

Digitalization as a Tool to Facilitate the Development of Skåne's Entrepreneurial Ecosystem

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Abstract

Fostering entrepreneurship has become fundamental to economic development in cities and countries globally. The emergence of digital tools and services has created novel ways of pursuing entrepreneurship. Sweden ranks as the third most digitalized EU country, so this thesis aims to investigate how digitalization has facilitated the development of one of its most progressive Entrepreneurial Ecosystems (EEs) in the region of Skåne. Previous research has often laid out and explained the development and functioning of EEs. However, the impact of digitalization on said development remains relatively uninvestigated. As *Human Capital*, *Finance*, and *Policy* constitute three overarching components of Isenberg's (2011) model of the EE, this thesis applied an inductive approach and conducted semi-structured interviews with representatives from each of those components to gather empirical data. By implementing techniques from thematic analysis, the authors could derive four main findings. In addition to considerably impacting day-to-day activities, interviewees cited the Covid-19 pandemic as a key to accelerating digitalization, global teams, and the concept of remote work. The emergence and adoption of digital tools such as Slack, Zoom, Notion, and Microsoft Teams facilitated organizational workflow and, in turn, enabled better collaboration between and within components of Skåne's EE. The facilitated access to digital tools has also democratized entrepreneurship by lowering the threshold of new venture creation. Additionally, digitalization has allowed Skåne to establish itself on the international stage and compete with bigger EEs. This thesis suggests that future research on digitalization's impact on EEs should; (1) Attempt to translate these learnings into practicalities; (2) Develop a framework to determine when an EE evolves into a Digital Entrepreneurial Ecosystem (DEE); (3) Examine the implications of Web3 on EEs and DEEs.

Keywords: Entrepreneurial Ecosystem (EE); Digitalization; *Digital Entrepreneurial Ecosystem (DDE)*; *Covid-19*

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1. Introduction

Fostering entrepreneurship has become fundamental to economic development in cities and countries globally. The predominant metaphor for fostering entrepreneurship as an economic development strategy is the “entrepreneurship ecosystem” (Isenberg, 2014). Every entrepreneurial ecosystem rests upon a carefully and well-developed infrastructure that connects the interdependent factors to keep the machine running. Examples of integral infrastructures are present throughout society, ranging from communication networks to transportation systems and public policies. As society has progressed into the digital realm, the need for such infrastructures to resort to digital solutions in order to stay competitive, innovate, and keep the system running has similarly increased. The glue that holds these complex systems together is the network of components and the cooperation within those. In entrepreneurial ecosystems, *Human Capital*, *Finance*, and *Policy* constitute three overarching components that work together to foster entrepreneurial activities and regional innovation. In the context of entrepreneurship, digitalization most commonly refers to the use of digital technologies to improve processes, change business models, and provide new revenue and value-producing opportunities. As new technologies develop and more societal functions digitalize, the need to understand how they impact or support each other within the ecosystem becomes more valuable.

A recent event that further pointed out the need for understanding and challenging entrepreneurship practices is the Covid-19 pandemic, which resulted in significant cultural, social, and business change while accelerating the urgency for companies to digitalize (Ratten, 2020). While the Covid-19 pandemic is no focal point of this paper in itself, it prompted individual entrepreneurs and businesses to be creative, opportunistic, and devise by devising existing knowledge, skills, people, and networks to existing or emerging needs insufficiently addressed by governments and incumbent institutions (De Cuyper et al. 2020). The pandemic forced the actors involved to change and challenge standard practices and prompted an overdue advance in digitalization and a visible “long-term trend for the post-Covid economy” (Stephan, Zbierowski, & Hanard, 2020, p.1). Even though many aspects of life expect to “go back to normal”, the newly achieved digital level of work and society is now made indispensable as companies and entrepreneurs continuously digitalize and thereby utilize the potential of digital platforms and tools for new business potential and value creation. Yet, this trend has been progressing before the Covid-19 pandemic and has given businesses novel opportunities for growth and success year by year. These fields of

opportunity are supported by research about the transformation towards a more digital entrepreneurial ecosystem as it is acknowledged that “firms that can realize the value of ecosystem transformation are in a position to ensure the successful provision of digitally-enabled advanced services and solutions” which highlights the necessity of digitalization in modern business (Kolagar, Parida, & Sjödin, 2022).

Cavallo et al. (2018) argue that prior research on entrepreneurship has heavily emphasized the characteristics of individual firms, but more resources should be allocated to investigating regional networks. Similarly, Miörner and Trippl assert an apparent “need to deepen our understanding of what factors in the regional environment are shaping the development of new industrial growth paths” (2017, p. 481). Research on entrepreneurial ecosystems has not yet picked up the pace of recent digital advancements and how these influence entrepreneurs, capital providers, policymakers, and the entrepreneurial ecosystem at large. The role of digitization has shown to be of particular significance in the context of the entrepreneurial ecosystem (further referred to as EE) as it allows for the creation of novel ways to create valuable products and services (Urbinati et al. 2020). However, its distinct influence on different components and actors involved within that system remains vague. Therefore, looking at the example of the Skåne region in Sweden, the research question at the very core of this paper reads as follows:

How does digitalization support the areas of Human Capital, Finance, and Policy in the development of the Entrepreneurial Ecosystem in Skåne?

1.1 Research Purpose | Academic Contributions

Digitalization created new entrepreneurship opportunities and business models such as e-commerce, dropshipping, and social media. The Covid-19 pandemic further highlighted the need for businesses to digitalize and for them to be flexible in order to stay competitive (Ratten, 2020; Stephan, Zbierowski, & Hanard, 2020). The main objective of this thesis is to investigate how digitalization has facilitated the development of Skåne’s EE. Previous research has often laid out and explained the development and functioning of EEs, yet no sufficient emphasis has been given to digitalization’s influence on said development, especially when looking at one specific region such as Skåne. While researchers started picking up on the importance of platformization and the digital world at large, literature on the shift to digitalization and its effect on entrepreneurship is still in the early stages. Many did not fully consider the “radical transformation that digital technologies bring to how

economic and social activities are being organized and pursued” (Song, 2019, p. 571). Sussan and Acs (2017) similarly point out a significant gap in the approach to researching entrepreneurship in the digital age. This discrepancy between the rise of entrepreneurial interest and digital access juxtaposed with the research gap is paradoxical and requires additional scientific support. Kraus et al. (2018) similarly remark that despite the growth in interest, “minimal research has addressed this topic and literature on digital entrepreneurship is quite scarce” (p. 354). Examining digitalization as a tool in developing Skåne’s entrepreneurial ecosystem contributes to the existing literature on EEs. It elaborates on the influence of digitalization by suggesting a framework that applies to the digital society and centralizes digital support within entrepreneurial ecosystems. This thesis contextualizes the influence of digitalization on the development of Skåne’s entrepreneurial ecosystem. Insights and learnings derived from the research assist in understanding how each of the examined components can best utilize the digital infrastructure for their own respective benefit and progress.

1.2 Outline of the Thesis

Chapter 2 presents the theoretical framework by reviewing existing literature on entrepreneurial ecosystems, digitalization, digital entrepreneurial ecosystems, and entrepreneurship in Skåne. Chapter 3 elaborates on the methodology, research design, case selection, and limitations. Chapter 4 presents the empirical findings derived from the semi-structured interviews. Chapter 5 offers an in-depth analysis and discussion. Lastly, Chapter 6 concludes the main results, research implications, and suggestions for future research.

2. Theoretical Framework

The following chapter will define and contextualize the concepts that are essential to this research paper in order to investigate the impact of digitalization on the selected key components in Skåne's digital entrepreneurial ecosystem. This includes not only the region itself, but the concept of digitalization and its encompassing components. Chapter 2.1 will discuss and define the concept of Entrepreneurial Ecosystems (EEs). Chapter 2.2 provides an academic overview of digitalization and its impact on entrepreneurship. Lastly, Chapter 2.3 examines entrepreneurship in Skåne to better understand how it has developed over the past three decades.

2.1 Entrepreneurial Ecosystems

While the term *ecosystem* is known to most from the world of biology, its core idea is applicable to many contexts including organizations, education, information, and communication. In their study on the development of EEs, Cavallo et al. (2019) argue that in the same way as the system of living organisms is considered to be at the heart of the ecosystem in biology, the factors mentioned above can be considered the heart of the entrepreneurial ecosystem. The underlying idea of a successful entrepreneurial ecosystem is that actors do not just compete with each other, but base their business models on shared resources, network externalities, knowledge spill-overs, local endowments, and governmental support (Porter, 2011). As both interest and opportunities for entrepreneurship and innovation in the digital world prosper, this chapter will focus on defining and contextualizing just these.

In Daniel Isenberg's seminal paper about the cultivation of entrepreneurship, he proposes methodologies for entrepreneurship ecosystem strategies aimed at economic development (2011). In order to do so, he maps out the different elements that together create an entrepreneurial ecosystem. According to Isenberg, such a system consists of six distinct domain categories, being *Culture*, *Policy*, *Market*, *Human Capital*, *Finance*, and different kinds of *Support* (2011).

