IT-Based Value Co-Creation: 
A Literature Review and Directions for Future Research

Markus Mandrella
University of Göttingen 
mmandre@uni-goettingen.de

Sebastian Zander
University of Göttingen 
szander1@uni-goettingen.de

Lutz M. Kolbe
University of Göttingen 
lkolbe@uni-goettingen.de

Abstract

After more than two decades of IT business value research, organizations continue to seek ways to create value from IT investments. However, as the importance of external resources and inter-firm collaboration for the competitive success of firms continues to grow dramatically, there is a fundamental change taking place in the creation of business value. Now, multiple organizations collectively leverage IT in the context of inter-organizational network settings, raising important new issues that must be addressed. Due to the centrality of research on IT value for our discipline, expanding the agenda on how to best co-create value in these multiform environments is crucial. Therefore, this systematic literature review provides an overview structuring the efforts that have already been invested in this field. By analyzing the existing literature using a concept matrix, we develop a framework for classifying the latest research on IT value and provide promising directions for future research.

1. Introduction

Research on IT business value has a long tradition. In the context of the productivity paradox of IT [6], it has been a much debated question whether IT investments lead to value, as many studies have been unable to find a relationship to organizational performance. Today, the paradox seems to be resolved [30]. Researchers argue that under certain conditions, IT leads to value, such as financial benefits, process improvements, and customer satisfaction [30,41,44]. Measurement instruments for capturing IT value have been further developed and the linkage to business complementarities has been emphasized. Thus, this research stream makes important contributions to research and practice by demonstrating the relevance and value of IT investments.

Thus far, IT business value research has mainly focused on the firm level of analysis [19]. However, contemporary organizations are collaborating in inter-organizational networks. By both working together as well as combining resources and capabilities, firms can gain advantages in terms of cost savings, inter-organizational learning, access to new resources and markets, and reduced risks [2]. IT plays a critical role in these networks. Inter-organizational systems (IOS), e.g., workflow systems, electronic data interchange (EDI), and supply chain systems, improve coordination and communication between network partners, facilitate knowledge sharing, and increase innovation [14]. This provides new opportunities for companies as they can co-create superior benefits and synergies by combining their IT resources and capabilities in unique ways [19]. However, this also results in new challenges for IT business value generation because collaborating firms might have different strategies, information systems, and capabilities that must be integrated [56]. Furthermore, the contribution to and the sharing of co-created value is difficult to manage and capture [30]. Therefore, research on IT-based value co-creation has been garnering more and more attention. The relevance of this research area is addressed, among others, by recent publications on intra-organizational IT business value [18,30,41] and the 2012 MIS Quarterly special issue on co-creating IT value [19].

However, the understanding of this area remains limited. While much effort has been invested into synthesizing knowledge of and developing frameworks for research on IT business value in single firms (e.g., [18,30,44,60]), research on IT-based value co-creation is less structured. To the best of our knowledge, no study provides an overview that identifies and structures efforts in this research area. Therefore, we aim to answer the following research questions:

RQ1: To what extent has literature already explored concepts of IT-based value co-creation?

RQ2: Which areas provide potential directions for future research?

To answer these research questions, we develop a framework that summarizes the state-of-the-art research on IT-based value co-creation. This framework is based on concepts that were derived from 45 articles identified by a structured literature review.
Furthermore, our study identifies several gaps in existing literature, which provide directions for future research.

The remainder of this study is structured as follows. First, we set the background and boundaries of research in the context of business value in inter-organizational networks. We then discuss our methodological approach for the literature search process. Based on these results, we propose a framework on IT-based value co-creation. We then analyze potential directions for further research.

2. Background

2.1. Inter-organizational networks

Over the past two decades, research on collaboration in inter-organizational networks has been and continues to be an emerging and developing field of study, not only in IS research but also across various disciplines. As a result, the academic literature in the context of networks is by now quite extensive and scholars have proposed a wide range of definitions. However, despite having differences, they generally refer to certain common themes, including interaction, relationships, connectedness, collaboration, collective action, and cooperation [53].

