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Towards a Process Theory of IS Business Value Co-creation

Insights from enterprise systems adoption in an SME cluster

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Abstract. There is a growing emphasis on digital transformation in research and business practice. The creation of value from IS investments is a critical factor in digital transformation. It usually requires significant organizational transformation activities to realize the potential business value. Research has documented that the ability to realize IS value is a very challenging endeavor, especially for small and medium-sized enterprises (SMEs), who because of resource poverty are dependent on external input and cooperation with other companies. There is a general lack of research on how IS business value is co-created, particularly in small and medium-sized enterprises. This paper builds on the findings on value co-creation in a cluster of performing arts enterprises, to theorize about how co-creation among enterprises contribute to IS business value. The enterprises in the cluster engaged in a project to develop a collaborative approach towards strategic audience development utilizing CRM technology. The results expand our understanding of the dynamics related to co-creation. We find that co-creation can be an important avenue for SMEs to invest in IS and realize IS business value. We propose a modified IS business value framework to explain how networks of enterprises can co-create IS business value.

Key words: Co-creation, IS value, Cluster, SMEs, Cultural industry, CRM.

1 Introduction

Rapid development in new digital technologies and increasingly complex competitive environments create a pressure on firms to innovate and transform their businesses.

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Business value will not come automatically from implementing enterprise systems and related business concepts. To succeed in utilizing digital solutions and digital transformation, enterprises are increasingly seeking multiple partners to collectively leverage this value (Grover and Kohli 2012). Most firms strive with understanding the opportunities and consequences of digitalization to their business and how they should transform (Bharadwaj et al. 2013), and this challenge is particularly demanding for small and medium-sized enterprises due to their general lack of resources (Zach et al. 2014). One strategy to develop this capability to innovate and transform is to cooperate with others but establishing and effectively managing a co-creation strategy have many challenges (Gnyawali and Park 2011).

The research interest in co-creation has grown rapidly in diverse research areas such as service science, management and innovation science as well as marketing and information systems over the last fifteen years. As a result, co-creation covers diverse areas and topics including new product design, users as co-designers, retailing, co-production, customer participation, consumer communities, open business models, service exchange and service systems, and digitalization (for an overview, see Ramaswamy and Ozcan 2018). Recent reviews of the literature have shown that the concept of co-creation lacks a clear definition (Galvagno and Dalli 2014) and consensus around its conceptualization, its foundation, drivers, related processes and expected consequences (Leclercq et al. 2016). In a special issue in *MIS Quarterly*, five articles purport to frame, describe and analyze the nature of co-creation. From the vantage point of the resource-based view, Grover and Kohli (2012) sums up the work by identifying four layers of relational arrangements that influence IS business value co-creation: assets, complementary capabilities, knowledge sharing and governance. The outcome is an increased understanding of the types of assets and complementarities that are needed for collaboration, how contractual arrangements can create structures to reduce transaction costs and incentivize co-creation, as well as how IT can be used to facilitate this. Despite providing useful insight into the content of co-creation, the studies are not able to describe how co-creation unfolds, how it can be initiated, established and formalized, and how co-creation relates to the process of IS business value creation.

There is a general lack of research on how co-creation influences IS business value creation, and how co-creation in particular influences digitalization and digital transformation in different contexts (Stief et al. 2016). To contribute to a better understanding of how co-creation contributes to IS business value creation, and to contribute towards the formation of a theory of IS business value co-creation, this study reports from a case study of a network of around 60 SMEs in the creative industry called the Blender Collective. Enterprises in this cluster decided to cooperate and join efforts to

transform their industry and to improve their services. The cluster initiated a common project to implement a CRM system as part of a digitalization strategy, based on the actors' common ambitions to cooperate and learn more about their customers. Important activities in the project included developing the capability to analyze customer data to improve services and market coordination. In our research, we saw this case as a relevant opportunity to explore and conceptualize how IS business value co-creation is manifested in this cluster. We have therefore raised the following research question:

How does cooperation among enterprises manifest itself and contribute to IS business value co-creation?

To answer this question, we addressed the following sub-questions:

- What is the perceived IS business value from co-creation in the cluster and how does it influence the initiation of co-creation?
- What are the inhibitors for IS business value co-creation in the cluster?
- How can IS business value co-creation in the cluster be conceptualized?

The remainder of the paper is organized as follows: The next sections present related work on co-creation and IS value. We then present the research method, followed by the results and a discussion of potential implications for practice and further research. We conclude with the potential contributions and limitations of our work.

2 Related work

The importance of interdependence between firms, resulting in social relationships and networks, has for many years been recognized in the management literature (Czakon and Kawa 2018; Grönroos and Voima 2013). Based on new sources of information from network interactions, the participants have created opportunities for competitive advantage. This phenomenon has led to a rapidly growing stream of research since the early 2000s that has conceptually described these interactions as co-creation, that offers significant input to the innovation process (Nambisan 2002). By unlocking joint forces of value creation through co-creation, these networks enhance competitive power (Prahalad and Ramaswamy 2004). This interaction is particularly important when markets are dynamic and enterprises small with limited resources for innovation. Firms cooperating in such networks or ecosystems share knowledge and resources in co-creating interpretations and responses. This co-creation relates to a range of common issues such as the use of supply chains, innovations in service production and implementation of

information technology (Kohlbacher 2007). Despite consensus that co-creation can result in substantial advantages for enterprises, there is a general lack of research on the nature of co-creation in different contexts and how it can be initiated and managed (Felzensztein et al. 2018; Frow et al. 2015). Questions that need more research include how competing firms that are not suppliers or customers to each other, can collaborate horizontally in business networks, and how such co-creation can contribute to the well-being of the participants and the value-creation of the whole ecosystem (Galvagno and Dalli 2014).

