviewing the key concepts 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 the key concepts are theoretically examined. We conceptually argue 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 et al., 1994) or "IT business value" (e.g., Armstron & Sambamurthy, 1996; Sambamurthy & Zmud; 1994; Tallon et al., 2000), or, similarly, "business value of IT" (e.g., Fink & Sukenik, 2011; Hitt et al., 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 et al., 2000), flow directions of products/services (Lankhorst et al., 2013), or other categories (Chan, 2000; Gammelgård et al., 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 varying in the literature (Fink & Sukenik, 2011). Beside the need for an consistent definition of IT value, concise categories of IT value are 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 et al., 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 et al., 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).

Not only monetary performance indicators represent IT value but also non-monetary types of IT value concerning the organization. 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 et al. (2011) found that most IT valuation

approaches in practice are quantitative and founded on financial theories, while non-financial value (e.g., organizational aspects) is not covered. For example, process improvements or supplier relationships are types of IT value that are distributed over organizations (Chan, 2000). These cases of organizational value from IT can translate into monetary value but not directly. The value of information, knowledge, and usage rights are other examples of non-monetary value that are indirectly 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 review of the 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

While the notion of customer value has gained high appreciation in marketing science (e.g., Kumar & Reinartz, 2016; Woodruff, 1997), its importance is still underrated in the IT field. 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). According to Hitt and Brynjolfsson (1996), consumer surplus represents customer value that is created but not captured by the firm. They found that consumer surplus 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 et al., 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 et al., 2006; Tamm et al., 2011). This typology has been recommended for IT research and has been fruitfully applied in a survey on IT value with 241 executives (Tallon 2007; Tallon, 2007a). Further, a content analysis of annual reports from market-leading IT vendors (Gellweiler, 2019) reflected the applicability of Treacy and Wiersema's (1993, 1995) ideas in the IT field; eighty-four percent of the sample contained references to one or more of the three customer-value disciplines. The customer-value disciplines have been impactful in academia; to date, the Harvard Business Review article by Treacy and Wiersema (1993) has been cited more than 1800 times according to Google Scholar.

These customer-value disciplines broadly describe three different means to offer 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).

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 enable cost efficiencies by introducing new products/services (Bharadwaj, 2000). In addition, 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.

Internal IT applications are representative cases for delivering organizational value; these can be traditional enterprise resource planning systems (Gupta, 2000) or advanced IT applications for business analytics (O'Neill & Brabazon, 2019). Examples for organizational value in context with digitalization are customer information (Bharadwaj et al., 2013) or crowd work platforms (Gol et al., 2019). Other examples for non-cash-generating but valuable organizational attributes are intellectual capital and knowledge, which are inherent in an organization's databases (Bharadwaj, 2000).

Organizational value is essential but do not have direct influence on an organization's performance because profits depend on revenues that are 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 organizational 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. Firm performance depends on cash inflows that are received from customers. For that reason, we regard the integration of the customer view as essential when defining IT value.

This research has several objectives. First, it aims to expand our understanding of IT value by integrating a customer-based view. Second, it attempts to identify a consistent definition of IT value including concise categories. Third, it tries to clear up the theoretical relationships between customer value from IT, firm performance, and competitive advantage.

To find an appropriate integrative definition and categories of 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

3.1 Template Analysis

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 was the chosen qualitative research method (Brooks et al., 2015; King, 2004; King & Brooks, 2017). This technique is a particular kind of thematic analysis for studying textual data. It has been primarily applied in psychology research (Brooks et al., 2015) and there is a growing tendency of its usage in the field of business and management (King & Brooks, 2017). Template analysis provides a highly structured process and flexibility to adapt it to the researchers' needs (Brooks et al., 2015). By using this method, a template is created and developed. Our template includes collected data in rows that are coded into categories displayed in columns. The categories reflect meanings discovered in the data. They can be hierarchically structured into main categories and several subcategories that are multiple levels of abstraction. Typically, a template is created based on a data subset (initial coding) and then refined by applying it to further data (final coding) (Brooks et al., 2015).

Template analysis allows deductive and inductive coding. The deductive way uses categories pre-determined by an existing theory, i.e., the categories are derived from the literature. The deductive way is also referred to as "a priori" coding or top-down approach for theory testing. Deductive data analysis provides evidence to support the theory-driven sources of categories (Creswell, 2013). In contrast, the inductive coding develops categories from collected data. It is a data-driven approach; the researcher creates the categories so that the coded data are meaningfully described.

3.2 Unit of Analysis and Coding Operation

Units of analysis denote items that are being studied (Van de Ven, 2007). In our study, influential papers about IT value are the *unit of analysis*. These papers presented various activities for achieving IT value in short phrases, which were used as data for final

coding (Appendix B, column “IT-value activity”).

Basically, coding identifies sections of meaning in the data and labels them with a category (Linneberg & Korsgaard, 2019). In all ways of coding, a category (synonyms: code, theme, dimension) consists of a single term or a short expression that can be viewed as labels for assigning sense to data. By this means, the researcher organizes the data, reduces complexity, and attains a more general perspective (Creswell, 2013; Myers, 2013).

The procedure from Brooks et al. (2015) was followed. Initial 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.

Initial coding (steps 1 and 2) was carried out by one researcher, whereas final coding (steps 3 and 4) was accomplished jointly by two researchers. In thematic analysis, joint coding is recommended to make use of the positional reflexibility of two or more researchers that have diverse views. The joint interpretations of multiple researchers and the co-generation of categories allow for greater dimensionality and reinforce the theoretical outcomes (Anderson et al., 2016; Linneberg & Korsgaard, 2019).

