Success Factors in Managing Digital Transformation in Digital Business Ecosystems

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Abstract: Previous research has increased our understanding of digital transformation and digital business ecosystems as standalone topics. Less is known about how digital transformation unfolds in a digital business ecosystem context. Such collaborative creation of digital innovations is affected by individual members and by the whole ecosystem. Based on an empirical case study, regarding an ecosystem facilitator company and its digital business ecosystems as embedded cases, this paper contributes to the understanding of key success factors in new digital business ecosystems. The findings support collaborative governance as a tool in leading the digital transformation among multiple partners. Moreover, it presents the concept of a common rulebook, including the practices, principles, guidelines, tools, handshakes, and boundaries as enablers for the way of working in an ecosystem. Managers can use this paper to increase understanding and to clarify their organisational expectations when participating in joined endeavours around digital transformation.

Keywords: Digital Transformation; Business Ecosystem; Digital Business Ecosystem; Digital Disruption; Collaborative Governance; Common rulebook; Case study

1. Introduction

Changing customer needs and business environments, and the rapid development of digital technologies challenge the existing business models of many established organizations. To avoid being disrupted, organisations utilize digital technologies to innovate new digital services and business models and enhance their strategies, processes, and leadership to support the change. This complex combination of people, processes and technology engaged in constant change is understood as digital transformation (DT). (Skog, Wimelius, & Sandberg, 2018; Verhoef, Broekhuizen, Bart, Bhattacharya, Dong, Fabian, & Haenlein, 2019; Vial, 2019).
Responding to customer needs with new digital innovations, services, and business models outspan the boundaries of a single organisation, thus DT becomes more and more dependent on the resources within outer-organizational environments (Skog et al., 2018). Moore (1993) first introduced the concept of a business ecosystem, providing a way to combine the capabilities and expertise and overcome the limitations of a single organization. The concept of a digital business ecosystem (DBE) adds digital technologies and platforms to extend the concept of a business ecosystem. By definition, DBEs are “socio-technical environments of individuals, organizations and digital technologies with collaborative and competitive relationship to co-create value through shared digital platforms” (Senyo, Liu, & Effah 2019, p. 53).

A closer examination of the factors affecting successful collaboration is needed. To advance the understanding, our study explored digital transformation in the digital business ecosystem context. Specifically, our focus is on ecosystem governance as a success factor in emerging DBEs. Looking closer at the previous research, the majority of DT research has focused on intra-organizational perspective or specific aspect within DT. There is a need to better understand the adoption process of DT and the drivers and barriers affecting the adoption (Hausberg, Liere-Netheler, Packmohr, Pakura, & Vogelsang, 2019). DBE studies have concentrated on business or technical issues, conceptualization, and customer interactions. (Senyo et al., 2019).

While several authors have contributed to understanding the characteristics of DT and DBE, there is still limited understanding of how DT unfolds in the DBE context and what kind of factors increase the likelihood of success. Thus, we posed the following research question: What kind of factors contribute to success in managing digital transformation in digital business ecosystems? We conducted a case study, exploring the success factors based on the case company’s experiences from various DBEs focusing on digital innovations and transformation. Following the abductive approach according to Dubois & Gadde (2002), we analysed both theoretical literature and empirical data simultaneously.

The paper proceeds as follows. The next section provides an overview of previous research. To understand a DBE as an option for organisations in their DT initiatives, we first briefly present DT and DBE concepts. Following the overall success factors identified in the research literature, we set the focus on the role of governance. In the research design chapter, we justify the case selection, present the DBEs as research context, and explain the data collection and analysis phase. Next, we present and discuss the results, and suggest theoretical and practical implications. The last section describes the limitations of the research conducted and gives several suggestions for further research in the field.