These latter issues in the literature on challenges from rivalry between competing firms are particularly relevant to the Blender network we study, where IS investments in CRM are means to co-create a customer focused digitalization strategy. One relevant stream of research to better understand co-creation is coopetition research (see Dorn et al. 2016 for an overview). Coopetition research focuses on many different antecedents that can explain how co-creation is influenced, including regulatory bodies outside of the network, how the network is governed, how firms perceive strategy and goals, as well as how the relationships between the firms are influenced by relative position, compatibility and trust (Dorn et al. 2016). Also, the risk of opportunistic behavior was reduced with increasing levels of trust (Das and Teng 2000), whereas studies of SMEs identified resource endowment, goal characteristics, firm capabilities, strategy formulation and perceived vulnerability as factors that determine coopetition (Gnyawali and Park 2009). The coopetition literature provides only limited knowledge on the impact of multi-actor settings, where many firms participate. In the recent review of the coopetition literature, Dorn et al. (2016) conclude that there is a pressing need for research to understand how the dynamics of multi-actor networks create specific management challenges and requirements.

Since co-creation is described as a particularly important enabler for digitalization of firms (Lenka et al. 2017), it is important to understand the nature of co-creation in multi-actor settings and how co-creation can be managed to avoid rivalry that reduces joint value creation. The specific literature on the co-creation of IS business value is dominated by an innovation and technology management perspective that focuses on how value as new or improved services is a result of the use of technology to improve the interaction between customers and companies (Galvagno and Dalli 2014).

The business value of Information Systems (IS) investments have been one of the major research topics among IS researchers (Roztocki and Weistroffer 2008; Schryen 2013). Different terms have been used, such as IT business value (Soh and Markus 1995), IT and organizational performance (Melville et al. 2004), IS business value (Schryen 2013), Returns on investments in IT (Dehning and Richardson 2002) and IT

and economic performance (Dedrick et al. 2003). However, the causal relationships between IS investments and business value are still not well understood (Schryen 2013), and the IS discipline still lacks a widely accepted definition of IS business value (Oz 2005). We adopt Shryen's (2013) definition:

IS business value is the impact of investments in particular IS assets on the multidimensional performance and capabilities of economic entities at various levels, complemented by the ultimate meaning of performance in the economic environment.

For example, the business value from adopting an enterprise system may be that business processes can be performed more effectively, which may lead to competitive advantage and improved economic performance, depending on the actions of competitors. Four IS business value models have been widely adopted among IS researchers:

- the Process-oriented model (Soh and Markus 1995),
- the Return on Investment in Information Technology (Dehning and Richardson 2002),
- the Production-oriented model (Dedrick et al. 2003), and
- the Resource-based model (Melville et al. 2004).

There are two significant extensions of these models. Schryen (2013) has synthesized these models into an IS business value model. Trieu (2017) has extended Soh and Markus process model with key dimensions from Melville et al.'s (2004) resource-based model and Schryen's model (Schryen 2013) and has proposed a framework for how Business Intelligence creates business value. Although Trieu's framework was developed for Business Intelligence, it is synthesized from acknowledged IS business value frameworks. The framework is therefore appropriate for IS business value creation in general.

Several studies have posited that there is a need for research that address how IS business value is co-created in a network of firms, rather than by a single firm (Kohli and Grover 2008; Rai et al. 2012; Saraf et al. 2007). Further, some research has indicated that complementary factors and IS assets affect each other and can contribute to value co-creation, but that this relationship remains unclear (Schryen 2013). However, Schryen (2013) does not view the complementary factors in relation to co-creation with other firms. Our review of most widely adopted IS business value models reveals

that none of them includes any reference to how IS business value can be co-created with input from other firms. We therefore argue that IT is important to address how co-creation contributes to IS business value, and how this can be represented in an IS business value model.

We recognize that resources are key to achieving IS business value (Schryen 2013). We have therefore adopted the resource-based view (RBV) of the firm (Barney 2000; Mata et al. 1995) as an analytical lens. Vargo and Lusch (Lusch and Vargo 2006; Vargo and Lusch 2008) expanded the resource-based view by adding new ideas and theoretical foundations. They have conceptualized a service-dominant logic, where resources play an important role to the process of value creation. In this perspective, value creation occurs when a potential resource leads to a specific benefit (Vargo and Lusch 2008, p. 8). We therefore also adopted Vargo and Lusch's extensions of the RBV as an analytical lens.

3 Research setting

The Blender Collective is a network of approximately 60 enterprises in the creative industry sector in the Østfold county in Norway (www.blendercollective.no). Only three of the enterprises are medium-sized, the remaining are small enterprises. The cluster was initially called Arena Magica and began as a project initiated by the Østfold County Council (ECC) in 2009 to stimulate growth and value creation in the creative industry sector. Previous initiatives to strengthen collaboration in this sector had not been successful, but in 2010 the project was awarded funding for three years (2010-2013) from the national cluster and network development program—ARENA. The goal was to advance and boost the network of businesses in the creative industry, including music, stage, film, media and design. The three-year funding was followed by an increase in the number of members to 45 in January 2014.

The performing arts enterprises in the cluster identified audience development and audience engagement as a key capability area, and in 2013, they initiated a small research project together with Agder Research Foundation to investigate the options for a collaborative approach towards strategic audience development. The involved enterprises appreciated that audience data would be valuable to extend their business models, and that they did not have the tools or skills to exploit audience data strategically. This sparked off a larger collaborative project involving ECC, Agder Research Foundation, University of Agder and the regional University College. The project sought to create a collaborative platform for audience development by employing Customer Relationship

Management (CRM) tools in the cluster enterprises. The project was granted funding by the Oslofjord Research Fund.

3.1 Research method

To describe and analyze how the co-creation evolved among the enterprises in Blender Collective, we conducted a longitudinal case study. A case study is considered a suitable approach for examining emerging complex phenomena (e.g., IS value co-creation) in real-life settings (Eisenhardt 1989), to induce new theory (Benbasat et al. 1987). When theories are at their formative stage, case studies are well suited and an appropriate approach when answering research questions such as how and why things are done (Yin 1994), (Benbasat et al. 1987). Data collection took place over five years between May 2015 and January 2019. The empirical data was collected from project documents, 17 in-depth interviews, two study trips, four workshops, four steering group meetings, and a survey at the end of the project. All primary data was collected, transcribed and analyzed by the same team of researchers.

