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EXPLORATION OF VIRTUAL INCUBATORS AND DEVELOPMENT OF INCUBATOR SERVICES FOR DIGITAL ENTREPRENEURSHIP: RECEIVING ENTREPRENEURIAL SUPPORT FROM ANYWHERE IN THE WORLD.

Sarumi, J. A (PhD).[1], Ogunjimi O. L. A.(PhD, FASI)[2]
jerrytechnologies@yahoo.co.uk [1], olaogunjimi@gmail.com[2]
Lagos State Polythetic Ikorodu, Lagos[1]; Augustine University Ilara-Epe, Lagos State[2].

ABSTRACT

Entrepreneurship is frequently linked together with aspects of economic growth and development. In the last 40 years, an increasing number of incubators and service providers have been created to stimulate entrepreneurship and innovation. However, in the increasingly globalized and digitalized world, few virtual and digital initiatives have successfully been studied to encourage and facilitate entrepreneurship. This study aims to understand further how digital and virtual products and services can aid entrepreneurs in venture creation and potentially add to an updated and broader understanding of the potential in a virtual incubator program. By looking at three categories of entrepreneurial support actors, traditional public incubators, private incubators, and digital service providers. 14 semi-structured interviews were conducted to gain more in-depth knowledge of how they operate. More specifically, this study is conducted with actors that share the vision to assist startup in their initial phase and create a deeper understanding of what the incubator offers to startups and the possibility to adapt and improve their process using digital tools and external partnerships. Results indicate that the use of digital tools is varied. Incubators are leaning towards relying more on social media for reaching potential entrepreneurs and ideas, and further that a factor of validating every aspect of the startup is essential to promote success. The incubator mainly acts as a mediator of network, funding, coaching, and finding talents has during the COVID-19 pandemic moved most of their activities from physical to online. The issue of trust-building is, however, still prominent, and the incubators are looking for ways and tools to improve on this issue. Implications of this study have the potential to lower barriers to entrepreneurship, where entrepreneurial support becomes less dependent on their local ecosystem and geographical factors. Future research is encouraged to classify virtual incubators and a further look at specific cases and pursuit more longitudinal studies to fully understand the potential effects and implications. This study contributes to the field of incubators and entrepreneurial support and the ongoing digital paradigm shift.

Keywords: ***Business Incubator, Virtual Incubator, Entrepreneurial Support, Digital Entrepreneurship, Startup***

1.INTRODUCTION

The topic and the definition of entrepreneurship are highly researched and debated, according to Filion (2008). There are, therefore, many different definitions, and Filion (2008) refers to research from Casson (1982) addressing the issue with an accurate description of entrepreneurship and the associated entrepreneur, which can be the most challenging part of the research. Katila, Chen and Piezunka (2012) use a broad definition of entrepreneurship as a process, to be more specific, of either launching or designing a new form of business, where the people that take part in this process are referred to as entrepreneurs.

Entrepreneurship and innovation play an essential role and are positively linked with economic growth and prosperity (Aaboen, Laage-Hellman, Lind, Öberg and Shih, 2016). An essential aspect of a country's wealth and productivity is the creation of new companies, as argued in research by Audretsch, Keilbach and Lehmann (2007). Furthermore, the benefits of entrepreneurs have been reviewed by Van Praag and Versloot (2007), where they argue that entrepreneurs facilitate employment and innovativeness. Entrepreneurship is increasingly growing in popularity, and many people are interested in pursuing an active career as an entrepreneur or startup founder. It has, therefore, been argued that promoting entrepreneurship and facilitating an active support structure surrounding the entrepreneur can be beneficial for both a country's growth and development. Audretsch (2018) further describe a paradigm shift driven by globalization, technology, and politics, where the entrepreneur plays a crucial role in economic development and growth.
This shift is recognized by Nambisan, Wright and Feldman(2019) and Nambisan (2017) to understand the digital transformation of the economy. Nambisan et al., (2019) discuss the change of innovation and entrepreneurship when digital technology, platforms, and infrastructure have created digital entrepreneurship. This paradigm creates new types of business models, new products, and services but also a new kind of customer experience. Moreover, this transformation also accelerates the growth and scaling of new ventures and startups, according to Huang, Henfridsson, Liu and Newell (2017).