Resting on Isenberg's insights, the newly proposed model utilizes an increased focus on digitalization and aims at examining the interplay between digital technologies and three main components of EEs - being *Human Capital*, *Finance*, and *Policy*. According to Isenberg's definitions, the *Human Capital* component includes the traditional entrepreneur him-/herself as well as mentorship and specific entrepreneurship training (2011). An

entrepreneur's work nowadays is influenced by technology, not only as a final innovative product, but as a tool to build it. The entrepreneurs and their startups are key to the ecosystem and its level of innovation as they are the actual players within the game and offer their forces to drive innovation and new ideas forward. Isenberg supports this in his paper by noting that *Human Capital* is elementary for the entrepreneurial ecosystem, for example as “success stories inspire new generations and make society more tolerant of risk and failure and wealth creation” (Isenberg, 2011, p. 5). Nowadays, not only entrepreneurial education is facilitated and globalized through digitalization, but entrepreneurs have access to tools that allow them to utilize recently untapped resources and thereby create a venture in a much smoother fashion with a reduced level of risks.

The *Finance* component includes (but is not limited to) Venture Capital, Investments, and Angel Investors. This component is core to entrepreneurial ecosystems as the flow and investments of capital not only allows ideas to be turned into well-developed products and services, but additionally enables startups to grow and scale up for larger markets. Duan, Sandhu, and Kotey (2021) continue on this sentiment by stating that “the universal agreement is a functional entrepreneurial ecosystem provides capital [...] to enable entrepreneurs to discover, access, exploit and take advantage of market opportunities” (p. 5). Enabling the entrepreneurs to prosper via access to financial resources is meaningful for an individual's as well as the ecosystem's performance, as it allows to “mitigate unpredictable risks and derive competitive advantages from capital-intensive strategies, such as increasing investments in R&D” (Huang, 2021, p. 5). With digitalization opening up the information dissemination and allowing access to larger platforms to raise capital, the *Capital* component is assumed to have experienced a strong impact by digitalization.

The *Policy* component mainly focuses on the governmental end of the spectrum, including incentives and regulatory frameworks, as well as the level of overall venture-friendly legislation. This component is of substantial influence to the entrepreneurial ecosystem as it is needed to incentivize the different actors to invest into not only the human/financial capital but the technology adoption as well (Acemoglu & Johnson, 2005). Entrepreneurship-friendly policies and legal frameworks form the breeding ground for ventures to be planted and grow in and have significant impact on their chances of success. This is especially important in the digital realm, as it creates a novel ‘dimension’ of society. As new grounds need to be regulated, the fast growing digital environment calls for enabling policies and frameworks that governmental bodies need to catch up with, for example regarding start up visas and remote work regulations.

To account for and examine the influence that Digitalization has on these three components, Digitalization is added as a mediating variable that impacts the relationship of the development of Skåne’s EE, as illustrated in *Figure 1*. This adjustment allows this research to not only suit the Skåne context but most importantly updates the now decade old model by Isenberg with a timely digital spin. This is important as digitalization has skyrocketed throughout this decade (even more so during the Covid-19 pandemic) and allowed for accelerated digital progress. Considering the increasing influence of technology on our lives and its impact on entrepreneurial ecosystems, it is valuable to consider Digitalization an important component of the entrepreneurial ecosystem.

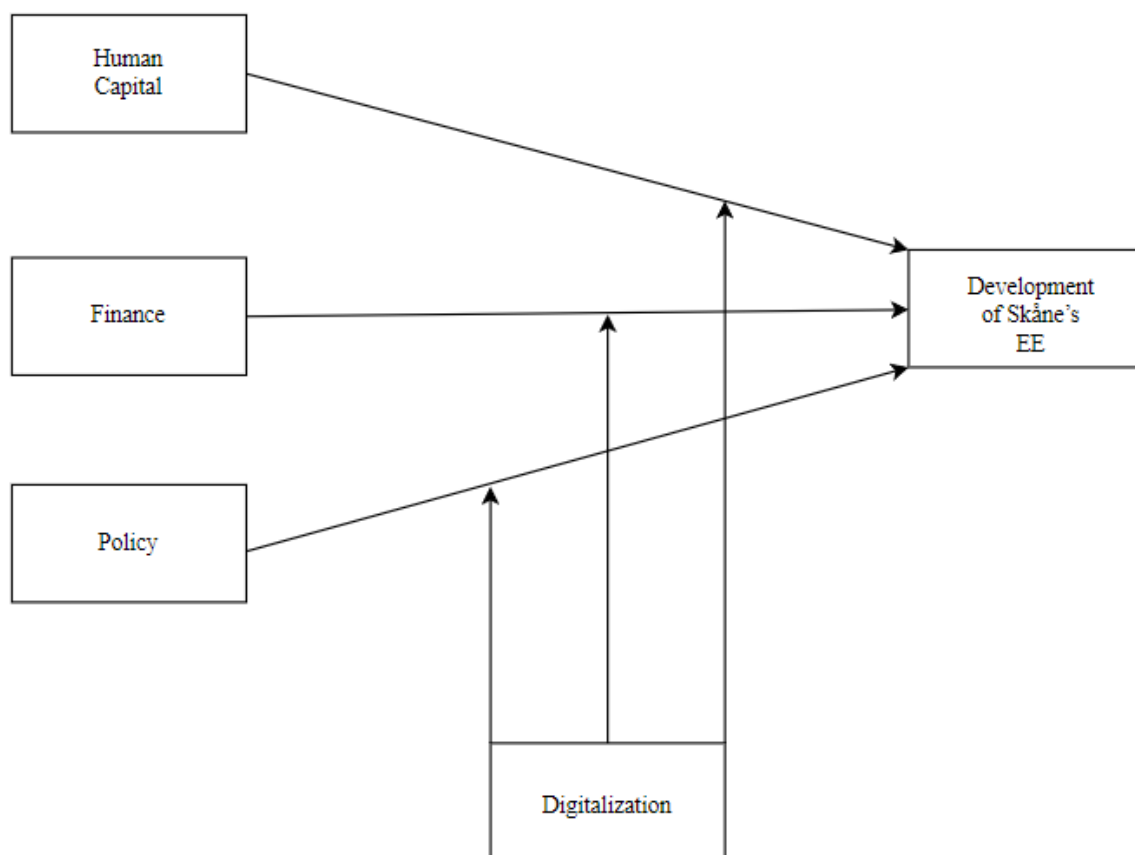


Figure 1: Research Model (Digitalization’s Impact on Skåne’s EE Development)

2.2 Digitalization as an Agent for Change

In the context of entrepreneurship, digitalization refers to the use of digital technologies to improve processes, change business models, and provide new revenue and value-producing opportunities. Alrich (2014) argues that the emergence of Web 2.0 and digital tools and services such as social media, crowd-funding, and open-source software has lowered the threshold for entrepreneurs wishing to start their businesses. The shift from static

web pages to dynamic or user-generated content and the evolution of social media are what characterize Web 2.0. Aldrich (2014) believes this digital transformation gave way to the growth of the maker movement.

The “deregulation of the Swedish economy coincided with the rise of the internet, which meant that more people were creating businesses while experimenting with new technology” (Semuels, 2017, p.1). In the 1990s, the Swedish government invested heavily in reliable and accessible internet service and even gave a tax break to companies that gave their employees home computers. These incentives encouraged entrepreneurs to think digitally when new policies and deregulations opened the country to development (Semuels, 2017). Facilitating access to something can unlock new possibilities, no matter the context.

The same holds for the digital world and its nature of connection which is why it is valuable to contextualize the world of entrepreneurship in the digital environment. Zahra et al. noted that context is “believed to pervade and influence the micro-processes that give entrepreneurial actions their substance and potency” (2014, p. 480). The gap in research about the contextual environment calls for further research to account for these contextual variables. This highlights the decisive impact that a good foundation has on the potential success outcomes of entrepreneurship, especially when it comes to digital environments. Sweden is a highly digital society among all demographics (Sefyrin et al. 2021). In fact, according to the Digital Platform Index 2020, Sweden ranked #5 globally for both Digital Technology Infrastructure and Digital User Citizenship (Szerb et al. 2022). Thereby, Sweden is considered to be a global leader in digital access and a flagship for the digitalization of small European nations. As the third most digitalized EU country, Sweden’s entrepreneurial landscape has been highly impacted by digitalization (European Commission, 2022).

2.2.1 Digitalization’s Impact on Entrepreneurship

An article published by the World Economic Forum suggests that digital technologies gave rise to the fourth industrial revolution and a new digital transformation (Schwab, 2016). Aldrich (2014) even argues that increased access to digital tools has democratized entrepreneurship. For example, new business models such as dropshipping, e-commerce, and social media create new opportunities by removing barriers in the way of entrepreneurship. Especially as digital natives make up a growing part of society, the offer of digital services and ventures increases simultaneously and paves the way for innovation. The digital world

also removes geographical constraints and allows access to new markets (Florida, Adler, & Mellander, 2017). Nambisan (2017) similarly argues that the digital transformation makes entrepreneurial processes “less bounded” and instead adds “increasingly porous and fluid boundaries” (p. 1). The same holds for the human dimension by removing barriers between people. Aldrich (2014) further adds that digitization leads to overall more collective approaches to entrepreneurship.