We decided that it would be important to explore how the co-creation process evolved over time and how it influenced the ability to create IS value among the cluster members and in the cluster as an entity. We therefore decided to do a longitudinal case study, and to utilize process theory to explore how events evolved over time (Pentland 1999). We initially developed an empirical project narrative (Langley 1999) to manage the analysis of our complex data. As a strategy to create a narrative of the project as it unfolded over time, we adopted the guidelines from Pentland (1999), who suggests that in addition to the temporal (sequence of time) feature, the research should focus on four other perspectives including focal actor(s), identifiable narrative voice, evaluative frame of reference and other indicators of content and context.

To secure potentially diverging narratives on the goals and content of the project from groups that were less active than the focal groups in the project, we developed a survey targeting non-adopters from the initial network supporting the project. Here, we targeted companies that for different reasons were not able to take an active part in the project. We interviewed them on how they saw the value of the project, what they could learn and gain from participation, as well as how they saw the value in the project's idea of co-creation.

By triangulating data from project documents, observations, interviews and the survey, we were able to observe and interpret how the project evolved over time, as is illustrated in Figure 1. We conjectured that the interviews and the survey would help us assess critical issues related to participation in the project. It would be valuable for

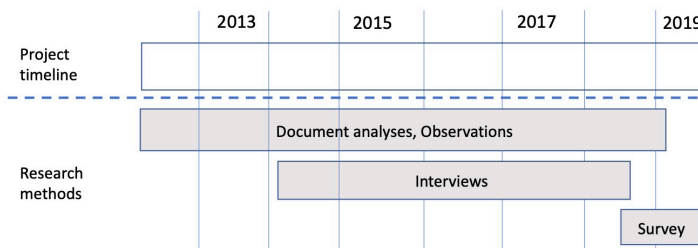


Figure 1. Project timeline and research methods

understanding the initial phase before the “IT investment” in Soh And Markus’ (Soh and Markus 1995) process model, as well as the “IT conversion process”. The document analyses and observations would be valuable to assess how the co-creation process unfolded. Understanding this process would help us understand how the process contributed to a better understanding of the potential of the CRM technology and how it could create business value for the members. Furthermore, we would learn how cluster members perceived the value of new business models, such as sharing audience data. These sources would therefore in particular be valuable for assessing the contribution from co-creation to the IT investment phase as well as the IT conversion process, but also to the IT use process and the Competitive Process in Soh And Markus’ (Soh and Markus 1995) process model.

This allowed us to use information from observations and interviews and follow this up in subsequent interviews and final survey. Not all enterprises from the creative industries participated in the project. To gain a deeper understanding regarding recruitment to co-creation and the motives for participating in the project from the population of all relevant enterprises in this context, we included both participants and non-participants in the final survey. Since no official record of the population exists, we used snowball sampling to forward the questionnaire to relevant participants. We estimate the population of relevant creative enterprises in this region to be around 70. 60 enterprises are now members of Blender Collective, and 40 enterprises participated in the survey. Of the 40 respondents to the survey, 10 enterprises were not members and did not participate in the project.

4 Results

The ultimate goal for the shared CRM is to facilitate data analytics expertise for both individual and collaborative purposes. We found that there were several issues that influenced the process and content of co-creation of IS business value in this case. We identified challenges to recruiting participants to co-creation, and subsequently four challenges that impeded the ability to realize the IS business value. We further found that co-creation contributed to IS business value in four ways. We will address the challenge of recruitment in establishing co-creation first, and then look at how co-creation contributed to IS business value.

4.1 Recruitment and establishing the co-creation initiative

During the project period, the ability to recruit participants increased gradually, and the number of participants grew from 25 enterprises in 2010, to 45 enterprises in 2014. In 2018 the number of members had grown further to around 60. The survey in late 2018 received a total of 38 responses from 28 members that had joined Blender Collective, and 10 enterprises that did not join. Despite the growth in recruitment, onboarding of enterprises does not secure effective co-creation of IT business value where enterprises also engage themselves in the joint efforts.

During initial phases of the project, the participants discussed common needs and potential benefits from participating in the project. The need for increasing revenue through audience development was the most common and important goal stated in the project documents. Other motives were also described, including the ability to communicate and share resources between cluster members, access to training programs and workshops, and many joint efforts that aimed at developing new offers and expanding the market for unique experiences, strengthen the participation between buyers and suppliers, as well as cooperation to develop joint IT support services and on research and development. These motives were confirmed in many interviews, and it was characteristic for the common narrative among participants that non-participants clearly lacked a positive view on these motivations.

A central member of the cluster's management team remarked that "the dialogue with external consultants and with the other networks we have visited in Cambridge and Nottingham has made the members open their eyes for this". He further expresses that "it is frustrating that a portion of the members has not seen the potential, but this is a process we have been through, and I feel that we have established this understanding now". Another participant in the cluster elaborate further on this: "We should probably have spent more time on creating a common basis for the project and

explained what it is doing, so that more companies had seen it as their project”. Common for these narratives is the idea that non-participants have not seen the project’s potential nor the need for a new ticketing system with CRM functionality”. To test these assumptions, we wanted to construct the non-participants’ own narrative on these issues as a contrast or control against the participants. We used a survey to collect the views from both participants and non-participants to compare how they saw the benefits from participating in a cluster like Blender Collective. The survey tested whether these assumptions were true (see appendix 2 for descriptive statistics). The respondents were asked about what they saw as benefits from participating in a cluster like Blender Collective. An independent samples t-test revealed that the responses on potential benefits from the non-participants were not statistically different from the responses of those who participated. A clear majority of non-participants saw access to information from the cluster as highly valuable, and a majority responded that they saw cooperation as positive to develop new offers in the market. Further, 70% of the non-participants disagreed that conflicts between participants were a hinder to their participation, that their lack of participation was related to a lack of faith in projects like this, or to a lack of a good climate for cooperation. Rather, the survey responses revealed that other issues were likely more important in the recruitment phase. Non-participation seemed to be caused by practical issues such as the lack of a clear invitation (40% agreed, whereas 20% disagreed) and that they had not received enough information at the start of the project (56% agreed and 22% disagreed). Based on this, it seems clear that recruitment to co-creation could not be explained by a lack of a common view on project vision, goals and motivation to participate. Rather, these views seem not enough for successful recruitment. Practical issues were more important in this case for recruiting participants to co-creation, and it became clear that the common narrative of the participants provided an incorrect description on the motives of the non-participants.