In this paper we follow the definition of Camarinha-Matos et al. [7]. Accordingly, inter-organizational networks consist of a variety of organizations that are largely autonomous, geographically distributed, and heterogeneous in terms of their operating environment. Furthermore, they collaborate in order to achieve common or compatible goals and are interconnected by computer networks.

The continual progress of information and communication technologies plays a fundamental role in the functioning of such networks. In particular, inter-organizational systems – defined as integrated IS shared by two or more organizations – support different tasks within the network by linking customers, suppliers, and other network members [1]. Thus, IOS are seen as catalysts and enablers for collaboration across organizational boundaries and important drivers for value creation in inter-organizational networks [19].

2.2. Framing IT value co-creation research

It is well known that firms attempt to generate business value through investments in IT [47]. However, several studies have been unable to prove the relationship between IT investments and organizational performance, which has come to be known as the productivity paradox of IT [6]. Researchers have argued that IT resources, such as hardware, software, and IT personnel, can be easily duplicated by competitors because they are widely available on the market and mobile in nature [42, 67]. Hence, IT investments per se do not necessarily lead to organizational performance and competitive advantage. Firms should instead link IT resources to complementary organizational resources in order to develop unique capabilities and thus use their IT resources in a more effective and efficient way than their competitors [4, 44]. Under these conditions, researchers agree that IT does create business value, whether it be financial, through greater efficiency of business processes, or in intangible dimensions [30, 41]. Figure 1 briefly summarizes these findings of previous research on IT business value.

![Figure 1. Model of IT business value (30, 41)](image)

To provide a clear scope for this study, we must set the boundaries of research [68]. IT business value research deals with the impact of IT on organizational performance [44]. Throughout this paper, we follow the definition of IT business value research by Kohli and Grover [30]. First, we implement a broad view of the term IT. Beside IT-related resources such as hardware and software, we include IT management and organizational concepts, such as IT compatibility and absorptive capacity because IT value is, as mentioned above, created through complementary resources and capabilities. Second, the scope of IT business value research lies on the economic impact of IT. Research on the impact of IT on intermediate factors only, such as the quality of IS, will not be considered in this investigation. However, if a relationship between this intermediate factor and an economic output, such as increased sales, is examined, it can be included in our analysis. Third, we focus on organizational impacts of IT and thus exclude research on individual and national-level value from further analysis.

In this study, we investigate IT business value at an inter-organizational level of analysis. In this context, IT can either be an enabler for cooperation or support inter-organizational networks that initially had incentives to collaborate [30]. Hence, the question arises of how different firms with different information systems can leverage common IT resources and capabilities in order to create value that they could not realize on their own [19]. This research stream is referred to as “IT-based value co-creation” and has
been proposed as an important research agenda in recent years [18,19,30]. Our focus thus lies on IT business value research in which economic outcomes and/or IT-related factors are investigated at the interorganizational level of analysis. The unit of analysis should correspond to our definition of interorganizational networks.

In summary, our focus lies on research that satisfies the following conditions [30]:
1. IT-based variable or manifestation.
2. Endogenous variable with an organizational IT economic impact.
3. At least one of the first two conditions at an inter-organizational level of analysis.

3. Research Methodology

3.1. Data collection

To examine the current state of research on IT value co-creation in the context of inter-organizational networks, we conducted an in-depth topic-based literature review following the principles of Webster and Watson [68].

The examination of an emerging research domain should encompass all relevant literature. Therefore, although conference proceedings are considered to be less mature than scientific journals, we included both, as this field of research is still at a developing stage.

To adequately explore the literature base, we focused on the following databases that cover all MIS journals in IS research ranked in the top 50 suggested by Levy and Ellis [36]: ProQuest, Elsevier, IEEE, ACM, JSTOR, Web of Science, and EBSCOHost. In addition, we added the AIS electronic library in order to access a wider range of leading IS conference proceedings.