Taking the lens of Davidssons’s (2015) entrepreneurial framework, the digital infrastructure acts as what he calls an *External Enabler* that “creates room for new economic activities but cannot ensure success for particular ventures initiated in response to their occurrence” (p. 675). Davidsson describes these conditions (such as technological advancements etc.) as enabling as they offer an incentive for *Opportunity Confidence* which ultimately holds the potential to build the foundation to start new ventures and turn business ideas into reality. Facilitating conditions (such as a digital infrastructure) can offer the supportive push needed or lacking in many cases. Additionally, a supportive and resourceful environment can make or break the “Go or No-Go” decision when undertaking a venture. Therefore, it is worthwhile to inspect the inherent aspects of the DEE in Skåne to filter out the details that can best aid these processes in sustainable manners.

2.2.2 Digital Entrepreneurial Ecosystems (DEE)

Whereas digital entrepreneurship and EEs are fairly well-covered topics in existing entrepreneurship literature, the concept of a digital entrepreneurial ecosystem (DEE) is still in an early stage of academic understanding and development. Digitalization's growing prevalence in our lives calls for more research to combat the exclusionary “dead end in the previous papers” (Acs et al. 2017, p. 5). Therefore, Sussan and Acs (2017) introduced the term *digital entrepreneurial ecosystem* to conceptualize entrepreneurship in the digital age. Their conceptual framework of DEEs integrates literature on digital ecosystems with entrepreneurial ecosystems and consists of four components: (1) *digital infrastructure governance* refers to the governance needed to establish a set of shared technological standards related to entrepreneurial activities; (2) *digital user citizenship* concerns the legal and social contract users agree to in their participation in the digital environment; (3) *digital entrepreneurship* represents the combination of users and agents within the EE; (4) *the digital marketplace* is the combination of digital infrastructure and entrepreneurial agents (Sussan and Acs, 2017).

Existing literature offers a range of definitions, Li et al. (2017) put it into simple words by defining DEEs as any “ecosystem where digital entrepreneurship emerges and develops” (p. 4). This digital ecosystem, characterized by the interplay of ‘living actors’ and their environment, is shaped by a digital infrastructure that is less prevalent and centralized in ‘traditional’ entrepreneurial ecosystems (Henfridsson & Bygstad, 2013). Torres and Godinho suggest that DEEs “represent a combination of elements, in a particular territory, backing the growth of start-ups aiming to pursue new opportunities that arise from digital technologies” (2021, p. 2). DEEs have already proved in practice to accelerate start-ups based on digital innovations. Because an ecosystem can facilitate the integration of resources and supportive elements beyond the business, a digital entrepreneurship ecosystem is important for the success of digital entrepreneurship (Spigel, 2015).

In academia, the main difference between EEs and DEEs is the inclusion of digital technologies (Sussan and Acs, 2017). Elia et al. (2020) argue that DEEs provide novel value to the entrepreneurial ecosystem realm as an “enabling factor” that “leverages the potential of the crowd in different parts of the entrepreneurial process, including some core activities” such as customer and feedback research as well as scenario evaluation (p. 7). In the digital age, online platforms can replace local businesses and organizations' roles in orchestrating actors to foster innovation and create value in the ecosystem. One example is how Apple allowed anyone to develop apps and sell them through their app store. While value creation occurs within the platform, the main contributors to this value creation are actors outside the firm boundaries. Sussan and Acs (2017) further remark that digital entrepreneurs have better opportunities to participate in and influence the ecosystem in which they operate than it is for entrepreneurs in non-digital environments. Thus, they believe that DEEs can be more sustainable than traditional EEs, referencing their ability to foster new entrepreneurs and disrupt existing businesses long-term. To emphasize the interplay between various components within DEEs, Szerb et al. (2022) argue that the European Union must oversee its DEE policy to stay competitive and promote technology innovation, platform companies, and create a sustainable platform economy. This sentiment is yet another powerful argument for investigating how digitalization has influenced the development of Skåne’s EE.

2.3 Entrepreneurship in Skåne

Skåne (*English = Scania*) is Sweden's southernmost area and home to 1.3 million people. Historically, the region is well-known for its rich agricultural landscape and farming, but it has transformed tremendously over the past two decades. With Malmö at the economic center of southern Sweden and the opening of the Öresundbridge connecting the city to Copenhagen in 2000, Skåne became a hub for businesses and innovation. As of March 2022, there are 80 registered companies and organizations in Skåne working to support entrepreneurs and innovators wanting to develop their businesses (Verksam, 2022). A study by Ejeremo et al. (2021) reveals that the opening of the Öresundbridge led to a significant increase in patent filings in the Malmö region, especially compared to Gothenburg and Stockholm, two other populated regions. Furthermore, they concluded that 78% of the total increase in patent applications can be attributed to the increased inflow of human capital in Skåne (Ejeremo et al., 2021). This increase in patent filings also resulted in Malmö being named the fourth-most inventive city globally (Pentland, 2013).

Circling back to the recognition of patent increases as a success factor, as suggested by Fagerberg et al. (2005), these numbers allow us to conclude that Skåne boasts a successfully innovative ecosystem. Close access to world-class universities in Lund and Copenhagen, relatively affordable housing, a high density of skilled workers, and an active startup scene are also contributing factors to the growth of entrepreneurial activities in Skåne. The development of Skåne's entrepreneurship scene accelerated by a deal signed in 2010 between the region and its non-profit sector to exchange monetary assistance for the continued and increased work on five certain areas - one of those being idea-driven entrepreneurship (Persson, 2021). An additional and updated agreement followed this development in 2014. This progress closely aligns with Sweden's overall pursuit of entrepreneurship, as a substantial 60% of Swedes in the workforce found themselves in either a trade union or an entrepreneurial organization in 2016 (SCB, 2016). In their article on the enabling role of cities, Geissinger et al. (2019) note that the "density and diversity of cities constitutes a critical enabling condition for digital entrepreneurship" (p. 884). Despite being only the third-largest city by population in Sweden, Malmö boasts the highest proportion of foreign-born residents.

When reviewing entrepreneurial activity in the Skåne region (especially in the context of digitalization), it can be insightful to look at the whole country. Sweden used to harbor a heavily regulated economy where public monopolies dominated the market. Since 1990,

however, the ability for new ventures to compete with bigger and more established firms has increased as regulations have eased (Semuels, 2017). Economist Joseph Schumpeter famously theorized that economies thrive when “creative destruction” occurs, i.e. when new technologies, products, methods of production, and means of distribution can compete with or replace long-standing practices and institutions. With this in mind, the deregulations were arguably necessary to foster innovation and drive entrepreneurship in Sweden. As matters of legal support and enablement of entrepreneurial activities are deemed crucial to an EE, these matters are examined and discussed within the *Policy* component of the paper.

3. Methodology

This thesis aimed to examine how digitalization supported vital components in the development of Skåne’s entrepreneurial ecosystem. The following chapter is divided into several sections addressing the choice of research design, selection of informants, data collection procedures, data analysis, limitations, and conclusions.

3.1 Design

Due to the lack of research on entrepreneurial ecosystems in the digital age, this study applied an inductive and qualitative approach to contribute to and expand existing theory on EEs. A case study design is appropriate since it is not strictly dependent on existing theory which increases flexibility in the research (Eisenhardt, 1989). By using this approach, this thesis incorporated semi-structured interviews with people representing three vital components of an EE - *Human Capital*, *Finance*, and *Policy*. Semi-structured interviews allow spontaneous follow-ups and elaborations if unforeseen topic directions provide new and worthwhile insights. This methodology adds value through the “richness of data they yield” and the freedom of encouragement for other replies from the interviewees (Harvey-Jordan and Long, 2001, p. 219). Rather than looking at several EEs, this thesis decided to examine one region through the lens of three vital components, namely *Human Capital*, *Finance*, and *Policy*. Due to the nature of qualitative research, this thesis aimed to make analytical generalizations about digitalization’s facilitating effects on entrepreneurial activities and ecosystem development in Skåne.

3.2 Case Selection

Skåne makes for an accurate subsystem of Sweden as a whole, according to a piece about high-growth entrepreneurship by Gabrielsson, Dahlstrand, and Politis (2014), who found a 0.98 correlation in industry structures, prompting them to name Skåne as a “Sweden in miniature” (p. 33). The authors used Verksam.se’s sorting tool (Swedish authorities’ joint hub for business information and services) to narrow the list of potential organizations, businesses, and actors in Skåne and sort them into either *Human Capital*, *Finance*, or *Policy*. Almi Invest, as an example, was sorted into *Finance* due to it being a venture capital firm. Following that, key individuals were identified within those businesses and organizations to act as representatives of the specific component. To accurately represent either *Human Capital*, *Finance*, or *Policy*, interviewees needed to have a minimum of ten years of working experience within Skåne’s Entrepreneurial Ecosystem (entrepreneur, advisor, incubator, educator, investor, business accelerator, or governmental institution). Including more than one interviewee per each component also allows “*findings to be replicated within categories*” (Eisenhardt, 1989, p. 537). The following section clarifies the three components and further justifies the case selection.

Human Capital

Although entrepreneurs are considered the heart of the EE (Cavallo et al. 2019), the *Human Capital* component also includes mentorship, leadership, and supportive services provided by incubators, which are essential for incubated startups to grow (Yuan et al. 2021). Isenberg (2011) cites *Human Capital* as the most vital and encompassing component within the entrepreneurial ecosystem, which is why it was decided to include four representatives as opposed to only two. This allows to include actors involved in accelerators and incubators as well as the traditional entrepreneurs themselves. For this component, interviewees with work experience at incubators and accelerators were of significant interest due to their insight into entrepreneurs and early-stage ventures in the region. Important organizations, actors, firms, and support services that ultimately make up the *Human Capital* of Skåne’s EE were again identified through Verksam.se’s sorting tool to narrow down the list of options.