4.2 Challenges

There were several challenges that hampered the development of the shared CRM. The attempts to resolve them have not always been successful so far in the process. These challenges are both external and internal. First, we found that the lack of resources was a significant challenge. Almost all cluster members are small enterprises, with an average of three employees. They therefore lack both human and financial resources to take on major changes, and they are therefore rather cautious. A festival manager remarked that “Do we have to be so involved that it starts to be a load on our working hours”? We uncovered that the cluster members had insufficient understanding of the needed

investments in the CRM system and in developing expertise. It was therefore necessary to raise funding, and to have an external partner to lead the project. This was beneficial for building the awareness of what could be achieved by a shared CRM. However, it also led to a lack of leadership amongst the cluster members. The CRM project would require an initial investment, which none of the partners were willing or able to attain, even though the business model clearly showed a medium-term return on investment for all members.

Second, we found that the lack of incentives was also a problem. Most of the cluster enterprises obtain significant proportions of their income from public sources. They have become reliant on such financing. We argue that this has led cluster members to focus more on securing public financing than on developing their ability to innovate to increase income from audience. A manager at ECC noted that “What surprises me, is that everyone is so set on keeping what they already have”.

Third, we found that the cluster members did not have a clear common vision. There was a lack of a strong common vision of the project outcome. This improved gradually through the project, but it did not permeate the cluster. They had different goals and agendas. We found that they generally had a too strong focus on CRM tools, and too little on implementing the new collaborative processes. The cluster enterprises ranged in size from one-person theatre producers to medium-sized venues and festivals. Their perceived needs were sufficiently different, which made it problematic to get agreement on the business model. Different partners in the consortium joined at different times—so whilst there was progress with the initial group, each time a meeting was held, new people came along, and they had to start some processes over again. There was no process for ensuring buy in at every step.

The CEO of a small theatre commented:

We have had to build trust [...], so to present this concept to someone who has not been a part of the process and say, ‘- you can be a part of this on the condition that you feed our joint database with your customers’. I think that would be very difficult.

The owner of a small production company verified this:

We cannot forget, that these are competitors fighting for the same audience and who are in similar markets. To the extent that some might share a business plan or strategy, this is good. However, the more peripheral actors we include, the greater the fear becomes.

Fourth, the lack of leadership was a significant challenge. The cluster received funding for the project through a regional research and innovation fund, Research Fund Oslofjord. A requirement for the funding was that ECC should head the project. This was very unfortunate for the progress of the project, because the director at ECC that headed the project did not have a strong commitment or presence throughout the project. Interestingly, several of the other ECC staff who participated in the project were both committed and very engaged from the start. Both the communication advisor and artistic staff appreciated the value of accessing and sharing data. The fact that ECC led the project also resulted in that there were no strong actors among the cluster members in charge of driving the project through. They were basically waiting for the ECC director to run the project. Despite that this model would give considerable benefits to organizations that ECC support, and bigger opportunities for cultural engagement, the public authorities were not engaged nor enthusiastic about the project. This is partly because ECC as a public body are not allowed to fund the investment in the CRM system, or own a stake in the consortium, since the cluster consists of private enterprises. The managing director at a small event business noted that:

I believe, that if they [County Council] has said no, that it is due to principles of what public bodies can participate in. It is a market system here, so I think they are cautious about entering into these types of enterprises, on the owner side.

4.3 Co-creation of IS business value (internal vs external focus)

The informants perceived that co-creation contributed to IS business value in four ways: building an awareness of the value of audience data, leading to a better ability to master CRM technology, contributing to a better ability to share data and knowledge, and to the development of the competitiveness of the cluster and the cultural industry.

First, we found that the activities in the project made the participants more aware of the value of audience data. As noted above, the awareness and understanding of the potential value of audience data was very low at the start of the project. The cluster members gradually increased their understanding and appreciation of this value, especially when data would be aggregated from all participating cultural organizations in the region. In the final survey, 80% of the participants reported that they learned a lot about the importance of audience data. The following quotes from the later stages in the project illustrate the increased awareness. The owner of a small production company

observed that: “[d]ata is important, not necessarily to see names, numbers and emails, but how to use the data and apply it to something”. The owner of a small production company remarked that “[i]t is important to identify the customer groups and know who they are [...]. That must be the most important goal. If you know that, the ticket sale and profit will come as a result”. The CEO of a small theatre company supported this: “It is important to know whether you target the customers the way you planned”.

The participants therefore realized that the present ticketing system did not permit analysis of audience data. The CEO of a small production company commented:

At the moment we use [large international ticket agent]. [If we want to access customer data]. What we have to do, then, is to ask for a pdf-file from the venue [who uses the ticket agent] and we get a list (sometimes in excel) with [customer data], and then someone in my office manually must feed this information into Mailchimp, [...]. I can't access my CRM relevant data or information or make a system work. I can't run a ticket selling system or an extra business in addition to everything else. If I can get audience data through [a new system] and get help to use it strategically, I think it would enable me to do things I wouldn't be able to do on my own.

He further added:

We don't really know who our audiences are, and we certainly know nothing about their user habits, this is where we are currently working in blindness. We would like, actually we need, to get into position, because now it feels like we are more producers than audiences, and we need a way to retain and develop our own audience.

Second, the participants improved their understanding of the CRM technology, and came to realize that the ability to master this technology was critical to accomplish a better customer relations management. They realized that by running this project they would be able to implement a CRM system that would be far out of reach for each one of them. The managing director of a small event business noted that

I don't see how [the cluster] or any of the other smaller producers in [the cluster] could ever benefit from the larger and more sophisticated systems like [arts and culture specific ticket agent, US], if we weren't doing this together. It would be unattainable both in terms of time and financial investments.

Third, the participants also achieved a greater appreciation of the value of sharing customer data and knowledge about customer relations management. The owner of a small production company remarked that “The more we market each other, the better it will be for all—my audience and your audience are different, but at the same time they are the same people”. Given that the participants are mainly small businesses, they lack the very basic capabilities in customer relations management, and they are too small to improve these capabilities on their own. They realized that they need to muster these capabilities in the cluster. This is therefore perceived as both an important prerequisite for the CRM project, and an important benefit of the project. Participants perceive that this project will improve their ability to share important customer data for the benefit of all the cluster members. This comment from the CEO at a small theatre illustrate this:

What could benefit others is exchange of experiences, e.g., how to extract information on consumer behavior.

