Creating trust through communication within a knowledge ecosystem: an empirical perspective of SMEs

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Abstract:

The interest towards mutual trust in the ecosystem is increasing in the current literature. Therefore, the purpose of this research is to explore the significant role of effective communication in building mutual trust in knowledge-based ecosystem collaborations as small and medium enterprises (SMEs) need to collaborate across organizational boundaries due to the lack of internal resources. We employ a qualitative study and collected empirical data through a focus group workshop and semi-structured interviews with SMEs and other stakeholders in a regional ecosystem. Our findings suggest that knowledge exchange with other ecosystem actors is based on emplaced trust among the partnering actors, where open and transparent communication and information sharing are the keystone determinants of building trustworthy relationships in the ecosystem. Furthermore, we have found that close geographical proximity and intermediary facilitation activities are critical in developing efficient communication, resulting in developed mutual trust. Co-location helps in utilizing personal relations, sharing transparent and open information, and collaborating with inter-organizational teams in close proximity, while intermediaries initiate collaborations between different ecosystem actors and function as trust-bridging entities which drive SMEs to develop know-how of their partners. Relevant theoretical and managerial implications are also discussed.

Keywords: Mutual trust, communication, knowledge ecosystem, SMEs, intermediary organizations

1. Introduction

The contemporary view on innovation elucidates that inter-organizational interactions are critical for firms to achieve innovative solutions. Given the effectiveness of outside-in innovation, organizations are increasingly forming collaborations with different stakeholders for joint value creation and proposition. Such collaborations are particularly critical for small and medium enterprises (SMEs) to overcome the limitations in their internal innovation processes (e.g., lack of financial and non-financial resources, limited cognitive abilities, and limited internal R&D capabilities) (Deschamps et al., 2013). Ecosystem-based collaborations include a multitude of actors that join forces to share and acquire unique knowledge that acts as a necessary ingredient in building innovative solutions and capabilities (Shahzad and Takala, 2022). Since these collaborations include competitors, collaborators, and other value chain actors, relational aspects of mutual trust and commitment are deemed critical success factors (Shahzad, 2018; Shahzad et al., 2018; Shahzad et al., 2020). Particularly in the context of collaborative innovation, mutual trust is seen as a prerequisite for successful outcomes (Hardwick et al., 2013). Developing trust among collaborators requires communication strategies and therefore effective communication is considered one of the key tools that contribute to trust building process (Kim and Chai, 2007).

Extant research outlines that trust has a key role in the effective functioning of collaborative mechanisms, such as, Planko et al. (2017) explain that trust is a critical component in building strategic networks, while Barrane et al. (2020) argue that trust is the key enabler in collaborative new product development related projects. Similarly, other researchers emphasize that trust is a critical aspect in forming long-term collaborations between suppliers and project-based firms (Xu et al., 2021), buyer's supplier relations (Shahzad, 2018; Shahzad et al., 2018; Shahzad et al., 2020), knowledge sharing and networking building in collaborative innovation processes (Hardwick et al., 2013), and SMEs involvement in open innovation (Tobiassen and Pattersen, 2017). Moreover, researchers also assert that coordination and open communication are basic components in trust building among the collaborating parties (Shahzad et al., 2018) and the actors in the innovation ecosystem (Steinbruch et al., 2021). Although the existing research (e.g., Steinbruch et al., 2021; Pattinson et al., 2022) taps into analyzing the trust and collaboration mechanisms from the ecosystem context, yet studies are limited that empirically provide a detailed view on communication strategies that provide a steppingstone for ecosystem actors to build and reproduce trust in an ecosystem. Only a few scholars have conceptualized the influence of trust among actors (e.g., Steinbruch et al., 2021), and trust and open communication (Shahzad and Takala, 2022) from an innovation ecosystem perspective. Therefore, this research aims to empirically analyze communication strategies that enable SMEs to build and reproduce trust in ecosystem actors to share and acquire novel knowledge.

We focus on elements of communication (particularly transparency and openness in sharing information) and close spatial proximity that helps ecosystem actors to overcome the barriers in their collaborations. We also outline mechanisms through which initial trust is built among ecosystem actors and how it evolves into a long-standing deep trust that is key to success in ecosystem-based collaborations. The findings of this research are based on empirically analyzing the regional knowledge ecosystem situated in Northern Finland. Such a regional knowledge ecosystem consists of SMEs, large firms, universities, and intermediary organizations, where close spatial proximity and interdependencies among the ecosystem actors are observed. This research adds important insights to

the existing debate on the role of communication in building trust in collaborative innovation processes and knowledge sharing in an ecosystem context, thus, we contribute to seminal literature on ecosystem and trust building.