The first interviewee was Martin Backlund, an IT specialist with over 20 years of experience working with business discovery, business intelligence, corporate performance management, and knowledge management. The second interviewee, Sara Egidius, is the Head of Business Development at Ideon Innovation, a startup incubator in Lund. She

contributes to this paper with her knowledge and experience in driving innovation, process management, and professionally consulting startups. Thirdly, Jonas Jönsson contributes to the *Human Capital* component with his knowledge and experience in Business Development, Project Management, and Development Management within the region, accompanied by extensive working experience in accelerator programs. He is currently working as a Business Coach for the Malmö-based incubator Minc. Lastly, the authors interviewed Henrik Rosvall to learn about *Human Capital* and the impact of digitalization from an entrepreneur’s point of view. Henrik was a self-employed UX Consultant before founding his own business in the field of scientific EdTech.

Case	Name	Data	Occupation	Represents
1	Martin Backlund	5/4/2022	Business Developer at Invest in Skåne	Human Capital
2	Sara Egidius	28/4/2022	Head of Business Development at Ideon Innovation	Human Capital
3	Jonas Jönsson	29/4/2022	Business Coach at Minc	Human Capital
4	Henrik Rosvall	5/5/2022	Co-Founder and CTO at Akribian	Human Capital

Finance

Finance includes capital providers like angel investors, venture capitalist firms, and private equity. Different capital providers will be appropriate at particular stages of a startup, but it is an essential element driving the success of a venture (Yuan et al. 2021). To identify relevant contributors in the Finance component of Skåne’s EE, the authors again resorted to Verskamt.se’s sorting tool to narrow down the list of options. The authors only considered organizations, firms, and actors actively investing in earlier-stage startups.

As more focus was given to the *Human Capital*, *Finance* is represented by concentrating on the selection of two interviewees who were deemed to best represent this component. The first interviewee representing finance, Thomas Unt, is a Senior Business Developer and manager of VC relations with over 20 years of VC and corporate governance experience in Finance and Life Sciences. In his role at SmiLe, Unt consults SMEs in acquiring venture capital, developing financial strategies, and Initial Public Offering

launching. Meanwhile, Mette Gross has 20 years of experience as a CFO for small and large companies. In addition to managing investments, Mette has worked with the development and listing of two MedTech ventures and one SaaS company.

Case	Name	Data	Occupation	Represents
5	Thomas Unt	6/4/2022	VC Relations and Business Coach at SmiLe	Finance
6	Mette Gross	8/5/2022	Investor	Finance

Policy

The *Policy* component mainly focuses on the governmental end of the spectrum, including incentives and regulatory frameworks, as well as the level of venture-friendly legislation overall. This part of the ecosystem is central as it is needed to incentivize the different actors to invest in the remaining three concepts, namely human/financial capital and technology adoption (Acemoglu & Johnson, 2005). Relevant interviewees were identified and contacted by reviewing the websites of several municipalities within Skåne (such as Malmö and Lund) and the overarching governing body, Region Skåne.

The first interviewee representing *Policy*, Ola Andersson, provides insights on challenges and opportunities within Skåne’s and Sweden’s legal structures through his experiences as an entrepreneur and his current role in the Innovation and Development department at Malmö’s municipality. As a part of the local municipality, Andersson stands at the forefront of policy decisions with a powerful potential impact on entrepreneurs and their enablement to create successful ventures. The second interviewee representing *Policy* is Jeremie Poirier, a Swedish/Canadian Strategist at Region Skåne and a member of The Research and Innovation Council in Skåne (FIRS). At Region Skåne, he specializes in strategic initiatives around fast-growing startups, tech companies, and incubators in Sweden. Jeremie has been working within Skåne’s entrepreneurial ecosystem for more than ten years as a policy shaper, entrepreneur, Community Organizer, CEO, and Chief Growth Officer. Due to his policy-shaping positions, Jeremie’s first-hand insights on legal support for the entrepreneurial ecosystem in Skåne are of high value. Additionally, he is a co-founder of Skåne Startups, the largest startup community organization in southern Sweden. In his thesis on the replicability of entrepreneurial ecosystems, Jeremie attempted to make a model to guide societies from industrial to knowledge economies.

Case	Name	Data	Occupation	Represents
7	Ola Andersson	8/4/2022	Innovation and Development at Malmö Stad	Policy
8	Jeremie Poirier	14/4/2022	Regional Business Developer at Region Skåne	Policy

3.3 Data Collection | Procedure

First, the authors conducted a literature review to synthesize and analyze the existing body of research on entrepreneurship in Skåne, EEs, DEEs, and digitalization. This way, research gaps could be identified and the findings linked to established frameworks and theories. Semi-structured interviews with representatives of the *Human Capital*, *Finance*, and *Policy* components in Skåne’s EE provided the empirical data for this study. Semi-structured interviews allowed the researchers to collect rich data and enabled in-depth analysis (Bell, Bryman & Harley, 2019). The interviewees were informed about the topic of the research and the terms of their participation (Appendix B *Consent Form*). After gaining verbal consent, the interviews started with a set of general topics for all interviewees to discuss - entrepreneurship in Skåne, the entrepreneurial ecosystem, and digitalization. The interview guide can be found in Appendix A and includes (but is not limited to) questions about challenges for new venture creation in Skåne, how digitalization supports their ability to contribute to the EE, and how their respective organizations rely on support from the local EE. Subsequently, the authors asked questions about either of their specific areas of expertise (*Human Capital*, *Finance*, or *Policy*) to obtain additional insights into specific components of the local ecosystem. These include questions about policy differences in Skåne compared to other regions in Sweden or if digitalization had any impact on investment decisions. Including ‘personalized’ questions specific to the expertise of the interviewee allowed for a greater perspective and understanding of the complex nature of EEs and the effects of digitalization. The interview guide provided a loose structure, but all questions were open-ended and were not required to follow a particular order to increase freedom for the interview.

3.4 Data Analysis

Once the interviews were completed and transcribed, this thesis applied techniques from thematic analyses, which emphasize identifying, analyzing, and interpreting patterns of meaning within qualitative data. This approach offers flexibility and a wide range of analytical options. Additionally, it allows the researchers to iterate between theory and collected data (Bell, Bryman & Harley, 2019). First, the data derived from each interview was separated into different themes where repeated words and phrases were highlighted. Additional data collected was analyzed in relation to the recurring themes, differences, and similarities in the interviewees' answers. Then, the authors extracted the most meaningful quotes and sections from each interview into a separate document for a better overview. Apparent themes emerged through analysis of the collected data concerning the stated research question and the literature review. The authors contacted potential interviewees through email, LinkedIn, or in person. All interviews required approximately 80 minutes and took place either online or in the participants' offices to create a natural environment to ensure interview quality (Bell, Bryman & Harley, 2019). Additionally, they were conducted with both authors present and held in English to forego any possible misinterpretations deriving from translations.

3.5 Limitations

Limitations can have critical implications for the data analysis and the following discussion and conclusion. Here, the authors describe and discuss limitations regarding research design, data collection, and data case selection.

3.5.1 Research design

Qualitative research is often criticized for being subjective, problematic to generalize, non-transparent, and difficult to replicate (Bell, Bryman & Harley, 2019). To evade the limitations of subjectivity, the authors applied a thematic analysis while iterating between theory and empirical findings. All relevant aspects of the data collection and analysis process are described with detail and clarity to improve transparency and replicability. However, the unique context of interviews remains a challenge for replicability (Bell, Bryman & Harley, 2019). This thesis acknowledges that theory expansion with this type of research is bound to the distinct and unique context of the study cases.

3.5.2 Data collection

Qualitative interviews are generally regarded as less flexible and insightful in behavior and are prone to over-rationalization by interviewees (Bell, Bryman & Harley, 2019). To overcome this, the interviews were conducted with both authors present, meaning that two people could intervene if clarification or elaboration were necessary. The interviewees were only vaguely informed about the research topic but not aware of any other participants.

3.5.3 Case Selection

The limited case selection within this research is subject to potential bias. While the representatives of each component were carefully chosen and suitable in their contributions, these actors are mainly active within the cities of Malmö and Lund. While these are arguably essential to Skåne's EE due to Malmö being the largest city and Lund being home to the largest university and numerous incubators, including actors from other cities within the region could have allowed for insights within a bigger picture. This bigger picture could have further been created through a wider lens of industries and a larger sample size. While this paper's scope is intentionally focusing on representation within the entrepreneurial ecosystem, extending that view towards other non-tech industries can potentially result in meaningful insights into the impact of digitalization on work-life and work culture. Additionally, many interviewees shared a similar demographic, educational, and experience background which may also affect bias and the practical applications of the findings.

3.6 Ethical Considerations

Consent was given verbally by each interviewee before participation. Appendix B shows a written consent form in case interviewees preferred to obtain a physical copy. No sensitive personal information was required nor included in the interviews.

4. Findings

In this chapter, findings from the empirical data gathered through semi-structured interviews will be presented, analyzed, and discussed.

