

Available online at www.sciencedirect.com**ScienceDirect**

Procedia Computer Science 138 (2018) 492–499

Procedia

Computer Science

www.elsevier.com/locate/procedia

CENTERIS - International Conference on ENTERprise Information Systems /
ProjMAN - International Conference on Project MANagement / HCist - International
Conference on Health and Social Care Information Systems and Technologies,
CENTERIS/ProjMAN/HCist 2018

Co-creation of IT-value in a cluster of small enterprises

Eikebrokk, T.R.^a, Lind, E.^b, Olsen, D.H.^{a*}

^aUniversity of Agder, Post box 422, NO-4604 Kristiansand, Norway

^bAgderforskning, Universitetsveien 19, NO-4630 Kristiansand, Norway

Abstract

There is a growing emphasis on digital transformation in research and business practice. The creation of value from IT-investments is a critical factor in digital transformation. Research has documented that the ability to realize IT-value is a very challenging endeavor, especially for small enterprises who because of resource poverty are dependent on external input and cooperation with other companies. There is a general lack of research on the phenomenon of how IT-value is co-created, particularly in small firms.

This paper reports from a study of a cluster of performing arts organizations, Blender Collective. They realized that audience data is a key issue, and that they lack the tools to work strategically with audiences. Blender Collective members therefore engaged in a project to develop a collaborative approach towards strategic audience development. The results expand our understanding of the dynamics related to co-creation in a cluster of small businesses. We find that co-creation can be an important avenue for small enterprises to invest in IT and realize IT-value. We propose a modified IT-value framework to explain how networks of small enterprises would co-create IT-value.

© 2018 The Authors. Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Selection and peer-review under responsibility of the scientific committee of the CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies.

Keywords: Co-creation; IT-value; Cluster; Small firms; Cultural industry; CRM

1. Introduction

Rapid development in digitalization creates a pressure on firms to innovate and transform their businesses by implementing digital technologies and related business concepts [1]. This digital transformation is challenging for most firms who strive with understanding the opportunities and consequences of digitalization to their business and

* Corresponding author. Tel.: +47-38141706

E-mail address: dag.h.olsen@uia.no

1877-0509 © 2018 The Authors. Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Selection and peer-review under responsibility of the scientific committee of the CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies.

10.1016/j.procs.2018.10.068

how they should transform [2]. This challenge is particularly demanding for small firms due to their general lack of resources. One strategy to develop this capability to innovate and transform is to cooperate with others, but establishing and effectively manage a co-creation strategy has many challenges, including possible tensions between the participants [3].

There is a general lack of research on the phenomenon of how co-creation influences value-creation from digitalization and digital transformation in different contexts [1]. To contribute to a better understanding of this phenomenon, this study reports from a case study of a network of more than forty small firms in the cultural sector. The network, called the Blender Collective, decided to cooperate in their efforts to transform their industry and to improve their cultural services. By initiating a common digitalization project to implement a CRM system, the actors have expressed ambitions to cooperate and learn more about their customers. Developing a joint capability to analyze customer data will be the basis for improved services and improved market coordination. We wanted to explore how IT-value co-creation is manifested in this cluster. We thus raised the following research question:

- How does IT-value co-creation manifest itself in a network of small enterprises?

The paper is organized as follows: The next sections present related work on co-creation and IT-value. Then we present the research method, followed by the results and a discussion of potential implications for further research. Finally, we present the conclusion.

2. Related work

The management literature has for many years recognized the importance of interdependence between firms, resulting in social relationships and networks [4, 5]. Through such interactions, the participants have been able to create opportunities for competitive advantage through new sources of information. Since the early 2000s a rapidly growing stream of research has conceptually described these interactions as co-creation, that offers significant input to the innovation process [6]. By unlocking joint sources of value creation through co-creation, these networks enhance competitive power [7]. This interaction is particularly important when the market is dynamic, and the companies are 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 [8]. Even though co-creation can result in substantial advantages for companies, there is a general lack of research on the nature of co-creation in different contexts and how it can be managed [9, 10]. Questions that need more research include how different firms that are not suppliers or customers to each other, collaborate horizontally in business networks, and how co-creation as a dynamic process contributes to the well-being of the participants as well as the value-creation of the whole ecosystem [11].