2. Theoretical background

2.1 Trust and communication

Inter-firm trust has received a great amount of scholarly interest during the last couple of decades. It is considered as an expectation/willingness, integrity, fairness, reliability (Shahzad et al., 2020; Shahzad, 2018), as well as vulnerability (Michalos, 1990). In addition, mutual trust has been associated with several concepts simultaneously such as confidence, reliance, and cooperation, and has been used interchangeably in prior research. However, most scholars have been considering mutual trust as one party's willingness to believe in another party despite being vulnerable to their actions (Mayer et al., 1995). Inter-firm trust has also been recognized as a non-contractual mechanism, where one partner is willing to show confidence in the other partner's reliability, benevolence, and integrity (Zaheer et al., 1998). Therefore, we define trust as the willingness of one partner to be vulnerable to another partner based on a belief that the counterpart is reliable and acts predictably in the best interest of the relationship. Prior literature on mutual trust has also highlighted that trust-based relationships generate more value and relationship performance than relationships where trust is absent (e.g., Ali et al., 2021; Shahzad et al., 2018), as it involves the concerns of knowledge leakage and asymmetric information sharing which can risk the true nature of knowledge-based collaboration.

Prior research has also identified communication as an important antecedent of mutual trust which, as an effective tool, enhances the partners' confidence by exchanging meaningful and timely formal and informal information between the partners (Silva et al., 2012; Kim and Chai, 2017). Personal relations and socialization in close geographical proximity facilitate the development of a common understanding of issues, which drives them to create a synchronization that fosters a trustworthy environment when engaging. Several studies (e.g., Silva et al., 2012) have supported a positive link between communication and trust. Such exchange of formal, informal, timely, and frequent information develops confidence stimulating reciprocity in partners' behavior, and can go a long way in creating a relational bond. In addition, clear communication between relationship parties alleviates the likelihood of unpleasant surprises and resolving conflicts quickly (Shahzad et al., 2020), thereby contributing to building trust. The exchange of such fluent information facilitates openness and willingness to rely on the other partner (Silva et al., 2012), contributing to developing close ties among partners and maintaining a long-term relationship (Shahzad, 2018; Shahzad et al., 2018).

2.2 Knowledge ecosystem and building trust in ecosystem-based collaborations

The collaboration among business entities is not a nuanced concept, indeed reviewing earlier philosophies of economics reveals that the traditional market systems were built on traded interdependencies between buyer's and suppliers' relationships (Dosi, 2000), and trust has remained a critical aspect in such relations (Planko et al., 2017). However, compared to traditional buyer-supplier interactions, ecosystem collaborations are complex and entail characteristics of both traded and untraded interdependencies (Scaringella and Radziwon, 2018). Moreover, in their nature, ecosystem interactions are complex and consist of multiple layers of actors i.e., core value chain actors, intermediary organizations, and research institutes (Mei et al., 2019; Radziwon and Bogers, 2019). Core value chain interactions can be further distinguished into collaborations and coopetition (Mei et al., 2019; Radziwon and Bogers, 2019), while intermediary organizations commonly act as

knowledge brokers in the innovation process (Howells, 2006), and research institutes (including universities) are known as knowledge beacons (Van der Borgh et al., 2012). The logic of studying the ecosystem from the actor's and activities' perspective is consistent with Adner (2017) ecosystem as a structure view which is operationalized in this research by empirically analyzing the multitude of interactions among ecosystem actors that joined forces to share and acquire unique knowledge on developing innovative solutions. Thus, the conceptual underpinning of the research is built on a knowledge ecosystem where the core purpose of collaborations remained confined to value creation for its actors by facilitating the exchange of unique knowledge (Van der Borgh et al., 2012; Järvi et al., 2018).