3.3 Initial Coding (Steps 1 and 2)

The initial coding was carried out using data from a literature review (Gammelgård et al., 2006), which identified 25 types of IT value (step 1). 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 (“a-priori”).

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	- 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	- Lowest (total) costs - Operational competence - Process efficiency - Organizational efficiency - High productivity
Customer intimacy	- 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)

Then, initial coding was inductively carried out, i.e., the categories evolved from template analysis of the data (step 2). 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 the 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 can be a source of competitive advantage for vendors (Mata et al., 1995).

	IT-value category							
	Customer value			Organizational value				
IT-value types (for initial coding)	PL	OE	CI	SP/DM	FX	ER	K/C	Other
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						

Legend

PL: Product leadership
OE: Operational excellence
CI: Customer intimacy
SP/DM: Strategic planning/informed decision-making
FX: Flexibility
ER: External relations
K/C: Knowledge and control

Table 2. Initial Coding Template (Sources: Gammelgård et al., 2006; Treacy & Wiersema, 1993, 1995; Authors)

The template approach supports hierarchical category structures (King, 2004). On the initial coding template (Table 2), the higher-order IT-value categories are customer value and organizational value. At the lower level are the three customer-value disciplines (product leadership, operational excellence, customer intimacy) and the four categories for organizational value (strategic planning/informed decision-making, flexibility, external relations, knowledge and control).

3.4 Final Coding (Steps 3 and 4)

According to the procedure from Brooks et al. (2015), more data are needed to apply the categories from the initial coding template. In our research, data were 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 or in conference proceedings (top 30 either in subject area/category "Computer Science/Information Systems" or subject category "Information Systems and Management" of the Scimago journal rankings; Appendix A).

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

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 et al.	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 et al.	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 the 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 that resulted from the initial coding. The latter have been revised in step 4. The final coding template, comprising the 63 IT-value activities from the selected publications, is displayed in Appendix B. The column "IT-value groups" in Appendix B contains assignments of IT-value activities as presented in the selected papers.

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.

4 Results

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

Step	Template	Data	Approach	Goal
1	Initial coding	25 IT-value types from a literature review (Gammelgård et al., 2006)	Deduction	Initial test of pre-determined categories (customer-value disciplines)
2			Induction	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 of initial 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)

In total, 82 out of the 88 IT-value types/activities (i.e., 25 IT-value types used for initial coding plus 63 IT-value activities from the selected articles 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 types/activities from the data collection could neither be allocated to a customer-value category nor to an organizational-value category. In the initial coding stage, the item "lock-in effects/switching costs" could not be assigned to any IT-value category because they do not create value (Mata et al., 1995). On the contrary, they may generate extra costs for customers 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.

In the final coding stage, 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.

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, operational excellence, and customer intimacy. 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 discussion section demonstrates conceptually how customer value from IT is related to organizational value, performance, and competitive advantage. The first subsection of the discussion explains the importance of these concepts for strategic IT planning.

5 Discussion

5.1 IT Value is Imperative for Strategic IT Planning

IT impacts the position of a firm in its competitive environment (Henderson & Sifonis, 1998). The aim of strategic IT planning is to provide superior performance and to create competitive advantage by supporting the business strategy of a firm (Das et al., 1991; Oh & Pinsonneault, 2007). Successful IT planning integrates business planning and IT development (Galliers, 1993) and focuses on business value creation (Ward & Peppard, 1996), which is reflected in a firm's performance data (Premkumar & King, 1991). Thus, business and IT managers who are involved in strategic IT planning must understand the concepts and relationships of IT value, firm performance, and competitive advantage. Based on our findings, these are presented in the following subsections.

5.2 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 et al., 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.

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 customer demands, 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.

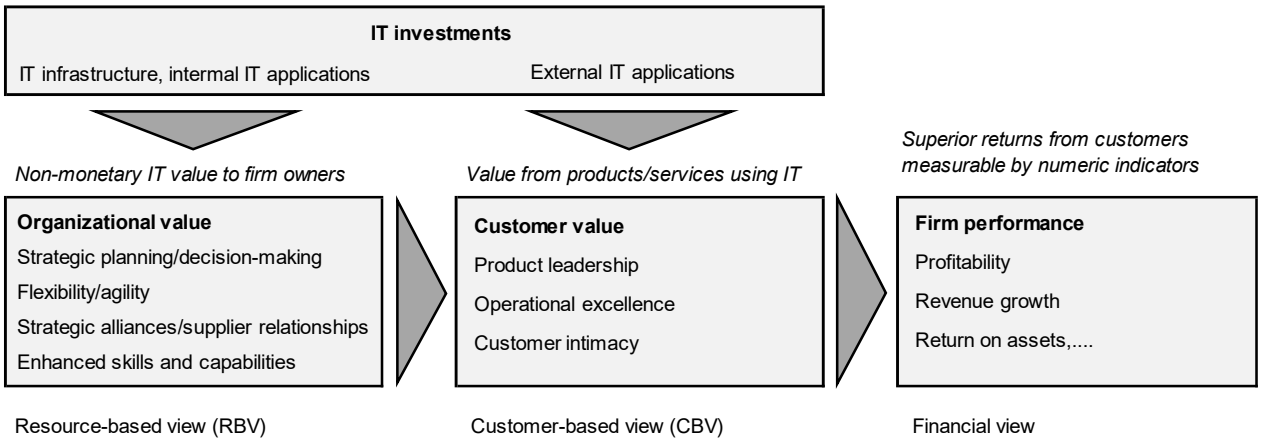

Figure 1. Model for Organizational Value as Preconditions for Customer Value and Firm Performance (Source: Authors)

The consideration of customer value alone 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.