The final survey addressed this learning process, and 60% of the respondents reported that they had learned a lot about audience development, whereas 20% reported that they had not learned more.

Fourth, the project participants perceived that the project would be beneficial for the development of the cluster and the cultural industry. It would promote innovation among the cluster members, and it would support their efforts to be relevant to their customers. This again would improve sales and revenues among cluster members. The CEO of a small production company illustrates this: “If everyone partakes and really share their data and work together [it will] make [the cluster] a success”. The CEO of a small producing theatre company corroborated this:

I genuinely believe the more the better, the more we market each other, the better it is for all of us, because x festival’s audience, and my audience, are two very different audiences, and at the same time, they are the same people. I think this thing of competition is just nonsense. There is no competition in our business.

5 Discussion

We have studied the co-creation of IS business value in Blender Collective, a cluster of more than forty enterprises in the cultural sector in Norway. All firms, except for three

medium sized ones, are small enterprises. In that respect they are not very different from general population of enterprises. They started a digitalization project to improve their strategic audience development. We identified several issues from the recruitment phase to the co-creation phase, that can influence how the project as well as the participating enterprises are able to co-create IS business value.

First, there were several challenges that hampered the project. In the recruitment phase, we observed that practical issues such a clear invitation and enough information about the project, were most important for attracting enterprises to the cluster. Contrary to several studies underlining the importance of various motives as drivers of co-creation (see Leclercq et al. 2016 for an overview), we found no significant differences in such motives between participants and non-participants.

In addition to the challenges related to the initiation of the project, we identified four issues that made co-creation of IS business value difficult during the project. The lack of resources was an impediment for the individual members to adopt the CRM system, particularly for the smallest enterprises. It was also an obstacle for the co-creation of IS business value in the cluster. The individual enterprises had little financial and human resources to contribute to the CRM project. On the other hand, by joining efforts and obtaining external funding for the CRM project, they had access to pooled resources. This would make it more feasible to succeed with the CRM adoption. Therefore, we conjecture that the lack of resources is both an impediment to, and a driver for, the co-creation of IS business value.

The lack of incentives was also a serious impediment for the co-creation of IS business value in the cluster. We argue that a strong incentive is a necessary precondition for the implementation of IT in the individual enterprises as well as in the cluster. The project targeted raising the awareness and understanding of the benefits of the CRM system and of strategic audience development, thereby improving the perceived incentives. The co-creation efforts would therefore increase the participants' perceptions of the value for their enterprise, and thus the incentives for participating, which were confirmed by the survey data.

The lack of a strong vision and leadership were also important impediments to co-creation success in the cluster. Literature has demonstrated that a clear common vision and strong leadership are critical success factors for realizing the benefits of enterprise systems implementation projects (Finney and Corbett 2007). The project has not been successful in addressing these factors, and the further efforts in the cluster specifically target these factors.

Second, we saw that co-creation contributed to IS business value in four ways: building an awareness of the value of audience data, building a better ability to master

CRM technology, contributing to a better ability to share data and knowledge, and to the development of the competitiveness of the cluster and the cultural industry. Building such awareness was very important to realizing the IS business value of this project. Building this awareness was a process where the cluster members gradually developed their appreciation of what they could achieve with the CRM technology. We saw that the value from the co-creation efforts mainly came as a result of the co-creation process. We therefore conjectured that a process perspective is appropriate to describe co-creation, consistent with the literature on co-creation (Leclercq et al. 2016). In a recent review of the co-creation literature, Leclercq et al. (2016) identified one general process of co-creation and three subprocesses covering interactions, resource integration, engagement, and a learning process. Based on this view, when IS business value is co-created, co-creation can be conceptualized as an additional process in IS business value creation.

To further conceptualize the components of this joint process of value co-creation, we have adopted the Soh & Markus' process model as a starting point. In doing this, we also acknowledge Schryen's (2013) perspective of co-creation as an important input to IS business value creation, but we extend his internal view of co-creation to also include external co-creation, where multiple external stakeholders interact with an individual enterprise or networks of enterprises, to co-create IS business value. We present a modified conceptualization of the IS business value framework to illustrate how networks of SMEs can co-create IS business value, see figure 2. We integrate previous definitions of IS business value (Schryen 2013) and co-creation (Leclercq et al. 2016; Prahalad and Ramaswamy 2004) and define IS business value co-creation as the process where stakeholders (e.g., suppliers, competitors, regulators, customers and clients) interact with internal resources to identify relevant investments in particular IS assets and then interact to influence how the potential of these assets are realized to impact their multi-dimensional performance. We propose that SMEs may utilize their network to co-create IS-business value in the three processes depicted in the IS business value co-creation framework. By extending the model with a fourth process: the co-creation process, we

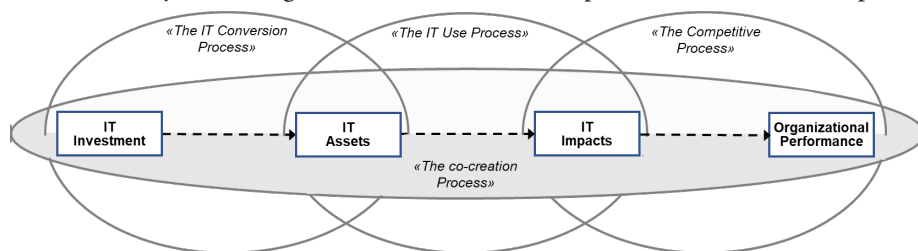


Figure 2. Proposed new framework for IS business value co-creation

show how discussing and disseminating potential IT technologies and concepts in a business network, such as Blender collective, will help SMEs make appropriate IS-investments. By joining efforts, they can also make investments in shared systems and services, making such investments more feasible. We therefore argue that co-creation will aid the IT conversion process. In the same manner, discussing and disseminating how to apply the technology to realize the optimal impacts, in the business network, will aid the IT use process. As we saw in this case, it may be through shared systems and services. Finally, co-creation in a network may have positive implications for the whole network and its capability to compete, thus supporting the competitive process.