Prior literature on innovation and ecosystem highlights that organizations are increasingly forming external collaborations to complement their internal knowledge and resource bases. External knowledge has been recognized as a key source to enhance organizational intellectual and social capital (Oliveira et al., 2020) and a major enabler to improve innovation processes (Miller et al., 2016) and strategic orientation (Keskin, 2006). However, in their external knowledge search process, organizations face various challenges, such as lack of trust, knowledge leakage, and risk of opportunism (Fernandes et al., 2019). Therefore, it is critical for collaborating actors to devise certain governance mechanisms that promote mutual trust building and help them to avoid risks that are embedded in the collaboration process. In the context of the knowledge ecosystem, the sociological aspect of governance mechanisms (trust and communication) becomes more relevant since such ecosystems are usually not orchestrated by the focal firm (Scaringella and Radziwon, 2018), instead, universities take the dominant role (Van der Borgh et al., 2012). One of the compelling arguments in the context of a university-led knowledge ecosystem is that close spatial proximity is the most prominent element (Van der Borgh et al., 2012) which is necessary for building mutual trust among collaborative parties (Barrane et al., 2020; Bönte, 2008). Similarly, intermediary organizations also play an important role in connecting different actors in an ecosystem (Randhawa et al., 2022), and facilitating innovative projects by acting as knowledge brokers (De Silva et al., 2018). Their intermediating role acts as connecting actor and enhances initial trust-building among the collaborating parties. Blanka and Traunmuller (2020) found that intermediaries connect and facilitate competitors in their collaboration process.

Trust is the most important factor in building long-term relations among ecosystem actors which ultimately increases the efficiency of ideas sharing in the ecosystem (Teramoto and Jurčys, 2017). Similarly, researchers e.g., Sankowska et al. (2013) argued that mutual trust is essential to boost innovations while Massaro et al. (2019) concluded that trust is the main pillar in collaborative projects as it allows efficient and effective knowledge exchange among the collaborating partners. While other studies have focused on antecedents of the trust-building process from the perspective of inter-organizational collaboration (Shahzad et al., 2018; Shahzad et al., 2020) Researchers have begun analyzing trust from an ecosystem perspective (Shahzad and Hafeez, 2022; Steinbruch et al., 2022; Tobiassen and Pattersen, 2017), yet studies are limited that empirically analyze short-term and long-term trust-building mechanisms in the ecosystem context. Therefore, this research aims to contribute to the ongoing debate on building trust in an ecosystem context through an empirical investigation of communication strategies utilized by knowledge ecosystem actors to build trust.

3. Methodology

3.1 Research design and ecosystem description

A qualitative research approach was adopted to perform an in-depth analysis of the ecosystem case; the interactions, interdependencies, and activities among the knowledge ecosystem actors. A qualitative approach is most suitable when researchers aim to fame a broader picture of real-world phenomena (Graebner et al., 2010) and analyze complex business systems (Phillips and Ritala, 2019). Such a research design helped us to analyze the parallel and interlinked collaborations among SMEs, a large firm, universities, and intermediary organizations. The studied knowledge ecosystem is renowned for activities and projects related to co-creation, collaborative innovation, and mutual knowledge sharing. It makes this ecosystem a good case study to analyze the mechanism of trust building an ecosystem perspective. Moreover, the selected ecosystem also exhibited key features i.e., interdependencies, co-evolution, a multitude of actors, and key values (knowledge sharing and acquisition) (Scaringella and Radziwon, 2018).

3.2 Research sample and data collection

The purposive sampling technique supported by multiple criteria was utilized to select participants for the study. Since the focus of the research was trust in the ecosystem, the participants were selected based on their active participation in the ecosystem, having close geographical proximity and interconnectivity with other stakeholders of the ecosystem. A total of 33 interviews were taken with a multitude of loosely coupled actors i.e., SMEs (17 interviews ranging from CEOs to General Manager (GM) and Automation Engineer (AE) to Project Manager (PM)), large firm (1 interview from Operation Center Manager (OCM)), public sector organizations (1 interview from Communication Manager (CM)), intermediary organizations (7 interviews ranging from CEO to PM and Manager Development (MDV)) and universities (7 interviews ranging from Senior Specialists (SS) to Directors and R&D Managers). The data was collected during 2021-22 by conducting semi-structured online interviews using Zoom and MS Teams software, spanning 60-90 minutes, with an average time of 60 minutes. All interviews were recorded and transcribed, and a total of 204 pages of transcriptions were yielded. Saturation in our research was attained when we started receiving repetitive insights from interviewees on ecosystem trust building, transparency, and openness in information sharing and co-location. Furthermore, we organized a workshop on building trust through communication, involving different actors of the regional ecosystem. Participants discussed strategies and channels of communication that can build and enhance trust among different actors. We took notes from the discussion which provided us with the baseline for mapping the ecosystem and important information on identifying relevant actors to conduct interviews.