5.3 The Relationship between 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). Although empirical research about the monetary value from IT investments is scarce and disputable (Schryen, 2013), many influential academics agree that IT capabilities can be built for value delivery and competitive advantage (Clemons & Row, 1991; Drnevich & Croson, 2013; McAfee & Brynjolfsson, 2008; Venkatraman et al., 1993). 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 et al., 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 et al., 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.

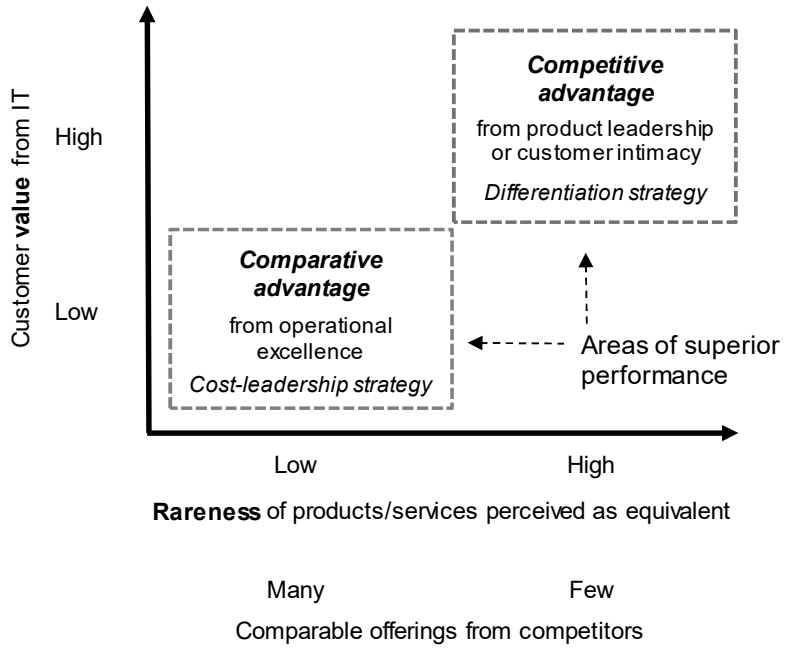

Figure 2. Customer-Value/Product-Rareness Matrix (Source: Authors)

5.4 Customer Value and Competitive Advantage through IT: Cases from Practice

Cases of the relationship between customer value and competitive advantage in the IT

arena are outlined in the following paragraphs. Early, prior to the emergence of the Internet and E-Commerce, McFarlan (1984) identified the customer-value potential of online order processing by problem solving (customer intimacy), time saving, and process flexibility (operational excellence). Electronic order management adds value for customers, rises sales and yields a greater competitive advantage (McFarlan, 1984).

Adner and Zemsky (2006) suggested that competitive advantage corresponds to added customer value. They described the loss of competitive advantage of the Intel Pentium processor from the mid to the end of 1990s because customers were not willing pay price premiums for high-performance processors. Many consumers perceived a better value of the lower priced AMD processors with medium performance characteristics. Intel's dominant market position was threatened. Intel reacted by introducing the Celeron processor family in the low-cost segment. So, Intel maintained the product-leadership position with the Pentium processors and entered the operational-excellence area with the Celeron processors.

As another IT-manufacturer case, Apple has achieved strong competitive advantage by strongly focusing on customers' needs. Apple seizes first-mover advantages (product leadership) and pursues a customer-intimacy strategy. While innovative hardware and software features (product leadership) can be imitated by competitors, the competitive advantage can be defended and extended by building and enhancing Apple's strong brand image (customer intimacy) (Christensen, 2010).

In the contemporary digital age, manifold types of customer data are collected by firms to create new products/services that meet specific needs of customers. Customer value from personalized product/services increases (customer intimacy) along with a firm's competitive advantage. Based on data-enabled network effects, the customer base grows (Hagiu & Wright, 2020). Beside product and service innovations (product leadership), big data analytics empower competitive advantage through customer experience and strong customer-firm relationships (customer intimacy). Moreover, comparative advantage can be accomplished through improved business-process efficiency (operational excellence) (Grover et al., 2018).

Lastly, IT-enabled social media provide great chances for competitive advantage by

extending customer intimacy. Value is created through greater reputation, more trust, and additional customer engagement. Further, sustaining customer loyalty can be enhanced from communities on social media (Stockdale et al., 2012).

5.5 Relationships: Customer Value, Performance, and Competitive Advantage

In short, we argue that performance is a result of customer value and that competitive/comparative advantage depends on the customer-value discipline, customer-value perception and the number of equivalent offerings from competitors. Strategy researchers have made different suggestions regarding the relationships between 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) noted that products and competitors are relevant to determine the value-performance dependency. However, his research failed to include the customer-based view between resources and performance.

Lately, Baia et al. (2020) pursued the same research objective as Newbert (2008) but with data from Portuguese firms. Their results did also not indicate a relationship 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. It is the customer's value perception that 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.

5.6 The CBV Complements the RBV

The resource-based view (RBV) is a paradigm well suited for examining IT in organizations (Daniel & Wilson, 2003). The RBV as an analytical method for competitive advantage has been dominant in IT research for decades (Peppard et al., 2014; Seddon, 2014). The RBV claims that a firm owns and uses resources and capabilities for achieving competitive advantage (Kohli & Devaraj, 2004; Melville et al., 2004; Wade & Hulland, 2004).

There is some 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. 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." Peteraf and Barney (2003) acknowledged that the RBV is incomplete; the customers' willingness to pay is an essential factor for achieving competitive advantage.

Priem and Butler (2001) indicated the need for a more integrative theory that should also include customer viewpoints. Zubac et al. (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 et al., 2010, p. 522).