We used three different combinations of keywords for database search. First, “value co-creation” and “relational value” were used in conjunction with “information systems” and “information technology”. Second, we used the keywords “business value of IT” and “IT value” in conjunction not only with the term “network” but also with other network-related terms, i.e., “inter-organizational”, “collaborative network”, “corporate network”, “cluster”, and “alliance”. Third, IT value can have multiple dimensions and researchers do not state necessarily the term “value”. Therefore, we used the keywords “value”, “performance”, “productivity”, “economic impact”, and “efficiency” in conjunction with the network- and IT-related keywords mentioned in the first two combinations.

Our research is restricted to articles published since the year 2000 for the following reasons. First, research on IT business value in the last century was dominated by the productivity paradox of IT, with researchers investigating whether IT creates value and dealing with measurement issues [9]. However, as mentioned earlier, research on IT business value has developed further and takes a different view on value creation. Second, earlier research on inter-organizational IT focused on investments in specific technologies, such as EDI (e.g., [3,70]). In contrast, recent research highlights the importance of inter-organizational capabilities in value co-creation.

The literature search was conducted from April to May 2015 and followed a three-step approach. The first stage of data collection resulted in 1,004 articles. Identical results were omitted, the titles and abstracts of the articles were briefly scanned, and irrelevant articles were removed – for example, a large number of articles investigated computer or social networks. In the next step, the content of the remaining 107 articles was analyzed. To select relevant papers for our sample, we used the conditions of value co-creation research introduced in Section 2.2. This step resulted in 31 relevant publications. In the last step, we conducted a backward and forward search, which led to 14 more articles. Finally, our sample includes 39 journal articles and 6 conference contributions.

3.2. Data analysis

We followed the approach of Webster and Watson [68] and synthesized the identified literature according to topic-related concepts. The IT business value model introduced in Section 2.2 was used to guide this categorization. Sources of value and translation processes were identified as concepts referring to resources and mediating factors of value co-creation. Regarding the outcome, we identified three concepts: type of measurement, value dimensions, and level of analysis. Furthermore, we classified the identified literature according to the methodology used.

Building on the relational view [16], Grover and Kohli [19] identify four sources of co-created value from IT. First, relation-specific investments in interorganizational IT assets, such as integrated systems, can lead to relational value. Second, value can be co-created through knowledge sharing based on IOS, such as knowledge repositories or common databases. Third, network firms can combine complementary IT-based capabilities in a unique way to create value. Fourth, effective network governance mechanisms through inter-organizational IT facilitates value co-creation.

The process of translating IT into business value can be complex and include several mediating factors [30]. Therefore, we distinguish between direct and
mediated value translation processes. In a direct translation process, inter-organizational IT resources and capabilities directly influence business value, whereas value is co-created through business-related capabilities in a mediated translation process.

IT-based value can manifest itself in several different dimensions [30]. Traditionally, researchers distinguish between the impacts of IT on firm or process performance [30,41,44,60]. Firm performance measures encompass market value, such as Tobin’s q, and accounting value, such as inventory turnover and sales growth. In this study, we also include network-related performance measures. Process performance measures assess the efficiency of specific business processes, such as customer service or information sharing. Furthermore, recent research highlights the importance of intangible IT value, such as customer satisfaction or the quality of inter-organizational relationships. Thus far, little research has been conducted in this dimension [18,41].

Research on IT business value can further be referred to on different levels of analysis, e.g., individual, group, and firm [30]. In the context of inter-organizational networks, IT-based value can be analyzed at the firm or network level [62]. At the firm level, organizational outcomes, such as ROI, are analyzed independently from the network relationships. In contrast, network-level value aggregates firm-level outcomes to network-specific outcomes, such as network ROI. Furthermore, relation-specific value can be seen as an intermediate form of firm- and network-level value. This type of value is assessed at the firm level, but as a result of the network relationship and vice versa [54]. For example, co-created value can be measured by the performance impacts of a collaborative IT project for the focal firm.

One major issue of IT business value research is the means of measurement [9], which can be classified into two types: objective and perceptual [12]. If value measures are self-reported, for example in a survey, they are treated as perceptual.

Finally, the systematization of Palvia et al. [48] was used to classify the articles according to the methodologies used.

Two Ph.D. students initially reviewed the literature independently. During a second phase, inconsistencies were discussed until a common understanding was reached.