The journey of a startup can be seen as a complicated path with many barriers and challenges and has been researched by Lougui and Nyström (2014) they refer to Sweden as a country where people perceive that they have an excellent opportunity to become an entrepreneur. However, as one of the main obstacles listed by Xavier, Kelley, Herrington and Vorderwulbecke (2014), the aspect of entrepreneurial ability is brought up, meaning that people do not see that they have the necessary skills to pursue entrepreneurship. Furthermore, entrepreneurs in Sweden face several other barriers based on research from Shane (2009), referring specifically to the initial phase of creating a business. Mainly to be in terms of capital, both human, social, and physical. Lougui and Nyström (2014) also argue that entrepreneurs in this phase usually seek external guidance, explicitly wanting to receive answers within taxes, regulations, and laws. Nevertheless, the primary concern is general questions regarding how to launch a business. These can further be translated into entrepreneurial barriers, in the respective fields such as knowledge and capital. As a concluding remark, the new digital context, as also developed by Sussan and Acs (2017), makes both opportunities and challenges evolve faster than before.

Derived from these obstacles, the research of entrepreneurial support tried to understand and find the best ways to support entrepreneurs and startups. There are many different organizations and service providers that act as a supporter to lower these barriers and act as a guide. There is furthermore an increase in educating entrepreneurs that are acknowledged by Martin, McNally and Kay (2013). Furthermore, big corporations launching innovation and startup labs and a general pursue in trying to capitalize on the growing popularity of startups (Hausberg and Korreck, 2020). There is also an increase in actors attempting to map out the actors and different organizations that provide support and assistance in a kind off entrepreneurial ecosystem. A

recent example is Keys-ecosystem (Keys Ecosystem, 2020) that provides a survey-based tool for entrepreneurs to find relevant supporting actors within the ecosystem.
The facilitators try to reduce the barriers associated with entrepreneurship through efforts of coaching, providing office space, knowledge, and funding by Ratinho, Amezcua, Honig and Zeng (2020). The concept of the business incubator is one of these initiatives, with the purpose to assist the entrepreneurs with their venture creation.

One definition of the incubator is by using the analogy of a service provider, as used by Aaboen (2009). In terms of services that incubators offer, the most common ones are; coaching; access to a network; consulting services; (Hackett and Dilts, 2004; Durão, Sarmento, Varela and Maltez, 2005; Bergek and Norrman, 2008). An incubator can, as stated, be defined in many ways, but according to the branch organization Swedish Incubators and Science Parks (SISP), an incubator is someone that offers a dynamical process to developing businesses, people, and companies. An incubator supports entrepreneurs with management, financial support, technical competence, and helps to connect them to new environments and a commercial network to grow in. They also help entrepreneurs to develop new technologies and ideas. (About Swedish Incubators & Science Parks, 2020).

The incubator development has also been concluded into three generations (Bruneel, Ratinho, Clarysse and Groen, 2012; Mian, Lamine and Fayolle, 2016). Before the 1980s, the first generation took place with the suggested value to stimulate job creation, specifically through providing entrepreneurs and startups with office space. The second generation, 1980, until the 1990s, had the purpose of adding value to entrepreneurs through coaching and training. Lastly, the third generation, after the 2000s wanted to enhance the access to external resources to entrepreneurs through networking. In an article from the magazine INC (Dahl, 2005) argues that the post-crisis era of 2000, incubators were increasingly going virtual, as the last generation of incubators had a more significant focus on technology than ever before.

The term virtual incubator was firstly initiated by Nowak and Grantham (2000) and further used as a theoretical lens by Mian et al., (2016) as an incubator that provides knowledge brokering to develop innovative startups. In Fadil, Persada and Baihaqi (2019) research, they further contributed to the virtual incubator framework, with a developed holistic approach to an online platform as the electronic incubator (E-incubator). Luik, Ng and Hook (2019) further develop on Nowak and Grantham (2000) research referring to the framework as virtual hubs. “That provide their participants with support such as mentorship, access to investors and investment, and networking, throughout fixed-duration and cohort-based programs” (Luik, Ng and Hook, 2019 p.1). The virtual incubator further was included as a category by Grimaldi and Grandi (2005). Lewis, Anderson and Molnar (2011) define the virtual incubator as opposed to traditional physical incubators. They characterize them as incubators with walls, and without walls. The main concluding difference is, therefore, that virtual incubators do not provide a physical space for incubates.

2. PROBLEMATIZATION

With research from Lorraine and Laferté (2006) noticed that face to face interactions was prioritized by entrepreneurs when receiving advice. The ongoing changes regarding digitization provide importance to continuously research the field of entrepreneurial support, and the associated barriers with entrepreneurship that the support tries to lower to increase further the development of the entrepreneurial support system and ecosystem. Richter, Kraus, Brem, Durst and Giselbrecht (2017) argue for the significant impact digitalization has had on entrepreneurship, how business models are changing but also the fundamental creation of entirely new businesses. In conclusion, Richter et al., (2017) argue that this shift creates an entirely new

way of understanding the newly created opportunities as well as challenges associated with entrepreneurship.