Our combination of the literature on IS business value creation and co-creation conceptualizes IS business value co-creation in the individual firm as a potentially co-created process. It would be a function of content, regulatory mechanisms and routines that initiate co-creation, recruit participants and control how their unique resources, assets and capabilities are shared. In establishing co-creation networks, it is important to recruit members with relevant relation specific assets, and complementary resources and capabilities. This will enhance each participating enterprise's ability to improve the selection of IS investments and the processes of IS conversion and IS use. In addition, the co-creation process must develop knowledge on how to establish good routines for knowledge sharing. Succeeding with value co-creation that involves both sourcing and sharing of resources inside a greater network is of vital importance for enterprises with scarce resources, as is the case for SMEs. Nevertheless, the conceptual model described here has general value as a strategic model that points to co-creation as an input for enterprises struggling to transform IS investments into organizational performance.

This study has several contributions. First, our study contributes to an increased understanding of how IS business value can be co-created in a network of firms, thus adding to the literature on IS business value creation in a context characterized by cooperating firms, in this case SMEs in the cultural industry. Despite the fact that innovation and technology management is identified as one of three research streams in a review of the value co-creation literature (Galvagno and Dalli 2014), surprisingly few studies have investigated how enterprises initiate and co-create IS business value in general, including the use of enterprise systems. Second, the study contributes towards integrating co-creation and IS business value creation into a theory of IS business value co-creation based on the Soh and Markus (1995) model and suggests avenues for further research. Third, the study contributes to an increased understanding of practical issues such as factors that influence motives for participating in IS business value co-creation by comparing participants and non-participants.

This was an exploratory study in one business cluster, and therefore has several limitations. First, it utilizes information from a cluster of SMEs in the creative industries in an early attempt to conceptualize on the nature of IS business value co-creation in an area where both the conceptualization of IS business value creation as well as co-creation is developing (Ramaswamy and Ozcan 2018). It is unclear as to what degree our findings are generalizable to other contexts. However, we argue that studying a single cluster is appropriate since analytic generalization is the appropriate mode of generalization for a qualitative study. We are aspiring for generalization to theory rather than to population (Yin 1994). Second, our study conceptualizes with input from a project that is still unfolding. Despite that the project reports several benefits from co-creation of IS business value, there is still limited information of how co-creation functions to influence and improve the processes of IS conversion and IS use within the individual enterprise.

6 Conclusion

Our study demonstrates how co-creation in a cluster of SMEs contribute to the creation of IS business value. Based on this longitudinal case study, we created a process narrative that helped us combine and extend previous literature on co-creation and IS business value creation. By adopting a process perspective, we conceptualize how content and governance of co-creation can influence the process of IS business value creation in the focal firm. Based on this conceptualization, we have proposed a new framework for IS-business value cocreation. We see this framework as an important step to further theorize about IS-business value cocreation. Further research should test and extend this framework.

Our case study of the Blender Collective not only contributes to conceptualizing and closing a gap in the literature on IS business value co-creation in general, it also sheds light on the nature of IS business value co-creation around enterprise systems and in SMEs. We agree with Sarker et al. (2012) in that alliances around an enterprise system provide an excellent platform to study co-creation, but we also believe it can inform us on how value creation around IS in general occurs. We combine literature from these areas and propose an extension of Soh & Markus' IT business value creation framework (Soh and Markus 1995) as a possible starting point for further theorizing. There is a clear need for more theorizing on IS business value co-creation, for instance to understand how co-creation influences the ability to succeed with digitalization and digital transformation, and how the initiative for IS business value co-creation occurs and is developed into a concrete project. Despite the weaknesses in our study, we believe that

our theoretical integration of co-creation and IS business value creation that emerged from the case study of enterprise systems in the Blender Collective, will be applicable to other contexts as well as the basis for empirical studies.

References

- Barney, J. B., (2000). Firm resources and sustained competitive advantage. *Advances in Strategic Management*, (17): 203-227.
- Benbasat, I., Goldstein, D. K., and Mead, M., (1987). The case research strategy in studies of information systems. *MIS Quarterly*, (11:3): 369-386.
- Bharadwaj, A., El Sawy, O., Pavlou, P., and Venkatraman, N., (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, (37:2): 471-482.
- Czakon, W., and Kawa, A., (2018). Network myopia: An empirical study of network perception. *Industrial Marketing Management*, (73:August 2018): 116-124.
- Das, T. K., and Teng, B.-S., (2000). A resource-based theory of strategic alliances. *Journal of Management*, (26:1): 31-61.
- Dedrick, J., Gurbaxani, V., and Kraemer, K. L., (2003). Information technology and economic performance: A critical review of the empirical evidence. *ACM Computing Surveys (CSUR)*, (35:1): 1-28.
- Dehning, B., and Richardson, V. J., (2002). Returns on investments in information technology: A research synthesis. *Journal of Information Systems*, (16:1): 7-30.
- Dorn, S., Schweiger, B., and Albers, S., (2016). Levels, phases and themes of coopetition: A systematic literature review and research agenda. *European Management Journal*, (34:5): 484-500.
- Eisenhardt, K. M., (1989). Building theories from case study research. *Academy of Management Review*, (14:4): 532-550.

- Felzensztein, C., Gimmon, E., and Deans, K. R., (2018). Coopetition in regional clusters: Keep calm and expect unexpected changes. *Industrial Marketing Management*, (69:February 2018): 116-124.
- Finney, S., and Corbett, M., (2007). ERP implementation: a compilation and analysis of critical success factors. *Business Process Management Journal*, (13:3): 329-347.
- Frow, P., Nenonen, S., Payne, A., and Storbacka, K., (2015). Managing co-creation design: A strategic approach to innovation. *British Journal of Management*, (26:3): 463-483.
- Galvagno, M., and Dalli, D., (2014). Theory of value co-creation: a systematic literature review. *Managing Service Quality*, (24:6): 643-683.
- Gnyawali, D. R., and Park, B.-J. R., (2011). Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, (40:5): 650-663.
- Gnyawali, D. R., and Park, B. J. R., (2009). Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. *Journal of Small Business Management*, (47:3): 308-330.
- Grover, V., and Kohli, R., (2012). Cocreating IT value: New capabilities and metrics for multifirm environments. *MIS Quarterly*, (36:1): 225-232.
- Grönroos, C., and Voima, P., (2013). Critical service logic: making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, (41:2): 133-150.
- Kohlbacher, F., (2007). *International marketing in the network economy: a knowledge-based approach*. Palgrave Macmillan, Basingstoke, Hampshire, UK.
- Kohli, R., and 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): 23-29.