4.1 The Covid-19 Pandemic's Accelerating Effects on Digitalization

While not specific to Skåne, a central theme emerging from the interviews is the Covid-19 pandemic and its impact on digitalization processes in the entrepreneurial ecosystem. In many ways, it turned digitalization from an optional add-on to *"the way of living your life"* according to Martin Backlund. All interviewees agreed that the most visible effect of the pandemic was its acceleration of digitalization processes in their respective companies. This was supported by statements such as *"We were in the same situation as everybody else. It forced us to adapt and transform from physical to digital"*, according to Martin Backlund. His statement is in line with Ratten's (2020) article on the pandemic's impact on EEs in which she argued that it accelerated the need for companies to digitalize.

The acceleration of digital processes led to changes that are here to stay according to the majority of interviewees. As companies realized the benefits of moving events such as conferences online, the pandemic ties into the access democratization which is described in chapter 4.2. Finance expert Unt reported that he and his colleagues *"could not access the big conferences digitally before the pandemic. All are open today, all are hybrids. It's less expensive to sit home than to fly to San Diego."* Martin Backlund reinforced this openness by stating that *"you are not limited by borders anymore if you have an internet connection"*, illustrating how digitalization has opened up opportunities for business in Skåne beyond Skåne's physical borders. The benefits resulting from Covid-induced digitalization are plentiful; not only allowing more participation for people involved in the EE but simply making the processes more efficient and more cost-effective for the ones behind the scenes. The pandemic is/was a global humanitarian crisis and thousands of people across industries lost their job, yet it also presented new opportunities for businesses as well. Paradoxically, interviewees reported a range of benefits related to digitalization. Unt extended his answer by adding that his company is *"more visible on the international arena, meaning that we now cooperate with more international organizations. We have corporations in Munich and Paris, and none of those existed before Covid or before digitalization."*

These accelerating effects of the pandemic on digitalization illustrate long-overdue developments. The interviewees highlighted the benefits of the pandemic on digitalization and uncovered the untapped potential of digitalization. Across the three components, interviewees reported that processes were possible but not used in full yet for no apparent reason. Sara Egidius particularly noted how sharing and distribution of information have increased during the pandemic, which is something she hopes will stick.” Egidius reported that *“a lot of things were possible before, but the pandemic really accelerated that.”* Lastly, the *Finance* component experienced changes as well and removed the fears of unknown practices that without the Covid-19 pandemic might not have happened. Mette Gross reported that she *“even invested in companies which I’ve never met, that was a new experience. It made it much more efficient because you could meet a lot of companies in one morning, which speeds up the meeting culture and information sharing”*. This otherwise untapped potential of such practices was brought to light through the actors being forced to adapt which uncovered novel opportunities for the actors involved.

The interviewees additionally conclude a ‘post-pandemic’ workplace and the lasting effect of Covid-19, stating that it is *“very difficult to get people back in the office, for example for physical meetings”* according to Martin Backlund. However, he added that this hurdle seems to be annulled as *“once people actually get here, it is more appreciated”* among the individuals.

4.1.1 Global and Remote Teams

While simplifying processes and taking away a lot of timely effort for travel, the pandemic was not only beneficial for business. Sara Egidius reflected on it leading to *“a temporary shortage in talent. It has been harder to get people to move”*. This statement illustrates the complexity that our newfound comfort brings through digitalization and the accelerated adoption of remote work, video meetings, and other online tools. As work-from-home policies become increasingly accepted globally, employees are now used to increased levels of flexibility and comfort and often refuse to return to the ‘old normal’. This results in remote teams being a double-edged sword for the parties involved. On the one hand, it allows to make life easier for both entrepreneurs, as it is *“faster and easier to build a team where not everyone is situated in Malmö or Skåne”* (according to Jönsson), such as the remotely built team from the startup Mapillary, as well as for the accelerators and incubators by enabling

them to “*contribute to companies that are not actually in-house, and it feels more and more natural to have a relationship over the screen*” (Jönsson). Mapillary’s remote team-building approach was surprising to many, “*but after the pandemic, it doesn’t seem strange at all.*” On the other hand, companies further pushing office-based work policies might find themselves struggling to catch up with employee demands. Henrik Rosvall summarized his stance on this matter by asking the question “*how can an office really be better than your home, especially if you design your home to be the best place for yourself? Digitalization enables us to ask that question and ask whether we need to be at the office at all*”. This statement showcases the interplay of longevity paired with the revolutionary impact that digitalization can have on work-life traditions as we know them.

4.2 Increased Collaboration Between *Human Capital, Finance, and Policy*

A recurring theme in all interviews was the emphasis on increased collaboration between and within the *Human Capital, Finance, and Policy*. The ability to meet online instead of always having to visit each other's offices increased the number of conversations taking place between components. The Head of Business Development at Ideon Innovation, Sara Egidius, repeatedly emphasized that “*digitalization enabled us to have a closer collaboration with people from the whole region.*” This seems to not always have been the case; Jönsson reflects on the differences in the past through statements such as “*I think 10 or 15 years ago, Ideon Innovation and Minc were really competing. But today, we are cooperating with SmiLe, Ideon Innovation, and Minc.*”

The different institutions in the area seemingly enjoy an environment of collaboration and empowerment due to these closer personal connections, which Jönsson called “*a main advantage of being in this region.*” Sara Egidius takes this point a step further by stating that this advantage makes it “*really easy to get a foot in the door here because it is more open and collaborative.*” She continues by saying that “*you would need to know the right people and should have been at the right school in Copenhagen or Stockholm*”, and other ecosystems due to their size are less personal and interconnected. Andersson continues by saying that “*here, you can actually call up the CEO of a company and you probably would get that meeting*”. Jönsson has had the same experiences: “*Here, it’s not impossible to get a meeting with the CEO of a big company like Oatly.*” Yet this closeness and collaborative attitude does

not promise an absence of issues or a generalized superiority about areas of competition. Sara Egidius gives the example that *“at the same time, it is much easier to find capital in Stockholm”*, showing that enjoying the benefits of being a smaller scale ecosystem entails the drawbacks of not being the center of attention such as capital cities are.

These enabled collaborations are partly facilitated by digitalization processes, as it takes comparatively low effort to set up meetings and to interact with one another through video meetings or other communication platforms. Mette Gross adds the example of information sharing which simplifies her interactions with the *Human Capital* component as *“it’s fairly easy if I want an update on a company for example”*, yet it also simplifies the processes of sharing pitch decks from companies to other institutions that might be a better fit. She adds that *“I think that most networks want the best for the company. It doesn’t really matter whether the investment comes from us or someone else in the ecosystem. I think the system has opened up because of information sharing. It’s so easy to take a brief meeting to find out what someone thinks and how we can help.”*, showing not only the existing goodwill between institutions but additionally the simple ways of translating this into actions digitally. Thomas Unt, who manages VC Relations at SmiLe, added that relationships between incubators in Skåne’s EE are now much more transparent and collaborative. Similar to Jönsson, he paints a picture of a more competitive landscape in Skåne just 10-15 years ago. He argues that more effective ways to communicate were a major shift in building better relationships. Thomas believes that *“all incubators try to look at what’s best for the companies. If I have a company coming to SmiLe and I, for whatever reasons, consider that company to be able to get better support from Minc, I send them there.”* Egidius described similar scenarios and elaborated that some startups even choose to move back and forth between incubators in the region today.

Ola Andersson from the Innovation and Development department at Malmö municipality shared an example of how *Policy* and *Human Capital* have come together to solve societal problems through an organization called Malmö Civic Lab. Essentially, The Malmö Civic Lab is a self-stated experiment initiated by the city of Malmö to explore ways of improving life in the region. Andersson described that the city brought in entrepreneurs and tasked them to come up with digital solutions to speed up processes such as getting a passport. Ola believes that *“we can solve a lot of societal problems with software, and outsourcing these projects to entrepreneurs enables us to solve it more quickly.”* He iterated that this approach would not have been possible ten years ago because the digital infrastructure was not well-developed enough. Andersson provided another example of how

digitalization has improved the collaboration between components within Skåne's EE. In his words, *"the European Union legislated that data collected by governments belonged to taxpayers."* Malmö municipality is currently working on a project to improve distribution of data with companies in the region. Andersson believes that all the data gathered by the municipality over the years can be valuable for companies working to solve regional problems. The legislation Andersson refers to is the Data Governance Act (DGA), which *"aims to boost data sharing in the EU so that companies and startups will have access to more data than they can use to develop new products and services"* (European Parliament, 2022). This new legislation is perhaps a response to Szerb et al. (2022) and their critique that the European Union must oversee its policy to facilitate the development of DEEs to stay competitive with other advanced areas in the world.

While initiatives from the policy side, such as asking entrepreneurs to find solutions are worthwhile, digitalization in the public sector seems to be a work in progress that is not at the same stage as the other components. When asked about her relationship changes with policymakers and municipalities due to digitalization, Mette Gross reported that *"I can't really say that it has necessarily improved. I don't have a bad relationship with them at all, but the few times that I've tried to establish a connection I've noticed that there is room for better collaboration here. Something that could be beneficial for both parties. It's taking too much time and there have been too many offices having to be involved. So it's been just energy-consuming. It's too inefficient and too slow in my opinion"*, which demonstrates how actors in the system communicate and, most importantly, require solutions that are mutually beneficial. If it does not improve, *Finance* may resort to their ways of handling matters without the public sector involved, which would cause them to miss out on valuable opportunities. The bureaucratic processes present in the *Policy* component not only prohibits fruitful collaborations within the EE, but Hamel and Zanini (2018) state that *"bureaucracy saps initiative, inhibits risk-taking, and crushes creativity"* (p. 52) which restricts innovative processes waiting to happen.