3.3 Data analysis

Based on inductive research we had begun with a thematic analysis of the transcribed data. Thematic analysis is the most suitable strategy to sort and identify embedded trends in the data (Braun and Clarke, 2006). A two-step procedure was followed to analyze the data. At first, to get familiar with the data, we read full transcripts of six interviews (two manufacturing and two service sector SMEs; two intermediaries). At this step, we applied semi-ignorance of the existing literature to remove confirmatory biases (Gioia et al., 2013), and through an iterative approach, we were able to identify key themes that emerged in the data. NVivo 12 software was utilized to code and organize the data and initial results. In the second step, a full-scale reading of all transcriptions was conducted, and we developed an open coding scheme. A three categories coding process was followed to derive empirical evidence from collected data.

Table 1 Data structure

Respondents quotations	Second order theme	Aggregated theme
"It is always good to know track record of the parties and mostly in small companies' owners and top management know each other at personal level…. and other party having good track of record makes it easy to collaborate" **GM** *"The people are key in collaboration, because building trust is very much about person centric, especially in the beginning of the collaborations"* **CEO1** *"The competency and knowhow of competitors matters a lot and for the successful collaborations… in our case we know owners of majority of the companies we are working with"* **CEO2**	Role of personal interactions, relations and integrity in communication	Close geographical proximity in trust building
"Open dialogue is the most important factor in creating long-term relationships and building trust with competitors" **PM** *"The transparency in information sharing has increased the chances of taking this collaboration into long and deep relationship…. building this efficient communication has taken time and effort from both sides"* **PM** *"Communication strategy is most important way of securing how to channel the necessary information between the competitors. Our communication strategy bases on identifying who is communicating to who? And what is communicated, how and when is communicated? So, our communication strategy goes around based on the answers to these questions"* **CEO3**	Transparency and openness in information sharing	
"One of the best ways that worked for us is to mix up teams with collaborators and doing thing physically at same location together. Mixing of teams and working at same location has built proper confidence on collaborators" **AE** *"Mutual communication and cross-collaboration of projects helped us to build long term trust with collaborators…… so trust grows as we collaborate more"* **CEO4**	Co-location of inter-organizational teams	
"We arrange different events for example we have recently conducted workshop where companies came together to network with each other and get to know on technologies they are using….in this way try to connect different companies with different sizes and industries" **MDV** *"We facilitate communication between different actors of regional ecosystem by starting collaboration projects… in these projects we anticipate which companies and actors are relevant, we contact them and bring them on the common objective and sort on how things will proceed from that point…so in a way we contribute to trust building and communication process"* **PM2** *"Our organization mainly operates in helping companies who are interested in starting their internationalization process. Part of internationalization process, we first build local network of companies who have similar expertise and diverse experience, so they can learn from each other. Connecting these companies requires extensive work to build trust among them because there can be competitors also. So, we arrange workshops, seminars, webinars and match making events and provide these companies opportunities to interact and communicate"* ***CEO5***	Co-creation workshops, projects, & matchmaking events	Intermediaries' facilitation in building trust

During the data analysis, first-order codes were assigned to interviewees' original thoughts in the form of quotations, and those quotations were linked to overarching second-order themes, which were grouped into aggregated themes of the results. Table 1 shows the general data structure of our study and illustrates the coding and the process of reasoning that we followed to derive the second-order and aggregate themes. To ensure the reliability and credibility of the results, we cross-verified the results and developed a mutual understanding of the produced results. Furthermore, we also

performed a triangulation process; we reviewed the primary data, workshop notes, and other secondary data sources i.e., blogs, news, webpages, organizational reports, and social media posts.

4. Findings and discussions

The empirical investigations of the researched ecosystem provided important insights on trust building in the knowledge ecosystem context. The empirical data evident that novel knowledge sharing and acquisition have been key concepts in the researched ecosystem (Järvi et al., 2018; Van der Borgh et al., 2012). Such knowledge exchange stands upon trustworthy relationships among the core value chain heterogenous actors and is facilitated by intermediaries and universities. The data structure exhibits close geographical proximity and the intermediary's facilitation activities are critical in efficient communication among the ecosystem actors. The empirical evidence shows that central concepts of communication in trust building i.e., personal relations among the top management, transparency, information sharing, and co-location of inter-organizational teams are embedded in close geographical proximity among the ecosystem actors (Pattinson et al., 2021). The role of intermediaries in facilitating such collaborations has also been highlighted by the interviewees, particularly intermediaries are important in the early stages of trust building, as they focus mainly on connecting and initiating collaborations among different ecosystem actors through co-creation projects, workshops, seminars, webinars, and matchmaking events (Blanka and Traunmuller, 2020).