2. Theoretical Foundation

Digital Transformation in Digital Business Ecosystem context

Digital transformation refers to profound change where organisations by utilizing digital technologies engage themselves in continuous digital innovation to develop new products, services, and business models. It has become a central topic for research both in
the fields of information technology and business during the last decade. (Vial, 2019; Hausberg et al., 2019). Besides new services and business models, DT entails changes in strategy, leadership, organisational structures, and culture (Matt, Hess, & Benlian, 2015). It is largely agreed among scholars that DT refers to a holistic organisational change process, driven by digital technologies. Continuous digital innovations disrupt existing business models, thus enabling DT (Skog et al., 2018). Also, Hinings, Gegenhuber, & Greenwood (2018) see cumulative digital innovations as the core enablers of the DT process.

Originating from natural ecosystems, the ecosystem concept in business use comes in many shapes and forms. A comprehensive literature review by Scaringella & Radziwon (2018) describes a digital ecosystem as a subtype of a business ecosystem, combining features from an innovation ecosystem. In digital ecosystems, the role of digital technologies in organizing parties to create value on a joined platform is highlighted (Jacobides Cennamo, & Gawer, 2018; Nambisan, Zahra, & Luo, 2018; Senyo, et al., 2019). More specifically, the concept of a DBE has been used to describe the digital and business layers’ coupling together, thus extending the concept of a business ecosystem (Darking, 2007). The concept of DBE is addressed in this study, but the perspective is more important than the definition. Ecosystem-as-affiliation (Adner, 2017) emphasizes the role and needs of the members, similar to a business ecosystem (Moore, 1993). Ecosystem-as-structure starts from the value proposition, and the members of the ecosystem contribute to that (Adner, 2017).

One of the biggest benefits of DT is the expectation for new value creation opportunities (Reddy & Reinartz, 2017). The outcomes of digital technologies creating disruption become visible when commercialized through business models (Chesbrough, 2010). New business models, like multi-sided platforms, have emerged as organizations thrive to create value through a dynamic collaboration between multiple organisations (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). In ecosystems, each member’s business model influences the ecosystem and vice versa. In that way, ecosystems challenge and pressure organizations to enhance, change or re-invent existing business models. (Verhoef, et al., 2019; Zott, Amit, & Massa, 2011). To summarize DT in the DBE context, two main assumptions can be distilled from the previous theory: DT is a result of continuous digital innovations, and business models help to understand the value creation and capture potential from both individual organisation’s perspective and the DBE as a whole.

**The role of governance as a success factor in Digital Business Ecosystem**

Successful value creation in ecosystems comes from members’ collective efforts to create value by complementing each other in collaboration and competition (Iansiti & Levien, 2004). To successfully utilize ecosystems, an organization needs to understand which role to play, and established companies typically play different roles than new ventures (Zahra & Nambisan, 2012). Keystones (Iansiti & Levien, 2004) typically are large, established companies taking a strong coordinating responsibility among members (Adner, 2017). Established companies should have a different strategic approach, depending on the sort of governance and the nature of innovation (Zahra & Nambisan, 2012). During the creation phase of a new ecosystem, organisations need to shift away from a competitive mindset to enable a cooperative mindset. To be able to successfully create value, organizations need to change mindsets to new kind of value creation, build
the right connections, and make their organizations more agile. (Letaifa, 2014). During the whole ecosystem lifecycle, organisations should constantly evaluate new possibilities for value creation, build the right connections, recognize their capabilities, and identify what kind of complementary capabilities are needed (Davidson, Harmer, & Marshall, 2015).

Ecosystems have governance systems to coordinate value creation, operations, and effects of the joint efforts. A governance system consists of authority structure as relations between ecosystems’ participants, membership control as to how open the ecosystem is for new participants and task coordination. (Iansiti & Levien, 2004; Thomas & Autio, 2014). The governance structures and the rules define, e.g., who can join an ecosystem and how the work of the participants is managed. Where some ecosystems may have stricter rules, some have fewer principles of behaviour and these are formed by the roles of ecosystem members. The multilateral dependencies between the members of the ecosystem and the modular structures are the unique factors that enable individual organizations to collaborate without strict hierarchies. (Jacobides, et al., 2018). However, it might be challenging to define a governance structure for a DBE, given the self-organizing nature (Senyo et al., 2019).