- Langley, A., (1999). Strategies for theorizing from process data. *Academy of Management Review*, (24:4): 691-710.
- Leclercq, T., Hammedi, W., and Poncin, I., (2016). Ten years of value cocreation: An integrative review. *Recherche et Applications en Marketing (English Edition)*, (31:3): 26-60.
- Lenka, S., Parida, V., and Wincent, J., (2017). Digitalization Capabilities as Enablers of Value Co-Creation in Servitizing Firms. *Psychology & Marketing*, (34:1): 92-100.
- Lusch, R. F., and Vargo, S. L., (2006). Service-dominant logic: reactions, reflections and refinements. *Marketing theory*, (6:3): 281-288.
- Mata, F. J., Fuerst, W. L., and Barney, J. B., (1995). Information technology and sustained competitive advantage: A resource-based analysis. *MIS Quarterly*, 487-505.
- Melville, N., Kraemer, K., and Gurbaxani, V., (2004). Information technology and organizational performance: An integrative model of IT business value. *MIS Quarterly*, (28:2): 283-322.
- Nambisan, S., (2002). Designing virtual customer environments for new product development: Toward a theory. *Academy of Management Review*, (27:3): 392-413.
- Oz, E., (2005). Information technology productivity: in search of a definite observation. *Information & Management*, (42:6): 789-798.
- Pentland, B. T., (1999). Building process theory with narrative: From description to explanation. *Academy of Management Review*, (24:4): 711-724.
- Prahalad, C. K., and Ramaswamy, V., (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, (18:3): 5-14.

- Rai, A., Pavlou, P. A., Im, G., and Du, S., (2012). Interfirm IT capability profiles and communications for cocreating relational value: evidence from the logistics industry. *MIS Quarterly*, (36:1): 233-262.
- Ramaswamy, V., and Ozcan, K., (2018). What is co-creation? An interactional creation framework and its implications for value creation. *Journal of Business Research*, (84): 196-205.
- Roztocki, N., and Weistroffer, H. R., (2008). Event studies in information systems research: a review. *Proceedings of the Fourteenth Americas Conference on Information Systems*, Toronto.
- Saraf, N., Langdon, C. S., and Gosain, S., (2007). IS application capabilities and relational value in interfirm partnerships. *Information Systems Research*, (18:3): 320-339.
- Sarker, S., Sarker, S., Sahaym, A., and Bjørn-Andersen, N., (2012). Exploring value cocreation in relationships between an ERP vendor and its partners: a revelatory case study. *MIS Quarterly*, (36:1): 317-338.
- 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*, (22:2): 139-169.
- Soh, C., and Markus, M. L., (1995, December). How IT creates business value: a process theory synthesis. *Proceedings of the Sixteenth Conference on Information Systems*, Amsterdam, The Netherlands.
- Stief, S. E., Eidhoff, A. T., and Voeth, M., (2016). Transform to Succeed: An Empirical Analysis of Digital Transformation in Firms. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, (10:6): 1833-1842.
- Trieu, V.-H., (2017). Getting value from Business Intelligence systems: A review and research agenda. *Decision Support Systems*, (93:January 2017): 111-124.
- Vargo, S. L., and Lusch, R. F., (2008). Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science*, (36:1): 1-10.

Yin, R. K., (1994). *Case Study Research: Design and Methods* (2 ed.). Sage Publishing, Thousand Oaks.

Zach, O., Munkvold, B. E., and Olsen, D. H., (2014). ERP system implementation in SMEs: exploring the influences of the SME context. *Enterprise Information Systems*, (8:2): 309-335.

Appendix 1. Interview guide

The background for this interview is that Agder Research conducts an analysis of what expectations are related to participation in the Magica project / collaboration on CRM in the region. The analysis will reveal expectations, success criteria and any concerns the participants in the project have. In addition, there is a need to measure the effect of participation in the project.

Part 1: about the actor / participant

Some background information about the participant and the organization. What kind of role / experience / competence do they have? What kind of history do they have in relation to the project and membership in the cluster?

About the participant:

- Describe your / their role in the organization?
- What kind of background do you have? (education, experience, expertise).
- How long have you been involved in the organization and how did you get the role you have today?

About the organization

- Describe your organization's main activity today; what are you doing, who are you?
- Describe your income model today: what are you selling? What are you doing? Who are your customers? What do you make money from?
- How do you assess the revenue model today? Is it good enough / are you too vulnerable / how can it be better?
- Who are their main partners?
- Describe some of the forms of cooperation; who is taking the initiative for this?

- Tell us about the reason why you stayed in Magica; how long ago, who, what, why? (not relevant to the County Council).

Part 2: Participation in the project:

Background information on project participation and expectations / concerns related to this.

Generally

- Describe the process you had to join the project.
- What was the main reason you wanted to participate? (A specific person, incident or problem, etc.).
- Describe what expectations you have for participating in the project what should happen?)
- Describe what concerns you have about participating in the project what can happen?)
- What is the best case scenario for you in relation to project results?
- How are you going to get there?
- What can you / your organization do to achieve this?
- Assess how realistic this is (time perspective?)
- What barriers can you see for yourself?
- What is the worst case scenario for you in relation to project results?
- What must be done to avoid this?
- What must you / your organization do to avoid this?

In the first workshop you were asked to discuss the benefits of working together on a ticketing system, and the result showed the following: selling more tickets, making more money, reaching out to more people, expanding companies, the opportunity to hire more, develop competence, increase visits to the region, increase cultural offerings for more:

- what would you say was your organization's biggest advantage in collaborating on common ticketing systems and audience development through this project?
- Can you imagine any possible barriers in networking that could prevent you from reaching your goals?