4.1 Close geographical proximity in trust building

During the data analysis, it was found that close geographical proximity facilitates communication among the ecosystem actors which ultimately helps them to build long-term trust and facilitate knowledge sharing in their collaborations (Radziwon and Bogers, 2019; Scaringella and Radziwon, 2018). The empirical evidence shows that the 'personal relations, transparency and openness in the information sharing process and co-location of inter-organizational teams' are key components of effective communication among the core value chain actors. We observed that geographically co-located actors' top management had increased interactions due to their previous experience of having formal and informal collaborations with traditional buyer-supplier and extended networks (Bönte, 2008). These experiences enabled them to know about their counterparts' skills, competencies, and track records. Although these elements are not directly related to the formal communication process, yet they were embedded in the informal communication among different actors located in the same knowledge hotspots (Hardwick et al., 2013). The empirical data also shows open and transparent communication is the key to long-term trust building. Transparency and openness in the communication process have been mentioned by interviewees as an open dialogue between the collaborators on the goals and roles in the collaboration process (Shahzad et al., 2018). Furthermore, collaborations also include competitors, and empirical data indicates in their coopetition process, organizations were concerned about securing the strategic information that is key to their competitive advantage. Therefore, they devised a communication strategy based on the identification of actors and activities to protect their strategic knowledge. Results suggest that communication strategies for ecosystem collaborations are comparatively complex as they require organizations to utilize different channels of communication and devise strategies to simultaneously share unique knowledge and protect their intellectual knowledge from the risk of opportunism (Hardwick et al., 2013; Pattinson et al., 2021). In the process of making sense of the analyzed data, we found that the co-location of inter-organizational teams is an important aspect of ecosystem trust building. Some organizations have built inter-organizational teams to work on collaborative projects, which has improved communication and information sharing among the team members (Hardwick et al., 2013). The co-

location of inter-organizational teams has particularly enhanced the mutual understanding of values and culture at the team's member level, which has been later translated into the inter-organizational level. Co-location and mutual learning in collaborative projects have been particularly important for building long-term trust in collaborating parties, which is in line with the findings of Bönte (2008). Therefore, close geographical proximity facilitates formal and informal communication among the ecosystem actors and helps them to build long-term trust and facilitate knowledge sharing (Radziwon and Bogers, 2019). Based on our findings, we offer the following proposition:

P1. Formal and informal communication among the geographically co-located value chain actors is critical for building long-term trust in the knowledge ecosystem.

4.2 Intermediaries' facilitation in building trust

The examined ecosystem includes core value chain actors and intermediary organizations. The core value chain actors varied in terms of their size and type of organizations, i.e., SMEs and large firms. Such variations in types of organizations require certain intermediating actors that act as bridging organizations and help core value chain actors to initiate collaborations and build trust. We found that intermediaries act as trust-building entities among the core value chain actors. Intermediaries enacted their connecting role by facilitating inter-organizational collaborations, as well as bringing new actors to the existing collaborative networks. Moreover, they help actors to interact and build collaborative relationships by bringing them together through arranging workshops, co-creation projects, and matchmaking events. Such interactions facilitate formal and informal communication among the top management of participating organizations and provide stepping stones for initial trust-building among different ecosystem actors. We found that intermediaries were also involved in initiating co-creation projects, where they identify and bring relevant actors to the collaborative projects. Although our results do not show any orchestrating role of intermediaries in these collaborations, however, we conclude that they have a critical supportive role in managing such collaborations which ultimately increases the actor's confidence and trust in the collaborations process (Van der Borgh et al., 2012). This finding relates to existing research which shows that intermediaries facilitate inter-organizational collaboration through partner search and initiate trust-building in coopetitive processes (Blanka and Traunmuller, 2020) and they also form ecosystem-based collaborations (Randhawa et al., 2022). Therefore, we provide the following proposition:

P2. Intermediaries play a supportive role in trust building among the core value chain actors of the knowledge ecosystem.