4. Results

The results indicate that IT-based value co-creation is an emerging issue. As shown in Table 1, the number of publications in this research area increased during the last years. Furthermore, we identified 13 articles published in adjacent research areas, such as supply chain management, marketing, and operations management, indicating that IT-based value co-creation is relevant in many business-related research areas. In addition, all studies find that value can be co-created through IT, indicating the importance of this research area.

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However, our literature review reveals that the concepts are unequally employed (see Table 2). Most studies focus on value co-creation through inter-organizational IT assets, especially IT integration [5,13,22,26,33,35,45,46,49,50,55,57,58,69,71] and IOS support and resources [10,17,31,37,61,65]. Other studies on IT assets investigate the value of relation-specific systems, i.e. ERP [39], medical [43], procurement [63], and RFID systems [11], e-supply chain capabilities [25], and participation in platform ecosystems [8]. Less attention has been paid to the other sources of co-created value, such as knowledge sharing through IOS visibility [32,34], inter-firm IT capability profiles as complementary capabilities [56], and IT-related relational committees as governance mechanisms [51]. Interdependencies between these sources have rarely been investigated. Only two publications consider more than two IT-based sources of co-created value [19,63].

Most studies analyze co-created value on the relation-specific level of analysis. For example, firm and process performance improvements as a result of partnership collaboration are captured [34,56]. In the opposite direction, Rai et al. [56] assess the value of the relationship as a result of the share of wallet. Research on value on the network level, however, is limited. Six articles analyze dyadic relationships using a matched pair strategy [21,27,28,32,34] or comparative case studies [39]. Only two studies investigate co-created value in networks with multiple partners: Lim and Melville [37] analyze the success of alliance IT resources by aggregating abnormal returns, whereas Sarker et al. [59] examine co-created value of B2B alliances in case studies.

A high number of studies rely on perceptual measures in order to capture co-created value. For example, survey respondents were asked to rate performance improvements as a result of an inter-organizational partnership [22,28,51] or in comparison with their competitors [26,58]. We found only nine studies that use objective measures. Most of them use secondary data gathered from various databases in
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order to develop objective measures, such as sales [8], abnormal stock returns [20,38], or Tobin’s q [65].

Despite these unexplored topics, our results also indicate advancements in IT-based value co-creation research. Regarding the dimensions of IT value, a large number of articles explore intangible value dimensions. For example, Malhotra et al. [40] find that IT-based knowledge sharing leads to a better understanding of the supply chain partner’s market and competitive environment. Other examples include supply chain agility [35,45,57], customer satisfaction [45,55], and relationship quality [21,57]. This is surprising, given that previous research on intangible IT business value remains relatively unexplored [18,41]. At the process level, mainly effects of inter-organizational IT on performance of supply chain process, such as ordering, have been investigated (e.g., [13,33,52,57]). However, most articles still investigate performance measures at the firm level, such as sales [22,34,63].

Concepts regarding the value translation process are equally employed. While research has traditionally investigated IT value creation through mediating factors, recent research calls for an embedded view in which digitalized business capabilities directly influence business value [19,30]. IT-based value co-creation research has adapted this perspective and explored digitalized capabilities to enhance value co-creation, such as information exploitation capabilities [29,63], inter-firm IT capability profiles [56], and IT-enabled collaborative decision making [69]. In contrast, many studies examine business-related capabilities that mediate the effect of IT on value, such as knowledge sharing [11,26], process coupling [58], or supply chain integration [13,55].

Seven out of fourteen distinct methodologies have been applied [48]. Quantitative approaches outweigh qualitative ones in this research area. The survey method is dominant and has been used 30 times, followed by case studies, interviews, and secondary data.

5. Discussion and Research Agenda

To answer our first research question, we propose a framework that is based on the derived concepts of our literature review and reflects the current state of research on IT-based value co-creation (see Figure 2). Based on the relational view, IT-based assets, knowledge sharing, complementary capabilities, and governance are sources of co-created value. These sources can influence co-created value directly or through mediating and business-related capabilities. Co-created value can be analyzed at the network, relation-specific, or firm level. At all levels, value can manifest itself in performance dimensions, processes, or as intangible value; this value can be captured by objective or perceptual measures.