The theory from Treacy and Wiersema (1993, 1995) about the customer-value disciplines

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 of IT value satisfies the need stated by Priem and Butler (2001) and Zubac et al. (2010) to add the customer-based view (CBV) 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.

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 et al., 1997). The RBV is also 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.

5.7 Contributions

The IT literature has been focused on resource-based, firm-internal aspects and has underrated the importance of customers for value creation. We have broadened the understanding about IT value by integrating the CBV.

Influential articles about IT value presented IT-value definitions and categories that are very different. This research offers a consistent IT value definition that integrates concise categories for customer value and organizational value (section 4).

Numerous studies about IT strategies have emphasized value creation and competitive advantage from IT investments but left out the relationships between value from IT and competitive advantage. These relationships have theoretically been illuminated in this

paper.

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 from IT and competitive advantage (Figure 2). These models are partial representations of theories (Van de Ven, 2007). Our models and propositions increase explanatory power and may be considered as incremental contributions to IT-value theory (Reay & Whetten, 2011).

Our suggestions will also contribute to practice. Business executives and IT managers may apply the proposed IT-value definition for strategic IT planning and decision-making regarding IT investments. Cost-benefit analyses should consider monetary value only for IT projects that directly impact customer value, whereas IT investments for organizational value should calculate costs and qualitatively estimate the benefits. Our ideas may also improve performance evaluations, which need to be founded on a thorough IT-value definition (Brynjolfsson & Yang, 1996).

5.8 Limitations

The template analysis methodology has limitations. Although this research strived for objectivity, data interpretations and coding are value-laden. They reflect the researchers' subjective views. The same data may be understood in different ways and be assigned to other categories. Researchers with other aims may develop distinct categories (Dey, 1993).

A potential source of error is researcher bias that influenced the coding results. The overall reliability can be improved by multiple coding by other researchers.

Due to the selection criteria, the current study has only examined papers that are at least 15 years old. Recent articles that have been less cited and or that have presented a lower number of IT-value activities have not been considered. Therefore, the scope of this study is limited.

Finally, a limitation lies in the fact that this paper has not examined ways for measuring organizational value from IT. The extent of each (non-monetary) organizational value category can be presented on qualitative scales (e.g., low, medium, high). Such

qualitative scales can be useful for pre/post assessments of IT investments.

5.9 Directions for Future Research

The methods and processes for assessing organizational value from IT investments are suggestions for further studies. It would also be interesting to examine the indirect effects of organizational value from investments in IT infrastructure and/or internal IT applications on firm performance. It is recommended that new investigations about IT value include financial data or customer data instead of only collecting the opinions from firm-internal managers or experts.

This conceptual research is beneficial to establishing new research directions and new agendas (Buhl et al., 2012). For upcoming IT-strategy research, we suggest analyzing competitive advantage and IT value always in context.

Future research may test the applicability of our propositions by numerical data collection and analysis. Prospective conceptual examinations about IT-value categories can include less influential but newer articles. Upcoming empirical or theoretical papers may support, reject, or adjust 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. We have addressed this problem 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

proposed after coding of IT-value activities from highly recognized publications.

Competitive advantage from IT investments 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).

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 debate on IT value and competitive advantage. We hope it might adjust scholars' perspectives on these topics and inspire new discussions (Whetten, 1989).

Acknowledgements

We are thankful to the anonymous reviewers that provided valuable comments for the improvement of this work.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declarations of Interest

None

References

Adner, R., & Zemsky, P. (2006). A demand-based perspective on sustainable competitive advantage. *Strategic Management Journal, 27* (3), 215–239.

Amit, R., & Schoemaker, P. (1993). Strategic assets and organizational rents. *Strategic Management Journal, 14* (1), 33–46.

Amit, R., & Zott, C. (2001). Value creation in e–business. *Strategic Management Journal, 22*, 493–520.

Anderson, R. C., Guerreiro, M., & Smith., M. (2016). Are all biases bad? Collaborative grounded theory in developmental evaluation of education policy. *Journal of Multidisciplinary Evaluation, 12* (27), 44–57.

Anupindi, R., Chopra, S., Deshmukh., D., Van Mieghem, J., & Zemel, E. (1999). *Managing business process flows*. Upper Saddle River, NJ: Prentice Hall.

Aral, S., & Weill, P. (2007). IT Assets, Organizational Capabilities, and Firm Performance: How Resource Allocations and Organizational Differences Explain Performance Variation. *Organization Science, 18* (5), 763–780.

Armstron, C., & Sambamurthy, V. (1996). Creating Business Value Through Information Technology: The Effects of Chief Information Officer and Top Management Team Characteristics. *Proceedings of the 17th International Conference on Information Systems (ICIS), Cleveland, OH,* 195–208.

Avison, D., Jones, J., Powell, P., & Wilson, D. (2004). Using and Validating the Strategic Alignment Model. *Journal of Strategic Information Systems, 13*, 223–246.

Baia, E., Ferreira, J. J., & Rodrigues, R. (2020). Value and rareness of resources and capabilities as sources of competitive advantage and superior performance. *Knowledge Management Research & Practice, 18* (3), 249–262.

Bakos, J. Y., & Treacy, M. E. (1986). Information Technology and Corporate Strategy: A Research Perspective. *MIS Quarterly, 10* (2), 107–119.

Baldwin, E., & Curley, M. (2007). *Managing IT Innovation for Business Value: Practical Strategies for IT and Business Managers*. Hillsboro, OR: Intel Press.

Bardhan, I., Bagchi, S., & Sougstad, R. (2004). Prioritizing a portfolio of information technology investment projects. *Journal of Management Information Systems, 21* (2), 33–60.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17* (1), 99–120.