Orchestration, describing the degree of formal and informal coordination is also used when discussing management and governance (Davidson et al., 2015). The ways that ecosystems are orchestrated influence ecosystems on both individual organization and ecosystem levels. Management should create capabilities to nurture productive ways to create value through experimentation and effective decision-making. (Van der Borgh, Cloodt, & Romme, 2012). Ecosystems should be managed to set aside the unproductive habits of competition and representing individual organization’s interest over the shared vision inside the ecosystem (Letaifa, 2014). Previous research shows that the digitally mature companies invest much more in building agile, digital culture and developing the needed capabilities than organisations still in the early phase of their DT journey (Kane, 2019).

According to Darking (2007, 79-82), the role of governance in DBE concerning the characteristics of DBE can be viewed through the interrelated dimensions of:

- Balance of interests with shared value, vision, and code of practice,
- Communication culture,
- Credibility and trust,
- Organisation and synchronisation,
- Regulation and licensing,
- Technological directions.

A similar approach is to review governance through tangible and intangible mechanisms. Tangible mechanisms, like contractual conditions and intellectual property rights, are important in setting the standard rules for the DBE. The role of the leading member in intangible mechanisms is to create a common vision, nurture open communication, and setting the ‘rules for the game’. (Ritala, Agouridas, Assimakopoulos, & Gies, 2013). Trust, in particular, is the fundamental success factor as both collaboration and contracting demands trust (Blomqvist, Hurmelinna, & Seppänen, 2005).

The concept of collaborative governance has been used loosely in the previous research literature (Batony & Svensson, 2019). In general, it refers to the process of facilitating
multi-organisational setups to solve problems that are difficult or impossible for a single organisation to solve (Agranoff & McGuire, 2003, 4). Through collaborative governance, a public sector organisation engages private sector stakeholders, but the definition leaves open whether the processes are driven by a private or public sector organisation (Ansell & Gash, 2008). A model of collaborative governance (Ansell & Gash, 2008, p. 550) identifies variables that influence successful collaboration: 1) starting conditions for collaboration, 2) institutional design as in clear rules and process transparency, 3) facilitative leadership, and 4) collaborative process. The collaborative process at the heart of the model includes the cycles of dialogue among members, building trust, committing to the process, shared understanding, and outcomes.

3. Research Design

Research context

Considering the overall complexity of both DT and DBE, the limitations identified in previous research, and the recognized need for in-depth case studies, we employed a qualitative case study, where a large Nordic ICT company (later referred to as a facilitator) and the digital business ecosystems they have participated were used to gain insight. A case study is the most suitable research strategy when the boundaries between the context and the phenomenon are unclear (Yin, 2003). Furthermore, embedded case studies provide the most suitable research strategy for complex and contextualized problems (Scholz & Tietje, 2011). A holistic single-case study with the facilitator’s ecosystems as embedded units fit the targets of our study.

The facilitator is a private Nordic information technology, software, and digital consulting company with a turnover of approximately 3 billion Euros. It operates in a business-to-business environment, advising and helping its customers to capture the opportunities in technology, innovation, digitalization, and digital transformation. The facilitator has been fostering digital innovation and exploration around new digital technologies in several collaborative arrangements, like networks and ecosystems. Through the facilitator, we got access to various ecosystems that were discussed by the facilitator company’s interviewees.