5. Conclusions

5.1 Contributions and implications

In this research, we have empirically analyzed how SMEs, that are embedded within a knowledge ecosystem, can benefit in terms of enhancing mutual trust through effective communication and knowledge sharing among other actors of the ecosystem. Our findings address the need to study the link between communication and mutual trust from an ecosystem perspective and we advance the argument that close geographical proximity facilitates the interaction among ecosystem actors where personal relations, transparency, and openness in information sharing and co-location of inter-organizational teams drive ecosystem actors to develop trustworthy relationships because of the similar culture, interests, and capacity to exchange information. SMEs can benefit from such an informal governance structure and strengthen their internal innovation processes, resulting in developing inter-organizational trustworthiness and credibility of increased knowledge sharing and learning influencing their market reputation (Radziwon and Bogers, 2019; Shahzad and Takala, 2022)

and a low propensity to act opportunistically. This could lead to lower transaction costs (Shahzad et al., 2018; Shahzad, 2018) within an ecosystem as mutual trust developed through effective communication functions as an efficient tool to avoid any additional costs in managing such ecosystem-based partner relationships. It means that effective communication in such dynamic collaborations does not only offer a trustworthy knowledge exchange environment in an ecosystem through sharing timely and relevant information between ecosystem partners but also helps SMEs to benefit from such a trustworthy environment in terms of exchanging knowledge which is useful for their internal innovations. Mutual trust also helps ecosystem partners to address the concerns of knowledge leakage and asymmetric information sharing that can risk the true nature of knowledge-based collaboration in an ecosystem. As SMEs, due to the limited resources, seek ecosystem-based collaborations with different partners of different sizes and types in the value chain, developing trust through open communication as an efficient governance tool becomes imperative as it is subjected to sensitive and important information and knowledge-sharing, IPR issues as well as the interdependencies between ecosystem actors.

Furthermore, intermediary organizations in an ecosystem function as trust-bridging organizations by offering facilitating platforms to the ecosystem actors. It also triggers smooth communication among several ecosystem partners as connecting through joint projects or co-creation workshops helps different types and sizes of organizations to build a common understanding despite their different organizational goals and objectives. We contribute to both the knowledge ecosystem literature (Järvi et al., 2018; Van der Borgh et al., 2012) and inter-organizational trust literature (Ali et al., 2021; Shahzad et al., 2018; Dyer and Chu, 2011; Zaheer et al., 1998) by developing a better understanding of how inter-organizational trust is developed through effective and open communication among different actors of the knowledge-based ecosystem, thus leading to reputation and integrity. This study also responds to the call for future research (e.g., Steinbruch et al., 2021; Shahzad and Takala, 2022) to explore trust in other types of ecosystems (in our case knowledge ecosystems) and the facilitating role of intermediary organizations in building trust among actors. Moreover, this research also adds to the discussion on the relevance of geographical proximity in the knowledge ecosystem context (Van der Borgh et al., 2012; Scaringella and Radziwon, 2018). The empirical evidence of the research supports the idea that close geographical proximity can be an enabler of knowledge transfer (Radziwon and Bogers, 2019) and facilitate formal and informal communication that is key in building long-term trust among collaborating parties (Bönte, 2008).

5.2 Managerial implications

This research has several implications for SMEs and other knowledge-based ecosystem actors. Our results offer recommendations for managers that are involved in the ecosystem-based collaboration. Managers can benefit from the co-location of other ecosystem actors and can utilize their personal relations in order to develop a common understanding for joint projects in the ecosystem. As SMEs lack resources, such a setting of co-location and personal relations will help them bring transparency and openness in sharing important information, instead of spending time and resources to develop new relationships. SMEs can benefit from such an informal governance structure of sharing information and knowledge and strengthen their internal innovation processes which can help them to develop inter-organizational trustworthiness and market reputation. Furthermore, SMEs can also benefit from the intermediary organizations functioning as trust-building entities in the knowledge-based ecosystem. As intermediaries offer several services to all ecosystem actors, SMEs can actively engage with other relevant actors through such services such as arranging workshops, co-creation projects, match-making events etc. This helps SMEs to develop effective communication channels and develop their confidence and trustworthy reputation in the ecosystem.

5.3 Limitations and future research

There are certain limitations of this study and we offer future avenues for researchers. As our empirical setting involves the central focus on SMEs in the ecosystem, this research context may not completely correspond to the knowledge ecosystem where particularly universities and other research institutes usually have a dominant position. Further research could take on this to analyze the different roles of universities and research institutes as ecosystem orchestrators and how they engage with organizations, particularly SMEs. Future studies can also compare the results of close proximity with scattered geographical proximity and how communication can be managed in such geographical locations that are not in a close radius. Additionally, it would be interesting to investigate the relationship between communication and trust building in other types of ecosystems such as the entrepreneurial ecosystem and business ecosystem through a quantitative research setting.

Acknowledgment

This research is part of the InnoDigi project funded by The Foundation for Economic Education (Liikesivistysrahasto) under grant number 190283.

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