Bharadwaj, A. (2000). A resource–based perspective on information technology capability and firm performance: an empirical investigation. *MIS Quarterly, 24* (1), 169–196.

Bharadwaj, A., El Sawy, O. A., Pavlou, P., & Venkatraman, N. (2013). Digital Business Strategy: toward a next generation of insight. *MIS Quarterly, 37* (2), 471–482.

Bhatt, G. D., & Grover, V. (2005). Types of information technology capabilities and their role in competitive advantage. *Journal of Management Information Systems, 22* (2), 253–277.

Bowman, C., & Ambrosini, V. (2000). Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy. *British Journal of Management, 11* (1), 1–15.

Brooks, J., McCluskey, S., Turley, E., & King, N. (2015). The Utility of Template Analysis in Qualitative Psychology Research. *Qualitative Research in Psychology, 12*. 202–222.

Brynjolfsson, E., & Yang, S. (1996). Information technology and productivity: A review of the literature. *Advances in Computers, 43*, 179–214.

Buhl, H. U., Fridgen, G., König, W., Röglinger, M., & Wagner, C. (2012). Where's the competitive advantage in strategic information systems research? Making the case for boundary-spanning research based on the German business and information systems engineering tradition. *Journal of Strategic Information Systems, 21*, 172–178.

Cao, G. (2010). A four-dimensional view of IT business value. *Systems Research and Behavioral Science, 27* (3), 267–284.

Chan, Y. E. (2000). IT Value: The Great Divide Between Qualitative and Quantitative and Individual and Organizational Measures. *Journal of Management Information Systems, 16* (4), 225–261.

Christensen, H. K. (2010). Defining customer value as the driver of competitive advantage. *Strategy & Leadership, 38* (5), 20–25.

Clemons, E. K. (1986). Information Systems for Sustainable Competitive Advantage. *Information & Management, 11*, 131–136.

Clemons, E. K., & Row, M. C. (1991). Sustaining IT Advantage: The Role of Structural Differences. *MIS Quarterly, 15* (3), 275–292.

Collis, D. J. (1994). Research Note: How Valuable are Organizational Capabilities? *Strategic Management Journal, 15*, Special Issue: Competitive Organizational Behavior, 143–152.

Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). Thousand Oaks, CA: Sage.

Croteau, A.- M., & Bergeron, F. (2001). An information technology trilogy: business strategy, technological deployment and organizational performance. *Journal of Strategic Information Systems, 10*, 77–99.

Daniel, E. M., Wilson, H. N. (2003). The role of dynamic capabilities in e-business transformation. *European Journal of Information Systems, 12* (4), 282–296.

Das, S., Zahra, S., & Warkentin, M. (1991). Integrating the Content and Process of Strategic MIS Planning with Competitive Strategy. *Decision Sciences, 22* (5), 953–984.

Daulatkar, S., & Sangle, P. S. (2016). Proposed re-conceptualization of IT business value benefits. *Business Process Management Journal, 22* (3), 522–545.

Davern, M. J., & Kauffman, R. J. (2000) Discovering Potential and Realizing Value from Information Technology Investments. *Journal of Management Information Systems, 16* (4), 121–143.

Day, G. (1994). The capabilities of market–driven organizations. *Journal of Marketing, 58* (4), 37–52.

Dey, I. (1993). *Qualitative Data Analysis*. London, UK: Routledge.

Dranove, D., & Marciano, S. (2005). *Kellogg on Strategy – Concepts, Tools, and Frameworks for Practitioners*. Hoboken, NJ: John Wiley & Sons.

Drnevich, P. L., & Croson, D. C. (2013). Information Technology and Business–Level Strategy: Toward an Integrated Theoretical Perspective. *MIS Quarterly, 37* (2), 483–509.

Duncan, N. B. (1995). Capturing flexibility of information technology infrastructure. A study of resource characteristics and their measure. *Journal of Management Information Systems, 12* (2), 37–57.

Fink, L., & Sukenik, E. (2011). The Effect of Organizational Factors on the Business Value of IT: Universalistic, Contingency, and Configurational Predictions, *Information Systems Management, 28* (4), 304–320.

Gammelgård, M., Ekstedt, M., & Gustafsson, P. (2006). A Categorization of Benefits From IS/IT Investments. In Gammelgård, M. (2007). *Business Value Assessment of IT investments – An Evaluation Method Applied to the Electrical Power Industry* [Doctoral dissertation, KTH, Royal Institute of Technology, Stockholm]. KTH

Theses and Dissertations Archive. https://kth.diva-portal.org/smash/get/diva2%3A12595/FULLTEXT01.pdf

Galliers, R. D. (1993). Towards a flexible information architecture: integrating business strategies, information systems strategies and business process redesign. *Journal of Information Systems, 3* (3), 199–213.

Gandelman, R. T., Cappelli, C., & Santoro, F. M. (2017). Toward a Prescriptive Catalog for IT Value. *Proceedings of the 10th IADIS International Conference on Information Systems 2017, Budapest, Hungary*, 225–228.

Gellweiler, C. (2019). Operational Excellence as the Main Customer Value: Information Technology Vendors' Perspective. *Business Systems Research Journal, 10* (1), 13–30.

Gol, E. S., Stein, M.-K., & Avital, M. (2019). Crowdwork platform governance toward organizational value creation. *Journal of Strategic information Systems, 28* (2), 175–195.

Grahovac, J. & Miller, D. J. (2009). Competitive Advantage and Performance: The Impact of Value Creation and Costliness of Imitation. *Strategic Management Journal, 30* (11), 1192–1212.