Although usage of communication tools and the normalization of online meetings increased the number of conversations happening between and within the three components, Sara Egidius described digitalization as a process of trial and error. In her words, *"we've had to learn how to balance digitalization with a physical presence."* Alongside other interviewees, Egidius expressed concern over purely remote or digital communication as it can miss out on some vital aspects of relationship-building. In her words, *"meeting up in person can feel more organic."* Overall, the interviewees iterated that technology has made

their workflow much more efficient and better able to stay up-to-date on what goes on within the entrepreneurial ecosystem. However, physical meetups at events or in the office remain vital for added personal connection. Thomas Unt concluded *“the digital has not entirely replaced the in-person aspect. The magic still happens when you meet people., although our ability to connect is much better now.”*

4.2.1 Improvements in Organizational Workflow

In addition to increased collaboration between *Human Capital, Finance, and Policy*, interviewees also reported improved collaboration within their own respective organizations and the processes of starting a venture. Martin Backlund summarizes the digital opportunities for new venture creation by saying that *“technology is the toolbox you can use to realize your idea.”* Once the idea is realized, digitalization steps in to assist with optimizing workflows and simplifying specific organizational processes in day to day work. Interviewees cited real-time communication tools Slack, Microsoft Teams, and Notion as some of the most useful tools for improving the organizational workflow. Henrik Rosvall, the co-founder and CTO of Akribian noted that *“ten years ago, we used email and Skype as our primary communication tools. Real-time communication software existed, but we weren't using them. Today, we use Slack, and the difference between email and instant messaging is like day and night. How we talk and communicate is so different and much more efficient because you can skip a lot of formalities associated with email. I think that's a big transformation.”* Sara Egidius explained that the new hybrid nature of meetups and events also means less interruptions to the workday. This saves time and money associated with transportation and allows her and others to attend more local, national, international, and conferences as well as workshops. Thomas Unt similarly asserted that *“being able to attend two or three conferences a month means we can review more possible investments than ever before. The deal flow has become much more efficient.”*

Jonas Jönsson from Minc added that Customer Relationship Management (CRM) improved significantly over the past 10-15 years due to Slack, Zoom, and Microsoft Teams. However, the biggest change in the way he works happened with the Covid-19 pandemic. *“If I compare 2006 to 2019, I wouldn't say the way I worked changed that much. But from 2020, it's like another world. I used to hate video calls, and I could never remember my password to Skype. But suddenly, everything was online, and I was in video meetings on a daily basis.”* The wide adoption and normalization of video meetings also allowed (and prompted) Minc

and other incubators to develop digital onboarding processes and provide more digital tools for entrepreneurs coming to them. As Ratten (2020) contends, these new forms of communication made possible from digital technologies seem to have created many advantages and emphasized the usage of digital devices and communication methods to exchange ideas.

Furthermore, these advanced communication tools have not only improved the organizational workflow in the private sector, but for policymakers as well. Ola Andersson iterated that even though policy shapers and policymakers sometimes move slower than the private sector, digitalization has improved and sped up their workflow substantially. He believes *“it is now much easier to communicate, easier to start projects, easier to stick to plans and get stuff done. A lot of our work is about getting information to and from the right people. Now we can work much quicker and reach more people. We can set up new web pages, systems for handling communication, and so on. It has made the job easier and keeps us more connected to everybody else”*, illustrating the range of optimization opportunities digitalization provides for organizational workflows.

4.3 Democratization of Entrepreneurship and Digital Access

A present finding throughout the interviews is the democratization of entrepreneurship and digital tools. Facilitated access to tools and services means that more people can start new ventures. Martin Backlund stated that *“the digitalization process is a democratization process of entrepreneurship as it allows you to get started on an idea and skills rather than having to go and look for a shop and the shop window and buy a lot of inventory.”* As Alrich (2014) argues, the emergence of digital tools and services such as social media, crowd-funding, online marketplaces (Etsy, Facebook, and eBay), 3D printers, and open-source software have substantially lowered the threshold for entrepreneurs wishing to start their own business. By removing access hurdles, digitalization opens up opportunities for people regardless of their financial or professional background, and enables them to acquire skills and access digital tools from almost anywhere. Jeremie Poirier explained that even simple tools like LinkedIn allows *“anyone to see who you are connected to, so you can backchannel references. This is greatly facilitated by digitalization in the sense that today I can connect to essentially anyone in the entire world.”* This removal of obstacles results in a more universal degree of access to knowledge and (digital) tools which Jönsson summarized in his interview by stating that

there is *“so much more information around, and it is so much easier to get skills from all over the world”*. According to him, digitalization makes it *“so much easier and cheaper to grow a startup or develop an MVP with all the digital tools available.”* Jönsson illustrates what was found across all interviews; digitalization removes borders and allows to expand one’s network, outreach, and potential. He exemplifies this phenomenon by saying that *“you can build a software-based product in India and sell it from here. The business opportunities are skyrocketing.”*

Florida, Adler, & Mellander (2017) and Nambisan (2017) iterate the above mentioned sentiment and argue that the digital removes geographical constraints. Opening these digital doors does not only simplify the work of entrepreneurs themselves starting a venture but for additional components of the EE as well. Poirier pointed out that *“there are simply a lot of tools available to venture capitalists now. It is easy for startups to find capital and easy for capital to find startups”*. Ola Andersson, representing policy, extends this point with his statement about more individual investing. He says, *“digitalization made everyone an investor. All the platforms for making investments are more open right now because of digitalization. And it’s global.”* Andersson illustrates how the gates towards entrepreneurship have opened up. Interviewees across all examined components made similar remarks, revealing how the gates towards entrepreneurship have opened up. Andersson also addressed this matter by responding that *“digitalization has made it more democratic. It’s also easier to access a broader investment community and business angels.”* Jonas Jönsson concludes that *“there are so many digital tools now that it’s easy to take a lot of them for granted.”*

4.3.1. Digital Room for Improvement

Yet the reality slightly differs from the aspiration of everyone being able to access whatever they might digitally need. While a wide range of new tools and platforms allow for better cooperation and organizational workflow, digitalization processes did not resolve every access issue overnight. Mette Gross for example reflected on the shortcomings of current accessible digital tools tools and stated that *“I don’t think matchmaking is necessarily easier due to digitalization. There is a need for a database where you can actually match experiences and learn about companies. That whole process could definitely be better”*, while later following up with stating that there is *“not really a central website where you can see all the company pitches and pitch decks. There is no central spot to find material from an*

event that I missed.” Gross demonstrates how despite increased access to more tools, there are still areas of improvement as current tools are underutilized and new challenges call for digital solutions.

A fundamental area in need of improvements is seemingly the public sector surrounding the *Policy* component. Martin Backlund expressed that *“while some of the Swedish authorities are very good at digitalization [...], the lower you get in the hierarchy of authorities, the more they are lacking when it comes to digitalization.”* Backlund specified that *“the central government is probably doing it the best”*. However, *“if you get down to the municipality level, it's not very good in terms of taking new technology and using it to make processes easier, and to make it more understandable for the citizens. Unfortunately, it takes a long time to trickle down there.”* Jeremie Poirier extends on Backlund's point through statements such as *“the public sector realized they were a bit behind in digitalization at the beginning of the pandemic.”* He exemplifies this by stating that *“since it's illegal by Swedish law to store public data on foreign services, many people in the public sector were banned from using services like Microsoft Teams.”* This lack of access showcases the existing hindrances existing despite opportunities emerging from digitalization. Ola Andersson, who also represents the *Policy* component, emphasizes how digitalization has helped their way of contributing to the EE yet realizes the policy shortcomings in certain areas. *“Sweden, I think, is ranked second last in Europe in using public data”* (Andersson). Although many new innovations and regulations come from the bottom-up, governmental organizations such as the EU can make a big difference by implementing legislations such as the Data Governance Act (DGA). Andersson reflects that digitalization processes in the public sector are often *“more about catching up than initiating things yourself.”*

4.4 Access to a Global Entrepreneurial Ecosystem

Online platforms like LinkedIn, AngelList, and social media have given new opportunities for entrepreneurs to grow their network and find potential co-founders, investors, and talent. Jonas Jönsson suggested that *“digitalization has allowed companies to think more globally”*. Similarly, digitalization has opened the doors of Skåne's EE to foreign investors and venture capitalists to connect with startups here. Jeremie Poirier explained how *“a few months ago, I organized a digital pitch event with a Japanese angel investor. He was in Japan, and the companies were here. The fact that they could do that digitally has obviously increased the chances of this specific angel investor investing in someone in the region, because he doesn't*

have to come here all the way from Japan. A specific company might not be relevant to the Swedish market or to Swedish investors, but it might be extremely relevant to a Japanese investor and the Japanese market. So digitalization helps to increase the relevant matchmaking that can take place.” This evolution allows a region such as Skåne that would otherwise not necessarily be a name on the global map to open up to an international network of accelerators, investors, and partners to utilize them for entrepreneurial and economic growth.