Based on this framework and the concept matrix, our results also highlight understudied topics in IT-based value co-creation, which provides opportunities for further research. We identified the following research gaps to answer our second research question.

1) Further research should explore a greater variety of IT-based sources of value co-creation. By broadening and expanding these sources, the understanding of how IS can create new options and value for networked firms can be expanded. For example, capabilities like strategic alignment are
understudied at an inter-organizational level of analysis, but might also give valuable insights into how network members can co-create value from IT. Furthermore, these sources should not be studied in isolation because various interdependencies among them exist [19]. For example, IT-based governance mechanisms enhance the effective and efficient use of shared IT resources in inter-organizational networks [51]. Therefore, future research should also investigate these interdependencies and how these sources differ in their contribution to value in order to provide deeper insights into favorable conditions and success factors of IT-based value co-creation.

2) The literature review indicates that co-created value is primarily analyzed in single firms, either in isolation or as a result of inter-organizational relationships. However, contemporary organizations are closely linked with their business partners and their inter-organizational partnerships are an important source of competitive advantage. Therefore, further research should examine how IT contributes to value co-creation at the network level. This might provide insights into the dynamics of value co-creation and how successful inter-organizational networks differ regarding their IT capabilities. Our results reveal that this area is relatively understudied. Although the analysis of dyadic relationships might give insights for network research, it is limited in its examination of the behavior and structure of a network as a unique social system [53,62]. However, Lim and Melville [37] and Sarker et al. [59] make a first step in this direction. Network research provides a variety of approaches that might be valuable for IS research. An overview is provided by Provan et al. [53]. Furthermore, the question arises of how co-created value can be shared between network members, resulting in issues such as opportunistic behavior, contracting, and accountability [54], which provides promising research topics.

3) The majority of the studies use perceptual measures to assess co-created value. Because of time-lag effects, intangible dimensions, and the unavailability of data, it is difficult to isolate and capture IT business value [30]. This seems to be even more challenging in inter-organizational networks. The contribution of single firms to network-level value, dynamics in network lifecycles, and the sharing of value are some of the issues that exist. While perceptual measures may be suitable in such circumstances, objective measures tend to be more reliable [12]. The main advantage of inter-organizational collaboration is the generation of relational rents, i.e., a supernormal profit that a firm could not realize in isolation [16]. Developing objective measures that capture such benefits as a result of IT-based collaboration could improve the reliability of research and allow for more accurate investigations of co-created value. Furthermore, such measures could improve decision-making regarding investments in IOS for practitioners.

Lastly, a more balanced use of methods could be useful for research on IT-based value co-creation. Most studies use quantitative methods, either based on survey or secondary data. Qualitative research could offer deeper insights into the value co-creation process and also provide foundations for the development of measurement instruments at the network level. Furthermore, the use of mixed methods may increase the accuracy and robustness of results [66].

The results of this study must be interpreted with caution due to the following limitations. First, our study focused on networks with largely autonomous organizations, thus excluding inter-organizational relationships such as mergers and acquisitions and outsourcing relationships, which might also provide insights into IT-based value co-creation. Second, the databases for the literature review were selected to cover IS-related journal and conference contributions. Thus, relevant literature in other research domains may not have been covered. However, we also found publications in adjacent research areas, indicating the importance of IT-based value co-creation in many business-related research areas.

6. Conclusion

In this study, we developed a framework that synthesizes research on IT-based value co-creation. Our literature analysis reveals that this is an emerging research field. Furthermore, progress is noticeable regarding the capture of multiple and intangible value dimensions. However, we identified several research gaps and promising fields for future research: a greater variety of IT-based sources and their interdependencies, investigations at the network level of analysis, the development of objective measures, and a more balanced use of methods.

The contributions of this study are as follows. First, we summarize current knowledge on IT-based value co-creation and provide guidance for research. Second, we identify gaps in existing literature, which provide guidance for future research directions.

7. Acknowledgements

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8. References


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