Gregor, S., Martin, M., Fernandez, W., Stern, S., & Vitale, M. (2006). The transformational dimension in the realization of business value from information technology. *Journal of Strategic Information Systems, 15* (3), 249–270.

Grover, V., Chiang, R.H.L., Liang, T.-P., & Zhang, D. (2018). Creating Strategic Business Value from Big Data Analytics: A Research Framework. *Journal of Management Information Systems, 35* (2), 388–423.

Gupta, A. (2000). Enterprise resource planning: the emerging organizational value systems. *Industrial Management & Data Systems, 100* (3), 114–118.

Hagiu, A. & Wright, J. (2020). When Data Creates Competitive Advantage…and when it doesn't. *Harvard Business Review,* January/February 2020, 94–101.

Hazen, B. T., Bradley, R. V., Bell, J., In, J., & Byrd, T. (2017). Enterprise architecture: A competence–based approach to achieving agility and firm performance. *International Journal of Production Economics, 193*, 566–577.

Henderson, J. C., & Sifonis, J. G. (1988). The Value of Strategic IS Planning: Understanding Consistency, Validity, and IS Markets. *MIS Quarterly, 12* (2), 187–200.

Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value. *MIS Quarterly, 20* (2), 121–142.

Hitt, L. M.., Brynjolfsson, E., & Walsham, G. (1994). The Three Faces of IT Value: Theory and Evidence. *Proceedings of the 15th International Conference in Information Systems (ICIS), Vancouver, Canada,* 263–277.

Ives, B., & Learmonth, G. P. (1984). The information system as a competitive weapon. *Communications of the ACM, 27*, December, 1193–1201.

Jarvenpaa, S. (2002). Value Creation in Mobile Commerce. *MIT Sloan School of Management, Center for Information Systems Research, Research Briefing, 2* (1B), 1–3.

Johnston, H. R., & Vitale, M. R. (1988). Creating Competitive Advantage with Interorganizational Information Systems. *MIS Quarterly, 12* (2), 153–165.

Jurison, J. (1996). Toward more effective management of information technology benefits. *Journal of Strategic Information Systems, 5* (4), 262–274.

King, N. (2004). Using templates in the thematic analysis of text. In Cassell, C. & Symon, G. (eds.). *Essential Guide to Qualitative Methods in Organizational Research* (pp. 256–270). London, UK: Sage.

King, N., & Brooks, J. M. (2017). *Template Analysis for Business and Management Students.* London, UK: Sage.

Kohli, R., & Devaraj, S. (2004). Realizing the business value of information technology investments: An organizational process. *MIS Quarterly Executive, 3* (1), 53–68.

Kohli, R., & Grover, V. (2008). Business Value of IT: An Essay on Expanding Research Directions to Keep up with the Times. *Journal of the Association for Information Systems, 9* (2), 23–39.

Kuiper, E. J., Gangadharan, G. R., & Janssen, M., (2011). Using IS/IT Valuation Methods in Practice. *Proceedings of the Seventeenth Americas Conference on Information Systems (ACMIS), Detroit, Michigan,* 307.

Kumar, V., & Reinartz, W. (2016). Creating Enduring Customer Value. *Journal of Marketing, 80* (6), 36–68.

Lankhorst, M. et al. (2013). *Enterprise Architecture at Work: Modelling, Communication and Analysis* (3rd ed.), Berlin/Heidelberg: Springer.

Laursen, M., & Svejvig, P. (2016). Taking stock of project value creation: A structured literature review with future directions for research and practice. *International Journal of Project Management, 34*, 736–747.

Lieberman, M. B., Balasubramanian, N., & Garcia-Castro, R. (2018). Toward a dynamic notion of value creation and appropriation in firms: The concept and measurement of economic gain. *Strategic Management Journal, 39* (6), 1546–1572.

Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. *Qualitative Research Journal, 19* (3), 259–270.

Luftman, J. (2003). Assessing IT/Business Alignment. *Information Systems Management, 20* (4), 9–15.

Martin, R. L. (2014). The big lie of strategic planning. *Harvard Business Review*, January/February 2014, 3–8.

Mata, F. J., Fuerst, W. L., & Barney, J. (1995). Information technology and sustained competitive advantage: A resource–based analysis. *MIS Quarterly, 19* (4), 487–505.

McAfee, A., & Brynjolfsson, E. (2008). Investing in the IT that makes a competitive difference. *Harvard Business Review*, July/August, 2008, 98–107.

McFarlan, F. W. (1984). Information technology changes the way you compete. *Harvard Business Review*, May/June 1984, 98–103.

Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Information technology and organizational performance: in integrative model of business value. *MIS Quarterly, 28* (4), 283–322.

Mentzas, G. (1997). Implementing an IS strategy—A team approach. *Long Range Planning, 10* (1), 84–95.

Mirani, R., & Lederer, A.L. (1998). An instrument for assessing the organizational benefits of IS projects. *Decision Sciences, 29* (4), 803–838.

Mohr, J. J., Sengupta, S., & Slater, S. (2005). *Marketing of High-Technology Products and Innovations* (2nd ed.). London, UK: Pearson.

Myers, M. D. (2013). *Qualitative research in business & management* (2nd ed.). London, UK: Sage.

Nevo, S., & Wade, M. R. (2010). The formation and value of IT–enabled resource: Antecedents and consequences of synergistic relationships. *MIS Quarterly, 34* (1), 163–183.

Newbert, S. L. (2008). Value, rareness, competitive advantage, and performance: a conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal, 29* (7), 745–768.

Oh, W., & Pinsonneault, A. (2007). On the assessment of the strategic value of information technologies: conceptual and analytical approaches. *MIS Quarterly, 31* (2), 239–265.