Thomas Unt agrees that *“the entrepreneurial ecosystem has definitely opened up”*. The hybrid nature of conferences today has not only removed the need to travel to and from wherever you would need to go, but Unt explains that *“we couldn't access the big conferences digitally before the pandemic”*. Today, however, many of them are now open to anyone with the link, meaning that investors abroad are suddenly ‘competing’ with local VC firms to a certain extent. Unt believes that his *“ability to connect companies to industrial stakeholders in the US, in Europe, or to meet international investors, to participate in international congresses or conferences, the access to the real world has been much better and much shorter”*. Again, Unt points to the Covid-19 pandemic as an accelerating event that made Skåne *“more visible on the international arena. Beyond “facilitating access to both local and international angel investors and advisors”*, Jeremie Poirier believes that digitalization has been *“a boom for Skåne’s EE and helped establish the region internationally”*.

4.4.1 Increased international competition

While all these digital opportunities allow for more potential for prosperity and growth for the Skåne region, they are not the only player in that game. Sweden might be on the forefront of digital access, yet other countries are also catching up. This development impacts the examined EE components of this paper in different ways. For example, entrepreneurs in Skåne do not necessarily depend or match with local incubators. Ola Andersson exemplified that *“maybe this specific program in Israel is perfect for you because of its niche focus. Digitalization has opened up the innovation support system, because you don’t depend on being there physically”*, which decreases the reasons for local entrepreneurs to limit themselves to the offer of incubators and accelerators in their home region. The same development can be seen the other way around as well; not only can entrepreneurs reach out

to supporting initiatives and companies worldwide, but companies and investors have their radars beyond their own region or countries. While not being internationally involved herself, investor Mette Gross recognizes this development. She stated that *“I do sometimes look at companies either in Europe or the States or Asia, but I haven’t invested in any of them. I think it’s going to grow as networks grow and the ease of it grows. I think there will be a more international flow of money.”* While arguably being beneficial for the private investors themselves as they can *“even attend a pitch in Stockholm or Gothenburg if I have an hour over”* (Mette Gross), developments such as this further increase the risk of any high-potential company coming up from Skåne to simply be bought away by larger companies with a bigger international budget. Andersson agrees: *“It’s really, really hard to build a large Swedish company right now. They all disappear. When you have a venture with really high potential, many are sold to companies like Intel”*. These digital developments allow for more successful regional growth in early stages yet seem to entail the drawback of reaping the benefits elsewhere as these promising companies are often bought out and/or continued outside of Skåne.

4.4.2 Increased Capital for Startups With Global Growth Potential

The increased attention that the entrepreneurial scene in Skåne has been getting over the years presents challenges such as the aforementioned changes in the world of finance. Regarding investments in local ventures, the financial increase poses both a curse and a blessing according to the interviewees. Ola Andersson juxtaposes the existence of both *“more money in the system than we ever had before”*, and *“the biggest challenge for new ventures is generating money”*. This contradiction is partly due to competition, says Jönsson: *“When I started at Minc in 2016, the majority of the companies in the incubator were not looking for funding or investments in the same way. Today, almost everyone is”*. While there seems to be a consensus that these last years have seen a steep influx in investments with more money circulating than ever, smaller local companies have increasing difficulties in receiving investments. Financial expert Thomas Unt agrees by stating that despite this fluctuation of capital, *“the classic challenge is getting sufficient financing”*. According to multiple interviewees, this focus is problematic as financial attention is given to a mere handful of high-potential startups whereas the majority struggle to find sufficient funding.

This stands opposed to the interviewees' responses regarding early-stage financing. Unt explained that there is an *“over-access of capital, and all these funds need projects to invest in”* which ultimately led to *“the maturity level of companies compared to five years ago has become much, much earlier”*. Policy representative Andersson saw this development differently and reported that it is *“easier to get access to money - not the larger amounts, but first seed funding money”*. Mette Gross from the *Finance* component of the ecosystem contextualize this matter from a different perspective and explained that she does *“not necessarily think digitalization has really influenced how much capital is accessible, but it has made it easier to invest”*, which seems to be a byproduct rather than digitalization being the actual cause.

As a continuous flow of money is needed to foster innovation and keep any EE running, actors from all three ecosystem components discussed in this paper showed their awareness of financial developments in the area. Jeremie Poirier from the *Policy* component summarizes the recent influx and shift of focus on high potential companies by exemplifying it as a vicious cycle. He states that *“the total amount of capital is increasing, but fewer startups getting money”* which ties in with reports from other interviewees who experienced the shift in focus on high growth potential ventures. Later stage companies getting increased investments is potentially problematic as *“they might raise a hundred million dollar round, but in five years you don't have enough companies that have been started five years previous to get these hundred million dollar rounds, and so on”*. Each interviewee reported a change in financing 'behavior' in recent years, yet these experiences can differ according to their position. Poirier, however, was the only respondent prompting a solution approach as *“a lack of capital is not the problem here”*. His suggestion is to *“have as many matchmaking opportunities as possible between startups in the region and local and international investors to increase the number of investments.”* If the increase in capital finds both the later stage high-potential companies as well as the early-stage ventures and some manage to stay in the area, the local scene could flourish even more and continue its path towards being a successful digital entrepreneurial ecosystem.

5. Discussion

Taking a deeper look at the findings from the interviews allows to uncover the opportunities and shortcomings that digitalization brings to entrepreneurial ecosystems and the people involved.

Most prevalent is how digitalization has given Skåne a platform to invite new stakeholders and actors while establishing itself on the international stage. Despite being expected to stand in the shadow of larger EEs found in Copenhagen or Stockholm, digital tools emerging from digitalization and Web 2.0 have allowed Skåne to make a name for itself. This development is creating a two-way street from Skåne to the world. First, it allows entrepreneurs and investors in Skåne to seek talent and funding outside the region and expand their reach beyond Scandinavia. Additionally, it means that investors from across the globe can increasingly seek and find a match for their investments in the south of Sweden. The interviews and responses presented in this paper illustrate how digitalization can remove the physical borders that restrict traditional entrepreneurial ecosystems. The digital landscape in Sweden offers a breeding ground that ultimately increases the chances of Skåne increasing its presence on the global stage over time. However, this opportunity also means that Skåne faces international competition as ecosystems across the globe also become increasingly accessible. Therefore, it is vital to utilize the digital tools and entrepreneurial opportunities they present to the full extent.

An important institution for that is the *Policy* component, which is responsible for the legal and political framework and can help Skåne in its transition into a digital entrepreneurial ecosystem. Yet, instead of leading the way towards such DEE, the public sector in Skåne is presented as a digital work-in-progress where actors have to find their own path and take charge. The interviews showed that policymakers are certainly enablers of entrepreneurial growth but still struggle to pick up the pace regarding digitalization compared to the private sector of entrepreneurs, investors, and accelerators. Especially in such fast-moving environments as digital entrepreneurial ecosystems, the *Policy* component is an essential asset to accelerate growth in the EE. Digitalization allows currently untapped potential to facilitate the development of its EE. Examples discussed in interviews include updated policies for foreigners and internationals looking to start a venture and international students wanting to stay in the area after their studies. Furthermore, it is recommended to look into additional accelerating policy initiatives such as startup visas, which some other countries have implemented to attract talent. Ola Andersson summarized this by saying that

“we need a startup visa and a scale-up visa, and we need to fix our immigration laws”. If other countries offer more favorable conditions, Skåne (and Sweden) will potentially miss out on valuable talent and future businesses.

On the personal side, it was visible how the pandemic brought digitalized measures in place seemingly overnight and thereby disrupted the traditional work in many ways. Many of these changes made workflows more effective, simple, and more time-/cost efficient, but work is also a social matter and not solely one of productivity. While the process improvements were visible and welcomed by interviewees, they also reported drawbacks. Moving more communication and day-to-day functions online leaves less room for spontaneous in-person meetings and networking opportunities. These in-person interactions can be vital for team spirit and comfort at work, making it essential to recognize these needs and not neglect social interactions. Digitalization can support and improve workflow but should not necessarily replace every point of contact with one another. Companies must become aware of this duality and find suitable solutions that offer flexibility. Examples of this are hybrid working or occasional in-person events and team-building initiatives for remote teams and workers.

Regarding the *Finance* component, findings showed that Skåne is heading towards a slippery slope of investment focus if the course is not redirected or balanced out soon. The vicious cycle of overfunding a few high-potential startups while leaving out early-stage ventures, as Poirier pointed out, can cause future problems for the overall entrepreneurial growth in the area. If taken to an extreme imbalance and money continues to flow in this limited section, it will get increasingly difficult to harvest the benefits across the EE and drive the local scene forward. Thereby, entrepreneurs can feel left to their luck and consequently resort to money and support from competing ecosystems. Even though the interviews led to contrasting findings regarding early-stage funding with actors from both the *Policy* as well as the *Finance* component saying that the increased funds need projects to dedicate their money to and that access to these has simplified through digitalization, the risk remains and financing keeps being the ‘classic’ challenge for entrepreneurs and their ventures. Therefore, actors involved in the *Finance and Policy* component should be aware and cautious of this development and its potential long-term consequences for the growth of Skåne's EE.

Beyond the reported increase in collaboration between the three components examined in this study, especially within Human Capital, all interviewees mentioned a mindset of familiarity and cooperation rather than competition found in less personal EEs in Stockholm and Copenhagen. For example, Martin Backlund stated that it is Skåne’s “main

advantage” to be “*much easier and friendlier compared to other innovation systems in Sweden*”. As Skåne’s EE is significantly smaller in size than competing regions, it allows for closer relationships, stronger interpersonal connections, and a higher knowledge of the involved actors around. While these findings are subjective and not based on factual data, the interviewees agree on the matter and actively use these for their benefit and transform the environment into a system with interconnected parts working together symbiotically.