About the ticketing system and the use of data today

- Describe how your ticket system works today? What is the main goal of the system? Who's in charge? How much time does it take to spend / develop the use of the ticketing system?
- How do you assess your own / your organization's expertise in ticketing systems?
- In relation to the development of a SPEC, what functions do you consider to be essential in a common system?

About the audience

- Describe what CRM means to you / your organization?
- Is CRM important to you / your organization? Why it / why not? (better management tools)
- Is audience development an objective of their CRM / ticketing system efforts?
- Can knowledge of the audience assist in artistic / professional development?

- Do you have any overview of your own audience segments today? If so, how are you categorized?
- Do you have any specific data on profitability / etc. on the various segments? Is this important?

Part 3: Measurable indicators

Here we want to map what we can and what we should measure in relation to the process the project is going through. Can you say something about the effect the collaboration has on each player and as a cluster? Is value creation real?

About management tools

- How do you assess strategic initiatives and further development today? What kind of management tools do you use / have access to?
- Number of tickets sold, number of advance sales, more sales, value per. ticket?
- Number of cooperation project?
- What numbers / measurement indicators do you have access to today? (Look at total revenues / costs / administrative costs vs. production costs). What kind of numbers / measurement indicators do you need?

Appendix 2. Survey instrument and descriptive statistics

Background

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>Total number of employees</i>	37	0	11	4.62	4.044
<i>Number of part time employees</i>	37	0	17	4.68	5.769
<i>Participated in the project? 1: Yes 2: No</i>	30	1	2	1.50	.509
<i>How many meetings did you attend?</i>	13	0	9	7.00	3.082
<i>How actively did you participate? 1: Not at all ...5: Highly active</i>	13	0	5	3.38	1.805

Motives for participation (1:Totally disagree – 5:Totally agree)

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>To learn about digitalization</i>	10	1	5	3.40	1.647
<i>To learn about CRM</i>	10	1	5	4.30	1.337
<i>To learn about audience development</i>	10	1	5	4.30	1.337
<i>To build network</i>	10	1	5	3.90	1.370
<i>To increase bottom line through new technology</i>	10	1	5	4.10	1.449
<i>To gain more knowledge about new technology</i>	10	1	5	4.20	1.317
<i>Because many other companies participated</i>	10	1	4	2.10	1.197
<i>Because we believe in participation with other companies</i>	10	1	5	4.30	1.252
<i>To get a better ticketing system</i>	10	1	5	4.20	1.317
<i>Because costs were covered by the government</i>	10	1	4	2.00	1.333

Reasons for non-participation (1:Totally disagree – 5:Totally agree)

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>Did not participate – would have taken too much time</i>	10	1	4	2.60	1.265
<i>Goals and vision were too unclear</i>	10	1	4	2.60	1.265
<i>Did not receive enough information at the start</i>	10	1	5	3.40	1.430
<i>Feared that competitors would steal our ideas</i>	10	1	4	1.90	1.197
<i>Was never invited in a clear manner</i>	10	1	5	3.10	1.287
<i>We do not believe in projects like this one</i>	10	1	3	1.90	.876
<i>Our company did not need to learn about these topics</i>	10	1	3	1.90	.994
<i>The climate for cooperation was too poor</i>	10	1	3	1.70	.949
<i>Incentives were lacking or too weak</i>	10	1	5	3.00	1.247
<i>Conflicts between participants were a hinder to participation</i>	10	1	3	1.60	.966
<i>We had little faith in what the project could achieve</i>	10	1	4	2.30	1.059

Experienced effects (1:Totally disagree – 5:Totally agree)

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>We learned a lot from participating</i>	10	1	4	3.20	1.033
<i>We learned a lot about the importance of customer data</i>	10	1	5	4.10	1.287
<i>For us. the outcome of participation was 1: very low – 5: very high</i>	10	1	4	3.10	1.101
<i>Vi learned much about strategy</i>	10	2	4	3.20	.789
<i>Vi learned much about audience development</i>	10	1	5	3.50	1.269
<i>Vi learned much about how technology can increase revenue</i>	10	1	4	3.40	.966
<i>Vi learned how customer data can increase revenue</i>	10	3	5	3.90	.876
<i>Project showed us that we can benefit from cooperation</i>	10	3	5	3.80	.632
<i>Project taught us how to cooperate with others</i>	10	1	5	3.30	1.160
<i>People in the project contributed to important network building</i>	8	2	5	3.75	1.035

Perceptions regarding the project (1:Totally disagree – 5:Totally agree)

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>The project was managed very well</i>	10	2	5	3.60	.966
<i>Goals and visions were unclear</i>	10	1	5	2.70	1.160
<i>There was not enough information during the project</i>	10	1	4	2.60	1.075
<i>Communication in the project was very good</i>	10	2	4	3.40	.699
<i>Project management was unclear</i>	10	1	4	2.20	1.033
<i>The project had too limited resources</i>	10	1	4	2.70	1.160
<i>Climate for cooperation was very good</i>	10	2	5	3.70	1.059
<i>There was an unfortunate mix of public and private companies</i>	10	1	4	1.90	.994
<i>Incentives for participation were lacking</i>	10	1	4	1.90	.994
<i>Conflicts were a barrier for participation</i>	10	1	4	1.70	.949
<i>The project progressed gradually</i>	10	1	5	3.00	1.155
<i>Fear of leaking info to competitors stopped us from taking part</i>	10	1	4	1.50	.972
<i>The project created very little benefits over the years</i>	10	1	4	3.10	1.101
<i>Cooperation was hindered by conflict between participants</i>	10	1	4	1.60	1.075
<i>The project expected too much from the participants</i>	10	1	4	2.40	1.075

Perception of benefits from cooperation in networks (1:Totally disagree – 5:Totally agree)

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev</i>
<i>Access to information and communication in a cluster</i>	19	1	5	3.47	.964
<i>Education and training programmes in the cluster</i>	19	1	5	3.42	1.017
<i>Activities to expand the market</i>	19	1	5	3.47	.905
<i>Activities that strenghten the cluster towards suppliers</i>	19	1	5	3.37	1.165
<i>Cooperation to develop offers to the market</i>	19	1	5	3.74	.991
<i>Cooperation on R&D</i>	19	1	5	3.21	.787
<i>Cooperation to establish support services to the cluster</i>	19	1	5	3.32	1.057