Data collection and analysis

A literature review was conducted using various databases. A literature review was an interdisciplinary collection, including organizational change, organization strategy, social network, computing, and information technology literature. Our search focused on DT and DBE from a business perspective. We built a conceptual framework of the main themes distilled from previous research. The structure of the main themes was utilized in conducting the empirical part of the study and it formed an instrument for data collection. We collected the data with semi-structured theme interviews with the purpose to:

• form an overall picture of the facilitator’s ecosystems in terms of ecosystem vision, members, and purpose, as well as the facilitator’s role
• explore what kind of elements are needed to successfully co-create in a DBE
understand in-depth how the collaboration can be managed successfully

As per our focus to concentrate on similar cultural and regulatory context, and approach to innovations, we narrowed down the data collection to Finland. In selecting the informants from the facilitator, we followed the criteria that all of them must have extensive previous experience of both digital transformation and ecosystems. The interviewees represented senior experts with business or technical background. All of them had extensive experience in digital transformation, co-innovation, and active involvement in the DBE endeavours of the facilitator. Our approach was in line with a key-informant interviewing method, where yielding insightful information in a qualitative study is based on key informants or organizational elites (Marshall & Rossman, 2011). One of the authors works with in the facilitator which helped in identifying and getting access to potential informants.

We collected empirical data through two interview rounds in one-to-one virtual meetings (MS Teams with video). The first round in spring 2020 included six in-depth interviews. The duration of each interview was 50-65 minutes, and they were recorded with the permission of the interviewees. Guided by Marshall & Rossman (2011), the richness of an interview is dependent on the interviewer’s ability to elaborate and ask follow-up questions, we focused on exploring detailed information beyond surface-level answers. The themes of the semi-structured interviews were related to the facilitator's role and experience from various DBEs as well as the key concepts of this study. Elements of DT and DBE formed the main themes: digital technologies, strategy and digital maturity, ecosystem members and roles, management and governance, and shared vision and mindset. Also, motivations to participate in DT initiatives in DBE’s were discussed. The recordings were first transcribed into the written format and then coded. For data analysis, we chose an abductive approach, as it provided the opportunity to analyse both theoretical literature and empirical data simultaneously (Dubois & Gadde, 2002). For data analysis, we utilized qualitative content analysis and abductive reasoning. Relying on the initial theoretical framework and empirical findings, the whole iterative process moved from raw data analysis to emerging empirical understanding.

Coding involves identifying themes, dividing the data further into themes, organizing themes and excluding non-valuable material (Fisher, 2004). In qualitative analysis, codes can evolve and change as the empirical study continues (Miles & Huberman, 1994). During the data analysis, collaborative governance emerged as a key finding. After a new research literature search and review, we carried out the second round of interviews in the spring 2021. The focus was on getting valuable insights into the governance, and especially the collaborative governance aspects. The second round included four interviews with a length of 10-15 minutes. Altogether, eight key informants were interviewed in ten interviews.

4. Findings and discussion
Describing the facilitator’s ecosystems

Through the facilitator, we set the in-depth focus to the viewpoint of the ecosystem facilitator. Various ecosystems situated within the case were treated as sub-units or embedded units in our analysis. The facilitator participates in several ecosystems that can be described as DBE’s. According to Senyo et al. (2019), the ecosystems comprised of organisations and individuals representing those organisations in a collaborative and competitive relationship, and digital technologies. Together, the actors had a goal to create such value, that is greater than the value created by a single actor (Adner, 2006). Given this, collaboration among multiple actors in ecosystems was seen as an attractive option for digital transformation to unfold, even if it was not perceived as the easiest option. A couple of quotes to summarize the facilitator’s viewpoint of an ecosystem as a context for digital transformation:

“Ecosystem never makes things easier; it only makes everything many times more difficult.”

“To get an ecosystem to function and work well is a hell of an effort.”