Reflecting on the research question regarding how digitalization supported *Human Capital, Finance, and Policy* in the development of Skåne’s EE, it can be summarized that digitalization gave entrepreneurs access to more useful resources and platforms. Additionally, it gave the entrepreneurial ecosystem a chance to globalize. The pandemic forced actors to shift towards a more digital world and utilize digital solutions that have shown to be more cost-effective and efficient for everyone involved. Yet, the ecosystem shall not depend on events such as a pandemic to recognize the urgency and importance of digitalization. Instead, all components in the EE should regularly explore and embrace alternative solutions and approaches. Moreover, companies, investors, and entrepreneurs should feel empowered by the *Policy* component instead of the public sector struggling to keep up when it comes to digital solutions and innovation. However, Sweden and Skåne offer a promising hub in which proactive actors are currently doing their part to turn this ecosystem into a blossoming digital entrepreneurial ecosystem.

5.1. Limitations

Interviewing people active within Skåne’s EE provided valuable insights into how digitalization has impacted their respective components. However, after presenting the analytical conclusions and findings, the authors recognized additional limitations that are important to address. Beyond representing the *Human Capital, Finance, or Policy* component of Skåne’s EE, the interviewees also represent their respective companies or organizations. This potential bias may result in them being less transparent and prone to present the company in a falsely positive way. While all interviewees have shown to be suitable for the study and provided worthwhile insights, they represent a fraction of Skåne’s ecosystem whose experiences might differ. This is especially relevant as society has changed in other ways than just becoming more digital. Mette Gross acknowledged that many things have changed in the world of investing over the past ten years. However, she debated whether they are due to digitalization or other societal changes, making it complicated to pinpoint changes

fully towards one specific event or development such as digitalization or if these are due to an interplay of a range of enabling conditions and events. All interviewees discussed the Covid-19 pandemic as an event that accelerated digitalization, but there may be other factors that this thesis did not investigate adequately.

5.2 Recommendations for Future Research

Future research can benefit from taking the findings examined in this thesis a step further by extending the areas of research. Instead of only concentrating on how digitalization has facilitated key components within the entrepreneurial ecosystem, it could be interesting to investigate its impact on different industries that may have been affected in other ways. Herein, it could be of interest to, for example, aim the attention on companies with physical products or traditionally non-digital industries.

Additionally, while Isenberg's EE model was intentionally limited and adapted to this paper's focus on digitalization, it can be of value to examine the less tangible and more overarching elements (such as *Markets* and *Culture*) of his original model. This would potentially allow for an even broader understanding of digitalization's impact.

Similar to how Isenberg developed a model of an EE, Sussan and Acs conceptualized the pillars of a DEE. However, it would be interesting to bridge the gap between the two by learning from both models and expanding these into a framework that actively describes how an EE can evolve into a DEE. While it is worthwhile to inspect the research question with a theoretical lens, such future works could then take their insights about the transition from an EE to a DEE in order to translate these learnings into practicalities, such as best practices, helpful advice, and action plans considering the utilization of digitalization in entrepreneurial ecosystems. If these can be generalized and adopted to comparable EEs, policymakers and other actors who partake can benefit from the learnings and insights of ecosystems that have already implemented these changes.

In this thesis, we investigated Skåne's EE and the impact of digitalization, which Alrich's (2014) defines in the context of Web 2.0 and the digital tools and services that emerged from it. However, as Web3 develops and becomes more adopted, one cannot help thinking about its implications for entrepreneurs and the ecosystems in which they operate. Web3 commonly refers to the next phase of digitalization characterized by blockchain technology and the decentralized networks it enables. Although still under construction, Web3 will likely provide new opportunities and challenges for entrepreneurs and EE. Exactly

what implications Web3 will have may be too early to tell, but we believe its meaning for entrepreneurial ecosystems deserve attention.

6. Conclusion

The main objective of this thesis was to investigate how digitalization has facilitated the development of Skåne's entrepreneurial ecosystem. To gather empirical data, the authors conducted semi-structured interviews with 8 people. Each interviewee represented one of three key components in the EE - *Human Capital*, *Finance*, or *Policy*. By implementing techniques from thematic analysis, the authors could derive four main findings. In addition to considerably impacting day-to-day activities, interviewees cited the Covid-19 pandemic as a key to accelerating digitalization, global teams, and the concept of remote work. The emergence and adoption of digital tools and services such as Slack, Zoom, Notion, and Microsoft Teams facilitated organizational workflow and, in turn, enabled better collaboration between and within components of Skåne's EE. The facilitated access to digital tools has also democratized entrepreneurship by lowering the threshold of new venture creation. Additionally, digitalization has allowed Skåne to establish itself on the international stage and compete with bigger EEs. Even though the research on entrepreneurial ecosystems in Sweden is lacking, especially regarding areas as specific as Skåne, the findings could be supported by literature discussed in the introduction and theoretical framework of this thesis. Although Alrich (2014) does not explicitly reference EEs, his insights into the democratizing effects of digital innovations on entrepreneurship were cited by interviewees as one of the greatest benefits of digitalization. However, as much as society continues to digitalize, some functions cannot be replaced by in-person meetups and interactions.

Sussan and Acs (2017) remarked a significant gap in the approach to researching entrepreneurship in the digital age, which was supported by Kraus et al. (2018) who pointed out that despite the growth in interest, "minimal research has addressed this topic and literature on digital entrepreneurship is quite scarce" (p. 354). These findings presented in this thesis helps contextualize the influence of digitalization on the development of Skåne's entrepreneurial ecosystem. The insights and learnings derived from the research allows us to make analytical generalizations about digitalization's facilitating effects on the development of Skåne's EE and assists in understanding how each of the examined components can best utilize the digital infrastructure. The findings conclude that digitalization has been supportive

in the development of Skåne's entrepreneurial ecosystem, especially in terms of increasing collaboration and inviting more contributors. Additionally, this thesis offers practical insights by highlighting areas where digitalization has not been fully utilized to improve productivity, collaboration within the EE, organizational workflow, and matchmaking opportunities. These practical insights may prove especially useful to the *Policy* component and public sector to build better and more collaborative relationships with local entrepreneurs, incubators, and investors. Lastly, this thesis suggests that future research on digitalization's impact on EEs should; (1) Attempt to translate these learnings into practicalities; (2) Develop a framework to determine when an EE evolves into a Digital Entrepreneurial Ecosystem (DEE); (3) Examine the implications of Web3 on EEs and DEEs.

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Enclosures

Appendix A: Interview Guide

Entrepreneurship in Skåne

- Can you describe some of the biggest challenges facing new venture creation in Skåne?
- In what ways has entrepreneurship in Skåne evolved since society has progressed more into the digital world?
- Can you describe Skåne compared to other regions in Sweden?

Entrepreneurial Ecosystem

- How has digitalization changed/facilitated your ability to develop/contribute to the entrepreneurial ecosystem?
- How, in your view, has digitalization impacted the relationship between Finance, Human Capital and Policy (in Skåne)?
- Impact on Human Capital, Finance, and Policy?
- Would you consider yourself a part of Skåne's EE (is that something you are conscious of)?
- How do you (i.e. your organization) rely on support from the EE?

Digitalization

- How has digitalization changed your way of working (both over the long run as well as throughout the pandemic for example)?
- What role does digitalization play in improving the entrepreneurial ecosystem?
 - Can you give an example of how digitalization has impacted entrepreneurship in Skåne?
- How has digitalization opened up/closed the entrepreneurial ecosystem?
 - More internationals reaching out to skane as well instead of solely the other way around?

Finance

- Broadly speaking, how has digitalization changed investing in Skåne over the last two decades or so?
- Did digitalization affect the type of companies/entrepreneurs you invest in?
- From a financial perspective, how has digitalization facilitated investments in the EE/Startups?
- Did the Covid-19 pandemic have any facilitating effects on investing in Skåne? If so, what?

Policy

- Are there any policy differences in Skåne compared to other regions in Sweden in the context of ‘new venture creation’?
- What opportunities or challenges does digitalization present for implementing policies?
- Does digitalization support/facilitate implementation of policies?
- What does Skåne/Sweden do to facilitate entrepreneurial growth (governance-wise)?

Human Capital

- In what ways does digitalization support you and your company in your work?
- How has digitalization impacted human capital?

Appendix B: Consent Form

Digitalization as a Tool to Facilitate the Development of Skåne’s Entrepreneurial Ecosystem

Adam Gavin & Lukas van Remmerden

- I have been given information about “Digitalization as a Tool to Facilitate the Development of Skåne’s Entrepreneurial Ecosystem” and discussed the research project with Adam Gavin and/or Lukas van Remmerden who is/are conducting this research as part of a Master’s Degree in Entrepreneurship and Innovation supervised by Diamanto Politis.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I agree to my interview being recorded.
- I understand that signed consent forms and original audio recordings will be retained by Adam Gavin and Lukas van Remmerden until the exam board confirms the results of their dissertation.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
- I understand that the data collected from my participation will be used for thesis and journal publications, and I consent for it to be used in that manner.

Name

Email

Telephone

Date

Signature