Olszak, C. M. & Zurada, J. (2020). Big Data in Capturing Business Value. *Information Systems Management, 37* (3), 240–254.

O'Neill, M., & Brabazon, A. (2019). Business analytics capability, organisational value and competitive advantage. *Journal of Business Analytics*, *2*(2), 160–173.

Oz, E. (2005). Information technology productivity: in search of a definite observation. *Information & Management, 42* (6), 789–798.

Penrose, E. (1959). *The theory of the growth of the firm.* Oxford, UK: Oxford University Press.

Peppard, J., Galliers, R. D., & Thorogood, A. (2014) Information systems strategy as practice: Micro strategy and strategizing for IS. *Journal of Strategic Information Systems, 23*, 1–10.

Peppard, J., & Ward, J. (2004). Beyond strategic information systems: towards an IS capability. *Journal of Strategic Information Systems, 13* (2), 167–194.

Peppard, J., & Ward, J. (2005). Unlocking Sustained Business Value from IT Investments. *California Management Review, 48* (1), 52–70.

Peppard, J., & Ward, J. (2016). *The Strategic Management of Information Systems – Building a Digital Strategy* (4th ed.). Hoboken, NJ: John Wiley & Sons.

Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, *24*, 309–323.

Piccoli, G., & Ives, B. (2005). Review: IT dependent strategic initiatives and sustained competitive advantage: A review and a synthesis of the literature. *MIS Quarterly, 29* (4), 747–776.

Porter, M. E. (1980). *Competitive Strategy.* New York, NY: Free Press.

Porter, M. E. (1985). *Competitive Advantage*. New York, NY: Free Press.

Premkumar, G., & King, W. (1991). Assessing strategic information systems planning. *Long Range Planning, 24* (5), 41–58.

Priem, R. L., & Butler, J. E. (2001). Is the Resource-Based "View" a Useful Perspective for Strategic Management Research? *Academy of Management Review, 26* (1), 22–40.

Ramirez, R., Melville, N., & Lawler, E. (2010). Information technology infrastructure, organizational process redesign, and business value: An empirical analysis. *Decision Support Systems, 49*, 417–429.

Reay, T., & Whetten, D. A. (2011). What Constitutes a Theoretical Contribution in Family Business? *Family Business Review, 24* (2), 105–110.

Rivard, S., Sraymond, L., & Verreault, D. (2006). Resource-based view and competitive strategy: An integrated model of the contribution of information technology to firm performance. *Journal of Strategic Information Systems, 15*, 29–50.

Ross, J. W. (2006). Enterprise Architecture: Driving Business Benefits from IT. *MIT Sloan School of Management, Center for Information Systems Research, Working Paper 359*, 1–3.

Ross, J. W., Weill, P., & Robertson, D. (2006). *Enterprise Architecture as Strategy: Creating a Foundation for Business Strategy*. Boston, MA: Harvard Business School Press.

Sambamurthy, V., & Zmud, R. W. (1994). IT Management Competency Assessment: A Tool for Creating Business Value Through IT. Working Paper, Financial Executives Research Foundation.

Schryen, G. (2013). Revisiting IS business value research: what we already know, what we still need to know, and how we can get there. *European Journal of Information Systems, 22*, 139–169.

Seddon, P. B. (2014). Implications for strategic IS research of the resource-based theory of the firm: A reflection. *Journal of Strategic Information Systems, 23* (4), 257–269.

Shang, S., & Seddon, P. B. (2002). Assessing and managing the benefits of enterprise systems: the business manager's perspective. *Information Systems Journal, 12*, 271–299.

Singh, M. (2009). Customer value via an Intranet: A case application of B2E at HCL Technologies. *International Journal of Information Management, 29*, 497–501.

Spanos, Y. E., & Lioukas, S. (2001). An Examination into the Causal Logic of Rent Generation: Contrasting Porter's Competitive Strategy Framework and the Resource-Based Perspective. *Strategic Management Journal, 22* (10), 907–934.

Stockdale, R., Ahmed, A., & Scheepers, H. (2012). Identifying Business Value From The Use Of Social Media: An Sme Perspective. *Proceedings of the Pacific Asia Conference on Information Systems (PACIS), Ho Chi Minh City, Vietnam*, 169.

Strauss, A. & Corbin, J. (2008). *Basics of Qualitative Research* (3rd ed.). Newbury Park, CA: Sage.

Tallon, P. P. (2007). Does IT pay to focus? An analysis of IT business value under single and multi–focused business strategies. *Journal of Strategic Information Systems, 16*, 278–300.

Tallon, P. P. (2007a). A Process–Oriented Perspective on the Alignment of Information Technology and Business Strategy. *Journal of Management Information Systems, 24* (3), 227–268.

Tallon, P. P., Kraemer, K., & Gurbaxani, V. (2000). Executive perceptions of the business value of information technology. *Journal of Management Information Systems, 16* (4), 145–173.

Tamm, T., Seddon, P. B., Shanks, G., & Reynolds, P. (2011). Delivering Business Value Through Enterprise Architecture. *Journal of Enterprise Architecture*, *7* (2), 17–30.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18* (7), 509–533.

Treacy, M., & Wiersema, F. (1993). Customer Intimacy and Other Value Disciplines. *Harvard Business Review,* January/February 1993, 84–93.

Treacy, M., & Wiersema, F. (1995). *The discipline of market leaders. Choose your customers, narrow your focus, dominate your market.* Reading, MA: Addison-Wesley.

Van de Ven, A. H. (2007). *Engaged Scholarship: A Guide for Organizational and Social Research*. New York, NY: Oxford University Press.