During the interviews, the informants reflected on their experience and the identified success factors. All the facilitator’s ecosystems are being formed around a specific DT initiative and the value proposition, thus following the ecosystem-as-structure approach (Adner, 2017). All the DBEs discussed in the interviews were in the ecosystem creation or development phase (Letaifa, 2014, p. 288) and the role of the facilitator was in leading the DBEs towards the jointly agreed goal. Another aspect of the facilitator’s role is that it is based on some existing technical capability, like expertise on some digital technology (e.g., blockchain) or a common platform that can be utilized by all ecosystem members. These are in line with the DT frameworks (e.g., Matt et al., 2015; Verhoef et al., 2019, Vial, 2019) and DBE definitions (e.g., Davidson et al., 2015; Scaringella & Radwiwon, 2018; Senyo, 2019). A summary of the facilitator’s DBEs, the aspects and findings based on empirical data are presented in table 1.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actors</td>
<td>The facilitator, private Finnish and Nordic companies, Finnish authorities, and public sector organisations.</td>
</tr>
<tr>
<td>Digital transformation</td>
<td>E.g., creation of multi-party business transaction flow without intermediaries, fully digital founding of a company, digital trading of</td>
</tr>
<tr>
<td>initiatives (goals)</td>
<td>non-listed company shares, entrepreneur’s digital services.</td>
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<tr>
<td>Lifecycle during the</td>
<td>The initial stage of birth (Moore, 1993), with the focus on collaboration and ecosystem creation (Letaifa, 2014)</td>
</tr>
<tr>
<td>interviews</td>
<td></td>
</tr>
<tr>
<td>Nature of technologies</td>
<td>Various digital technologies, e.g., data processing capacity, cloud, distributed ledger technologies.</td>
</tr>
<tr>
<td>Perspective</td>
<td>Build around value proposition (specific DT initiative). Ecosystem-</td>
</tr>
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</table>
Success factors in ecosystem work

The facilitator has adapted a certain approach towards the other ecosystem members to increase the success. This included the management mechanisms that can be, according to Ritala et al. (2013), divided as tangible or intangible. In all of the sub-units explored, the facilitator had formal agreements with the ecosystem members, thus highlighting the facilitator’s role as a keystone (Iansiti & Levien, 2004; Zahra & Nambisan, 2012). However, the majority of the mechanisms were relational by nature. A summary of the identified success factors in the facilitator’s DBEs is presented in table 2.

Table 2 Summary of success factors in facilitator’s DBEs

<table>
<thead>
<tr>
<th>Success factor</th>
<th>Description of the mechanism to ensure success</th>
</tr>
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<tbody>
<tr>
<td>Vision</td>
<td>• Creating a shared vision and strategy for the DBE.</td>
</tr>
<tr>
<td></td>
<td>• Maintaining and clarifying the vision along the ecosystem lifecycle, as the members and their roles may change during the DBE lifecycle</td>
</tr>
<tr>
<td></td>
<td>• Finding the business cases that will ultimately bring value to customers or end-users (consumers or other organisations that will utilize the outcome of the ecosystem).</td>
</tr>
<tr>
<td>Members and roles</td>
<td>• Selecting the right organisations for the DBE and selecting the right individuals to represent each DBE member.</td>
</tr>
<tr>
<td></td>
<td>• Selecting members that can and will commit to the shared vision.</td>
</tr>
<tr>
<td></td>
<td>• Balancing the interests and incentives of heterogeneous members. Understanding the competitive aspects.</td>
</tr>
<tr>
<td>Trust</td>
<td>• Creating and nurturing trust among members.</td>
</tr>
<tr>
<td></td>
<td>• Actions to increase transparency, openness, flexibility, and honesty.</td>
</tr>
<tr>
<td>Collaborative governance</td>
<td>• <strong>Leadership</strong>: leading the balance between ecosystem members interests and the DBE target. Balancing the interest and incentives of heterogenous members.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Boards</strong>: specific boards (e.g., advisory board), forums and workgroups for DBE orchestration</td>
</tr>
<tr>
<td></td>
<td>• <strong>Common rulebook</strong>: enabling the way of working by introducing the practices, principles, guidelines, tools,</td>
</tr>
</tbody>
</table>