These latter issues in the literature are of particular relevance to the network we study, where digital transformation resulting from co-creating a customer focused strategy based on IT-investments in CRM, might be challenged by rivalry between firms who are also competitors to each other. One relevant stream of research to better understand co-creation is co-competition research (see Dorn, Schweiger and Albers [12] for an overview). Co-competition 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, firms' perception of strategy and goals, as well as how the relationships between the firms are influenced by relative position, compatibility and trust [12]. Also, the risk of opportunistic behavior was reduced with increasing levels of trust [13], whereas studies of SMEs identified resource endowment, goal characteristics, firm capabilities, strategy formulation and perceived vulnerability as factors that determine co-competition [14]. The co-competition literature provides only limited knowledge on the impact of multi-actor settings, where a number of SMEs participate. In the recent review of the co-competition literature, Dorn, Schweiger and Albers [12] 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 [15], 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 IT-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 [11]. As such, IT-value co-creation integrates perspectives on IT-value creation with perspectives on how value is co-created.

We have adapted Trieu's framework [16] as an analytical lens to help us identify co-creation of IT-value. Although Trieu's framework was developed for Business Intelligence, it is synthesized from three acknowledged IT (IS) business value frameworks [17-19]. The framework is therefore appropriate for IT-value creation in general. Figure 1 illustrates the link from IT-investments to organizational performance. This can be perceived as a chain of necessary conditions, such that to enhance organizational performance requires IT-impacts, which in turn requires IT-assets, and IT-investments. IT-investments consist of investments in hardware, software, and technical infrastructure, human resources, and management capabilities [18]. IT-assets consist of IT, human resources, and application portfolios [17-19]. IT-impacts refer to one or more of the following benefits: improved operational efficiency of processes; new/improved products or services; and/or strengthened organizational intelligence and dynamic organizational structure [17, 19].

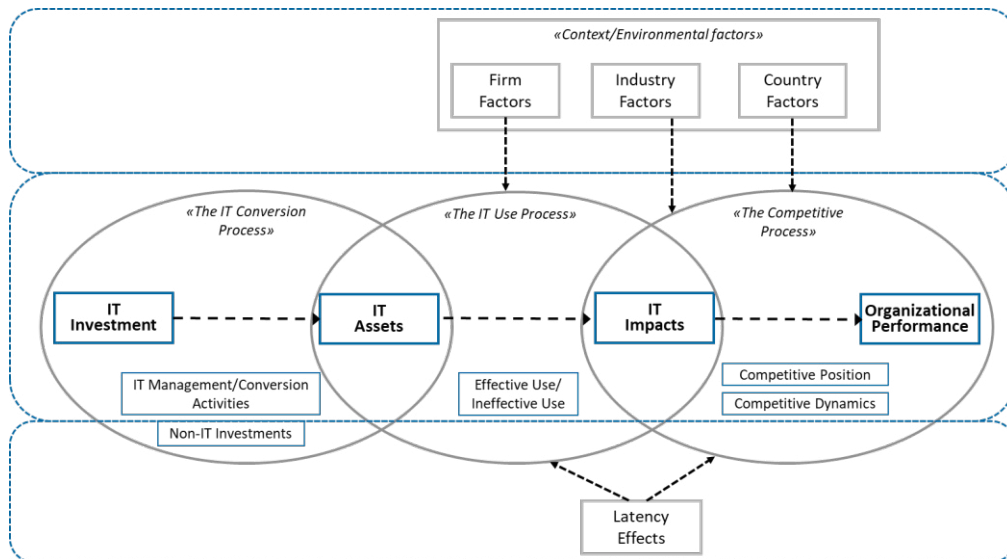


Fig. 1. Framework for IT-value creation (Adapted from [16])

3. Setting and research method

3.1. Research setting

Blender Collective is a network of approximately 45 enterprises in the creative industry sector in the Østfold county of Norway. All but three of the enterprises are small, three are medium sized. The cluster was to begin with called Arena Magica. It began as a project initiated by Østfold County Council (ØFK) 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 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 exploit audience data strategically. This sparked off a larger collaborative project involving Østfold County Council, Agder Research Foundation, University of Agder and Østfold 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 Regional Research Fund Oslofjord.