Venkatraman, S., Henderson, J. C., & Oldach, S. (1993). Continuous Strategic Alignment: Exploiting Information Technology Capabilities for Competitive Success. *European Management Journal, 11* (2), 139–149.

Wade, M., & Hulland, J. (2004). Review: The Resource-Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research. *MIS Quarterly, 28* (1), 107–142.

Ward, J., & Peppard, J. (1996). Reconciling the IT/business relationship: a troubled marriage in need of guidance. *Journal of Strategic Information Systems, 5*, 37–65.

Weill, P., & Aral, S. (2004). Managing the IT Portfolio: Returns from the Different IT Asset Classes. *MIT Sloan School of Management, Center for Information Systems Research, Research Briefing, IV* (1A), 1–3.

Weill, P., & Aral, S. (2006). Generating premium returns on your IT investments. *Sloan Management Review, 47* (2), 39–48.

Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14, 490–495.

Woodruff, R. B. (1997). Customer value: the next source of competitive advantage. *Journal of the Academy of Marketing Science, 25* (2), 139–153.

Zhu, K. (2004). The Complementarity of Information Technology Infrastructure and E–Commerce Capability: A Resource–Based Assessment of Their Business Value. *Journal of Management Information Systems, 21* (1), 167–202.

Zubac, A., Hubbard, G., & Johnson, L.W. (2010). The RBV and value creation: a managerial perspective. *European Business Review, 22* (5), 515–538.

Appendix A: Journals in Scope

Scimago Journal Ranking 2020 - Top 30; Subject Area: All; Subject Category: Information Systems and Management

Rank	Title	Type
1	MIS Quarterly: Management Information Systems	Journal
2	Information Systems Research	Journal
3	**Journal of Strategic Information Systems**	Journal
4	**Journal of Management Information Systems**	Journal
5	International Journal of Information Management	Journal
6	Accounting, Organizations and Society	Journal
7	Omega	Journal
8	Big Data and Society	Journal
9	European Journal of Operational Research	Journal
10	Information and Management	Journal
11	IEEE Internet of Things Journal	Journal
12	Critical Perspectives on Accounting	Journal
13	Journal of Industrial Information Integration	Journal
14	Knowledge-Based Systems	Journal
15	Proceedings - 2018 Crypto Valley Conference on Blockchain Technology, CVCBT 2018	Conference proceedings
16	Decision Support Systems	Journal
17	Information Sciences	Journal
18	European Journal of Information Systems	Journal
19	2018 IoT Vertical and Topical Summit on Agriculture - Tuscany, IOT Tuscany 2018	Conference proceedings
20	Proceedings - 2017 IEEE 1st International Conference on Fog and Edge Computing	Conference proceedings
21	Management Accounting Research	Journal
22	**Decision Sciences**	Journal
23	IEEE Transactions on Services Computing	Journal
24	Quality Technology and Quantitative Management	Journal
25	International Journal of Systems Science: Operations and Logistics	Journal
26	Journal of Big Data	Journal
27	IEEE Transactions on Big Data	Journal
28	CIDR 2017 - 8th Biennial Conference on Innovative Data Systems Research	Conference proceedings
29	Journal of the Association for Information Science and Technology	Journal
30	International Journal of Accounting Information Systems	Journal

Scimago Journal Ranking 2020 - Top 30; Subject Area: Computer Science; Subject Category: Information Systems

Rank	Title	Type
1	Molecular Systems Biology	Journal
2	MIS Quarterly: Management Information Systems	Journal
3	Journal of Service Research	Journal
4	Proceedings of the 8th USENIX Symposium on Operating Systems Design and Implementation, OSDI 2008	Conference proceedings
5	Journal of Supply Chain Management	Journal
6	Information Systems Research	Journal
7	Information and Organization	Journal
8	Briefings in Bioinformatics	Journal
9	Journal of Strategic Information Systems	Journal
10	IEEE Transactions on Cybernetics	Journal
11	Information Fusion	Journal
12	International Journal of Information Management	Journal
13	**Information Systems Journal**	Journal
14	Scientific data	Journal
15	IEEE Network	Journal
16	IEEE Transactions on Industrial Informatics	Journal
17	IEEE Transactions on Systems, Man, and Cybernetics: Systems	Journal
18	Big Data and Society	Journal
19	Information and Management	Journal
20	Proceedings of the 9th USENIX Symposium on Operating Systems Design and Implementation, OSDI 2010	Conference proceedings
21	BCC 2017 - Proceedings of the ACM Workshop on Blockchain, Cryptocurrencies and Contracts, co-located with ASIA CCS 2017	Conference proceedings
22	IEEE Internet of Things Journal	Journal
23	Journal of Information Technology	Journal
24	Proceedings of the 26th USENIX Security Symposium	Conference proceedings
25	Journal of the Association for Information Systems	Journal
26	IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans	Journal
27	Journal of the ACM	Journal
28	Decision Support Systems	Journal
29	European Journal of Information Systems	Journal
30	Database : the journal of biological databases and curation	Journal

Articles from journals in bold letters have met the selection criteria.

Appendix B: Final Coding Template

			IT-value category							
			Customer value			Organizational value				
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						
Tallon et al. (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					

			IT-value category							
			Customer value			Organizational value				
Authors	IT-value group	IT-value activity	PL	OE	CI	SP/DM	FX/A	SA/SR	ESC	Other
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						
		Generating product differentiation	x							
		Building external linkages						x		
	IT infrastructure benefits dimension	Building business flexibility for current and future changes					x			
		IT cost reduction		x						
		Increased IT infrastructure capability					x			
	Organizational benefits dimension	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