Facilitator’s role

Management and governance
Tangible mechanisms (Ritala et al., 2013): contracts between the facilitator and DBE member. Intangible mechanisms (Ritala et al., 2013): collaborative governance, including formal and collaborative process (Ansell & Gash, 2007).
Typically, DT initiatives in facilitator’s DBEs start with a limited number of members drafting initial visions of the digital innovation or a business model and making experiments with new digital technologies. Digital technologies are fundamental enablers (Matt et al., 2015; Verhoef et al., 2019), but the focus is heavily on what can be achieved with the technology, not the technology itself. Here, the major challenge was to create a shared vision for the ecosystem. The importance of the vision was highlighted by all informants, as it was seen as a prerequisite for success. The interviewees also pointed out the importance of clarifying the vision throughout the ecosystem lifecycle, in other words, collaborating and strengthening the common vision along the ecosystem lifecycle (Moore, 2006). Leading the balancing between the ecosystem vision and members’ interests, knowledge sharing and collaboration, learning from each other and sharing experiences openly helps in smoothing the journey, but the fundamental element all the informants brought up was trust.

“Building trust is important. It takes a long time for trust to emerge. In the beginning it’s like yeah, yeah everything is good (…), but really not. Trust and confidence are building along the way and things deepen along the way.”

The vision takes shape in combining the members’ previous experiences, expectations, budgetary limitations, and ideas regarding other members, roles, and outcomes. The members of the DBEs were selected to have sufficient expertise concerning the ecosystem targets and to be able to eventually create the market. It was also seen as crucially important for the ecosystem success that the members find natural roles and feel committed to those roles. These findings are in line with the ecosystem view that all participants directly affect the potential value creation in an ecosystem (Thomas & Autio, 2014) and that the complementary capabilities make ecosystems unique compared with other forms of collaboration (Jacobides et al., 2018).

What was interesting, is the concept of collaborative governance emerging in the interviews. In general, governance was seen as important, as it represents formal relationships between organisations. Collaborative governance was depicted and understood as a key success factor of ecosystem work, including the aspects of vision, leadership, management, structures, rules, and roles. Previous literature discusses ecosystem governance dimensions (e.g., Iansiti & Levien, 2004; Darking, 2007, Zahra & Nambisan, 2012; Van der Borght et al., 2012; Thomas & Autio, 2014; Letaifa, 2014; Senyo et al., 2019), but collaborative governance has not been stated as broadly and specifically as in the empirical findings of the current study. Specifically, the collaborative governance model the facilitator has used consists of following elements: rulebook to enabling the ecosystemic way of working, steering boards, and service entity, with clear segregation of the parties and owners. Amid these findings of the importance of these three elements, we wanted to explore more, hence focusing especially on the concept of a common rulebook in another (the second) interview round, that was novel to existing literature.
Several characteristics of the common rulebook arose from the data analysis. A common rulebook is a set of elements aiming to enable the way of working in a DBE. The elements include the practices, channels, contracts, tools, repositories, interfaces, and measures. As the respondents indicated, it sets the informal rules to guide the collaboration. It emphasizes the collaborative process of trust-building, shared understanding, and communication among members, and to some extent reflects to the model of collaborative governance (Ansell & Gash, 2008). Figure 1 provides an overview of the common rulebook, and as such, illustrates the elements by which the ecosystem work, support for collaboration, and tools for ecosystem management are addressed.

The results suggest that the likelihood of success when carrying out digital transformation in a digital business ecosystem context can be increased by utilizing collaborative governance. These findings are in line with previous research indicating that the amount of collaboration and competition aspects in an ecosystem work is related to the value creation or capture focus in different lifecycle stages of ecosystem creation, development, and dissolution (Letaifa, 2014). More specifically, a common rulebook provides practical tools for organisations facilitating the work, thus perceived as a way to increase the quality of communication and collaboration. As such, a common rulebook can be seen as a constitutional document or a statement of common purpose that defines important aspects like rights or common values in the DBE governance (Darking, 2007, 79-82). The common rulebook is constantly evolving as the DBE’s business model develops.