3.2. *Research Method*

This is a longitudinal case study of the enterprises in Blender Collective. A case study is considered a suitable approach for examining emerging complex phenomena (e.g., IT-value co-creation) within real-life settings [20], to induce new theory [21]. Case studies are well suited when answering research questions such as ‘how’ and ‘why’ things are done [22]. This approach is appropriate when theories are at their formative stage [21].

The data was collected over three years between May 2015 and April 2018. The empirical data was collected from 17 in-depth interviews, two surveys, two study trips, four workshops, and four steering group meetings. All primary data were collected, transcribed and analyzed by the same team of researchers.

4. Results

The goal for the collaborative CRM is to enable data analytics expertise for both individual and collaborative purposes. We found that there were several issues that influenced the co-creation of IT-value in this case. We identified four challenges that impeded the ability to realize the IT-value. However, these challenges also contributed to the need for co-creation. We further found that co-creation contributed to IT-value in four ways. We will address the challenges first, and then look at how co-creation contributed to IT-value.

4.1. *Challenges*

The development of the collaborative CRM has not been straightforward, and specific challenges have appeared, and efforts to resolve them have not always been successful so far in the process. These challenges are both external and internal. First, the lack of resources was an important challenge. Most of the cluster members are small enterprises, with an average of three employees, and they therefore lack both human and financial resources to embark on substantial innovations. They are therefore rather conservative. A festival manager remarked that “Do we have to be so involved that it starts to be a load on our working hours?” We found that the cluster members had an inadequate comprehension of the required investments in the CRM system and in developing expertise. They therefore depended on external funding and an external partner to lead the project. This helped develop the awareness of what they could achieve by a collaborative CRM, but it also led to a lack of leadership amongst the cluster members. The project would entail an initial investment, which none of the partners were able or willing to attain, even though the business model clearly showed a medium term saving for all the enterprises.

Second, the lack of incentives was also a problem. Most of the cluster members receive substantial shares of their revenues from public funds. They have become dependent on such backing. We contend that this has led the cluster enterprises to focus more on securing public funding than on increasing their capacity to increase revenue from their audience. A manager at ØFK stated that “What surprises me, is that everyone is so set on keeping what they already have.”

Third, the cluster members lacked a clear common vision. There was a lack of a strong common vision of the project outcome. This improved gradually through the project, but they did not achieve a strong awareness among the cluster enterprises. They had different goals and agendas. We found that they generally had a too strong focus on CRM tools, and too little on new collaborative processes. The cluster companies ranged in size from one-person theatre producers to medium-sized venues and festivals, and their perceived requirements were sufficiently different to make it difficult to get agreement on the business model. Different enterprises in the consortium entered at separate 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 each stage.

The manager at a small theatre noted that “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 corroborated this: “[...] 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 project received funding through a regional research and innovation fund, Regional Research Fund Oslofjord. A prerequisite for the funding was that ØFK should lead the project. This was very unfortunate for the progress of the project, because the director at ØFK that led the project did not have a strong dedication or presence during the project. Interestingly, several of the other ØFK staff who participated in the project were both dedicated and very involved from the start. Both the communication advisor and artistic staff appreciated the value of accessing and sharing data. The fact that ØFK 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 ØFK director to run the project. Despite that this model would give considerable benefits to organizations that ØFK support, and bigger opportunities for cultural engagement, the public authorities were not engaged nor enthusiastic about the project. This is partly because ØFK 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”.

4.2. Co-creation of IT-value

We found that the informants perceived that co-creation contributed to IT-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, the activities in the project made the participants more conscious 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 became more aware of this value, particularly when their data would be aggregated with that of other cultural organizations in the region. The following quotes from the later stages in the project illustrate the increased awareness. The owner of a small production company observed that “Data is important, not necessarily to see names, numbers and emails, but how to use the data and apply it to something.” The owner of another small production company noted that “It 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 manager of a small producing theatre company corroborated this: “It is important to know whether you target the customers the way you planned.”