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**Figure 1** Dimensions of the constantly evolving common rulebook
throughout the ecosystem lifecycle. A couple of quotes to capture the constantly changing conditions in a DBE.

“The entire business model evolves along the way. Yesterday it was different than today and tomorrow different than today.”

“The rulebook has to be created together. Whoever is leading, can provide a skeleton, but if you try to push the content, others won’t accept. Discussion, discussion, and discussion is needed[…]. You cannot be fully prepared. Things change, new stuff appear, and you have to agree on new rules or completely change a viewpoint.”

Based on the empirical data, the common rulebook consists of the following elements:

- **Principles** define the mindset for the way of working within the DBE, the culture and how trust is nurtured. Principles are used to guide the decision making and operations for situations in which there are no legal contracts, rules, or instructions. They include in written format the vision and the culture that every ecosystem member commits to. It also describes how trust is nurtured.
- **Guidelines** describe the instructions for participants to act upon. Instead of being strict rules or instructions, they include common terminology used in the ecosystem and collaboration practices.
- **Tools** and repositories describe the data sources, digital platform, and formats. They include the collaboration and communication tools, and the repositories used.
- **Handshakes** are documented promises from ecosystem members to follow the common rulebook. They can include formal contracts and informal commitments.
- **Boundaries** help in defining the autonomy of different ecosystem members, the level of openness, expectations, and items that need to be agreed upon vs. items that can be disagreed upon.
- **Practices** or structures define where and by whom different forms of collaborating and communicating (e.g., advisory boards) take place in the ecosystem.

Individually, many of the elements of the rulebook find common ground with previous research. Previous research shows that digitally mature organisations are more flexible and open towards new ways of working (Kane, 2019). A balance between agility and ambidexterity refers to maintaining efficiency in current business and enabling new digital business opportunities (Gimpel, Hosseini, Huber, Probst, Röglinger, & Faisst, 2018). This is related to the boundaries between the ecosystem and individual organization levels. The new business models invented in the DBE may pose a threat to individual organisation’s existing business models. The importance of digital mindset is highlighted as inertia and resistance are known barriers to digital transformation (Vial, 2019).

5. **Conclusion and Contribution**

We set out to analyse what kind of factors contribute to success in managing digital transformation in a digital business ecosystem. This study makes a theoretical contribution by positioning digital transformation within a DBE context. Specifically, our study offers important insights into the factors behind a successful ecosystem work. As
success takes form in new digital innovations and business models, that are crucial for businesses, it becomes more and more important to understand how to increase the likelihood of success. Our study pinpointed elements like shared vision and mindset, members and roles, trust-building, and governance to be the key success factors. This is in line with the previous research (Darking, 2007; Thomas & Autio, 2014; Jacobides et al, 2018; Nambisan et al., 2019; Senyo et al., 2019).

Moreover, an interesting finding is the way the facilitator employs collaborative governance mechanisms in managing the DBEs. Based on the empirical data we argue that the characteristics of DT and DBE influence governance dimensions. In line with the collaborative governance model of continuous dialogue, trust-building, commitment, and shared understanding (Ansell & Gash, 2008), our findings go further by introducing the common rulebook.

Furthermore, a common rulebook was seen as a provider of a variety of tools to manage the ecosystem collaboration, mostly by intangible elements. By introducing the principles, guidelines, tools, repositories, handshakes, boundaries, and structures, the common rulebook suggests that managing the collaboration in an ecosystem would benefit from a set of practical tools. As DBEs evolve during the ecosystem lifecycle and as members may change and or combine different strategies, the common rulebook allows flexibility. Similarly, like the shared vision of a DBE transforms, also the other elements of the rulebook can be renovated to better resemble the needs of the ecosystem.