The participants therefore also became aware that the existing ticketing system did not allow analysis of audience data. The manager of a small production company noted that “At the moment we use [large international ticket agent]. [If we want to access customer data] What we have 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 continues on this path of thought “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 cluster members increased their understanding of the CRM technology, and that the ability to master this technology, was key to achieve a better customer relations management. They appreciated that by undertaking this project they would be able to implement a CRM system that would be far out of reach for them as individual members. 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 cluster members also gained a greater appreciation of the value of sharing customer data and knowledge about customer relations management. The owner of a small production company noted 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.” Since the members of the cluster are mainly small businesses, they lack the very essential capabilities in customer relations management, and they are too small to raise these capabilities on their own. They realized that they need to assemble these capabilities in the cluster. So, this is viewed as both an important prerequisite for the CRM project, and an important benefit of the project. They perceive that this project will make them better at sharing important customer data for the benefit of the cluster members. This comment from the manager at a small theatre is illustrative: “What could benefit others is exchange of experiences, e.g. how to extract information on consumer behavior”.

Fourth, the cluster members perceived that this project would be valuable for the development of the cluster and the cultural industry. It would support change and innovation among the cluster members, and it would support their efforts to be relevant to their customers. This again would boost sales and improve the revenues of the cluster members. The manager 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 manager 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 IT-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. They started a digitalization project to improve their strategic audience development. We identified several issues that influence the participating enterprises’ ability to co-create IT-value.

First, we identified four issues that make co-creation of IT-value difficult. Lack of resources was an impediment for the individual members to adopt new enterprise systems such as CRM, particularly for the smallest enterprises. It was also an obstacle for the co-creation of IT-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 IT-value.

Lack of incentives was also a serious impediment for the co-creation of IT-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.

Lack of a clear common vision and leadership were also important impediments to success. Literature has demonstrated that a clear common vision and strong leadership are critical success factors for realizing the benefits of enterprise systems implementation projects [23]. 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 IT-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 IT-value of this project. We contend that this relates primarily to the “IT conversion process” in the IT-value framework, while also illustrating what is to be achieved in the “Competitive process” phase. This awareness is an important precondition to raise the required commitment and resources for the project.

The project also raised the understanding of the CRM technology, and the insight that implementing this technology would require the joint efforts of the cluster members. The co-creation efforts thus also contributed to the ability to undertake the IT implementation, contributing to the first process in the IT-value framework.

The project further raised the appreciation of the benefits of sharing customer data. This strengthened the rationale for implementing the CRM system, thus contributing to the “IT conversion process” while also illustrating “the IT use process” and the IT impacts.

In addition, the project led to an increased understanding of how CRM concepts and strategic audience development would strengthen the cluster and the cultural industry. We argue that this helped build the support and commitment for the project, contributing to the rationale for the IT investment and thus supporting the IT conversion process, while illuminating the IT-value that can be attained through long term effects on the cluster and the cultural industry.

Based on the discussion above, we contend that co-creation may be an important avenue for small enterprises to invest in IT -- and to realize IT-value. We argue that the Soh and Markus framework should be extended to incorporate an inter-organizational perspective on co-creation. Thus, we have modified the IT-value framework to illustrate how networks of small enterprises can co-create IT-value, see figure 2. We propose that small enterprises may utilize their network to co-create IT-value in the three processes depicted in the IT-value co-creation framework. Discussing and disseminating potential IT technologies and concepts in a business network, such as Blender collective, will help small enterprises make appropriate IT-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.

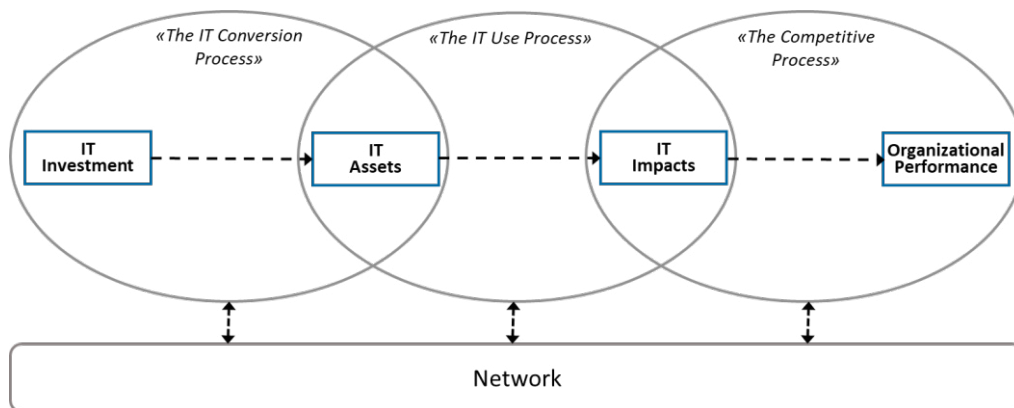


Fig. 2. Framework for IT-value co-creation

6. Conclusion

Our study demonstrates how IT-value co-creation takes place in a network of small firms in the creative industries. As such, it contributes to closing a gap in the literature on IT-value co-creation in general and in particular on the nature of IT-value co-creation in SMEs. Improved models for IT-value co-creation is important to understand digitalization, and we propose Soh & Markus' IT-value creation framework [19] as a possible starting point for further theorizing. Co-creation can be better understood by extending their process model of IT-value creation with input from the inter organizational network or ecosystem surrounding the focal firm.