Managerially, our study contributes to providing practical aspects for organizations to consider before engaging in DT initiatives in ecosystems. Based on our findings, we can make a few recommendations. It is important to recognize the characteristics of continuous change and disruption embedded in both DT and DBE to understand how value is created in ecosystems. At a strategic level, the decision to participate in a DBE should be a chosen path. Based on our findings, an ecosystem as a context adds complexity to DT initiatives, and the outcomes are not always positive as the new business models may disrupt individual organisation’s business models. To this end, it is a prerequisite for successful collaboration in ecosystems to understand the success factors. These initiatives, further clarified in the form of a common rulebook, could help in being better prepared for the journey.

6. Limitations and future research

In our consideration of the limitations of this study, we firstly acknowledge that the backgrounds of authors in general may influence the research and data analysis phase and thus need to be considered (Eskola & Suoranta, 1998). However, we used some measures to limit the risk of subjectivity. We followed the statement that choosing the theoretical framework forms the conclusions by affecting the interview questions and data analysis (Saunders, Lewis, Thornhill, & Bristow, 2019), and thus the theory led us in developing the interview measurements and forming the data analysis schemes rather than intuition related to the background of one of the authors. Furthermore, we aimed to increase the objectivity by carrying out the interviews and the research in a systematic way. Moreover, as one of the authors currently works in the case organization which may affect the objectivity and thus reliability. However, the risk is limited by the fact that the
author is not directly working with any ecosystems explored in this study. Another aspect to consider is that the background and the position of the author in the case organization helped in setting up confidential and relaxed interview sessions, where the interviewees were able to express themselves freely.

Our study explored the viewpoint of a facilitator in a single case study, by conducting ten interviews from eight informants. Although we acknowledge that the amount of data is rather limited, we used the key-informant logic to select the right respondents knowledgeable of the topic at hand (Marshall & Rossman, 2011). Also, with regards to the limited amount of data, we started to gain saturation in the responses. Also, concerning the DBE as a context, the limitation was to understand the complexity of relationships, collaboration, and competition between the ecosystem members. As our study addressed the success factors rather widely, it reached only the surface in some aspects, where as it provided more specific new knowledge on some particular aspects. Thus, it can be seen as a starting point for some further studies dwelling deeper into specific aspects of managing DBEs. Furthermore, in recognizing the limited viewpoint embedded in a single-case study with the focus on the point of view of the facilitator, we suggest several potential settings for future studies. First, we encourage studies that would examine the other ecosystem participants in addition to the facilitator organizations, as this could bring some more aspects and emphasizes into light. Second, further research is encouraged to follow the ecosystem lifecycle. Taking one ecosystem as a unit of analysis and carrying out a longitudinal study among all ecosystem participants, or a multiple case-study would help to reveal how the common rulebook works, and also, how the relationships evolve (including the fact that a member may join or leave the ecosystem) that might affect the emphasis given to different tools of the rulebook.

Furthermore, the geographical scope of our study was Finland, which brings limitations to the generalizability of the results. However, the reasoning for narrowing down the scope to Finland were clear. A high level of technical capabilities, a long tradition of collaboration, and the Nordic way of working together, openness and in-built trust in relationships made the Finnish context a solid ground for exploration. However, we encourage future studies to take on research in different environments, as cultures and legal environments very different to Finland might give interesting and at least partially differentiating results. However, even with Finland as the research scope of this study, we think that the results can be generalized to similar circumstances in the Western countries especially.

Overall, with respect to the identified limitations, we argue that the findings of success factors, especially collaborative governance and a common rulebook are not only limited to DBE but apply to many types of collaboration forms such as ecosystems and innovation networks, for example. Further research could gain more empirical evidence of the findings applied to different setups, thus providing more understanding and practical tools for organisations dealing with ecosystems as one possible way to execute digital transformation. The journey might be challenging and generate substantial challenges, but for organisations seeking to build competitive assets for the future, the DBEs can provide rewarding opportunities to create such value that would be difficult or impossible to build alone. A final quote from the interviews to summarize.
“There is no point in doing something with others, that you can do on your own. The target needs to be more than the sum of its parts. That's pretty clear.”

References