References

- [1] Stief, S.E., Eidhoff, A.T., Voeth, M. Transform to Succeed: An Empirical Analysis of Digital Transformation in Firms. World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering. 2016, 10, 1833-42.
- [2] Bharadwaj, A., El Sawy, O., Pavlou, P., Venkatraman, N. Digital business strategy: toward a next generation of insights. 2013.

- [3] Gnyawali, D.R., Park, B.-J.R. Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*. 2011, 40, 650-63.
- [4] Czakon, W., Kawa, A. Network myopia: An empirical study of network perception. *Industrial Marketing Management*. 2018.
- [5] Grönroos, C., Voima, P. Critical service logic: making sense of value creation and co-creation. *J Acad Market Sci*. 2013, 41, 133-50.
- [6] Nambisan, S. Designing virtual customer environments for new product development: Toward a theory. *Academy of Management Review*. 2002, 27, 392-413.
- [7] Prahalad, C.K., Ramaswamy, V. Co-creation experiences: The next practice in value creation. *Journal of interactive marketing*. 2004, 18, 5-14.
- [8] Kohlbacher, F. *International marketing in the network economy: a knowledge-based approach*, Springer, 2007.
- [9] Felzensztein, C., Gimmon, E., Deans, K.R. Coopetition in regional clusters: Keep calm and expect unexpected changes. *Industrial Marketing Management*. 2018, 69, 116-24.
- [10] Frow, P., Nenonen, S., Payne, A., Storbacka, K. Managing co-creation design: A strategic approach to innovation. *British Journal of Management*. 2015, 26, 463-83.
- [11] Galvagno, M., Dalli, D. Theory of value co-creation: a systematic literature review. *Managing Service Quality*. 2014, 24, 643-83.
- [12] Dorn, S., Schweiger, B., Albers, S. Levels, phases and themes of coopetition: A systematic literature review and research agenda. *European Management Journal*. 2016, 34, 484-500.
- [13] Das, T.K., Teng, B.-S. A resource-based theory of strategic alliances. *J Manage*. 2000, 26, 31-61.
- [14] Gnyawali, D.R., Park, B.J.R. Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. *Journal of small business management*. 2009, 47, 308-30.
- [15] Lenka, S., Parida, V., Wincent, J. Digitalization Capabilities as Enablers of Value Co-Creation in Servitizing Firms. *Psychology & Marketing*. 2017, 34, 92-100.
- [16] Trieu, V.-H. Getting value from Business Intelligence systems: A review and research agenda. *Decis Support Syst*. 2017, 93, 111-24.
- [17] Melville, N., Kraemer, K., Gurbaxani, V. Information technology and organizational performance: An integrative model of IT business value. *Mis Quart*. 2004, 28, 283-322.
- [18] Schryen, G. Revisiting IS business value research: what we already know, what we still need to know, and how we can get there. *Eur J Inform Syst*. 2013, 22, 139-69.
- [19] Soh, C., Markus, M.L. How IT creates business value: a process theory synthesis. In: *Sixteenth Conference on Information Systems*, Amsterdam, The Netherlands, 1995, pp. 29-41.
- [20] Eisenhardt, K.M. Building theories from case study research. *Academy of management review*. 1989, 14, 532-50.
- [21] Benbasat, I., Goldstein, D.K., Mead, M. The case research strategy in studies of information systems. *Mis Quart*. 1987, 369-86.
- [22] Yin, R.K. *Case study research: Design and Methods*, Applied social research methods series, 5. Biography, Sage Publications, London. 1994.
- [23] Finney, S., Corbett, M. ERP implementation: a compilation and analysis of critical success factors. *Business Process Management Journal*. 2007, 13, 329-47.