In terms of the entrepreneurial ecosystem, more extensive research about the facilitators is further encouraged so that "entrepreneurs are not sold broken dreams" (Ratinho et al., 2020, p11). This is the extent that has the possibility to reduce the number of ineffective programs and prioritize the best methods of entrepreneurial support. With virtual applications and initiatives, there is a potential to provide the startups and incubates better services, a more extensive network, and further lowering their barriers to become a successful venture. An important aspect is that a lot has happened throughout the past 20 years, and startups now can easily create a crowdfunding campaign online, trying to receive capital. Furthermore, there are digital programs where entrepreneurs receive education and coaching, and many of the traditional incubators are looking at going digital to receive some of the benefits, such as being able to help more people and create scalable assistance. Lorrain and Laferté (2006) conclude this as a need for individual coaching in a physical setting and further expands upon the findings that the entrepreneurs were not interested in virtual coaching on the premise that many within the sample lacked a personal computer. In a virtual world where increased digitalization, the
argument presented by Lorrain and Laferté (2006) that entrepreneurs do not prefer face to face compared to virtual assistance needs to be reviewed.

Although the possibilities are endless, there remain current obstacles in how to navigate amongst the different applications and platforms, and the use of specific tools, i.e., the use of LinkedIn to increase network size and funding platforms (Song and Vinig, 2012; Bruton et al.,2015). Furthermore, there is a limited amount of application fully dedicated to assisting with specific services and resources needed for entrepreneurs.

Shih and Aaboen (2019) research argues for the potential in incubators network by explicitly looking at public incubators and their relationship with the incubated firms. They argue that it is crucial for incubators to expand their network horizon, specifically to involve interactions with potential customers for the startups. Furthermore, Shih and Aaboen (2019) argue for further research of different kind of incubators, primarily of for-profit characteristics, based on their remarks that publicly funded incubators potentially has a narrower network horizon and a lower amount of resources. The question of specialization of the incubator is another implication that Shih and Aaboen (2019) indicate has a higher probability of offering more support.

Incubators providing virtual support, and the framework of Nowak and Grantham (2000) and the development of E-incubator (Fadil Persada and Baihaqi, 2019) and virtual hubs (Luik, Ng and Hook, 2019) opens a new field of trying to understand which specific services being the most relevant to entrepreneurs and to see if these could be transformed in a digital context as either a virtual incubator or as individual services to assist the entrepreneurs. When looking at the evolution of the web and how the internet is changing almost every aspect of our lives Constantinides and Fountain (2008) focus mainly on how Web 2.0 and its applications have changed how humans interact, find out about products and services but also how businesses do marketing and the occurrence of users generating content.

3. PURPOSE OF THE RESEARCH

Constructing the research question is Sandberg and Alvesson (2011) refer to as gap spotting as the most frequent way of constructing research questions. However, it is essential to recognize that within gap spotting, the researchers accept the undelaying theories and existing literature.

Traditionally speaking, the incubator has acted as a service provider and a community for the entrepreneur (Aaboen, 2009), but with the emerging change in the digital climate, the outline of the specific needs of the entrepreneur is changing (Sussan and Acs, 2017; Kraus et al., 2019).

This is exemplified when an entrepreneur can receive consulting services through freelancers across the world, receiving seed funding through crowdfunding platforms, network with like-minded individuals, and find talent on social media platforms such as LinkedIn in accordance to research by Mack, Marie-Pierre and Redican (2017). Lougui and Nyström (2014) and Lorraine and Laferté (2006) also provide a useful gap to understand within the academic field of entrepreneurship, what assistance, services, and advice that are essential to become successful and to decrease the risk of entrepreneurial failure.

In terms of the virtual incubator, as proposed by Nowak and Grantham (2000), and developed upon by Fadil, Persada and, Baihaqi (2019) as the Electronic incubator and Luik, Ng and Hook (2019) of the virtual hubs. It is essential to investigate further the change in context derived from digitalization, specifically with the reason that all improvements in the incubator process have the potential to impact many entrepreneurial efforts, and in the extent create more job opportunities, innovation and economic development (Fadil Persada and Baihaqi, 2019). Mack et al., (2017) recommend future research in the field of understanding technology adaptation, social media and internet applications, how and why they can be used, and be consequently increased the use of smartphones and mobile applications could come to play for entrepreneurs and startups. Mian, Lamine and Fayolle (2016), in their overview of entrepreneurial facilitation, argue that accelerators and incubators are essential facilitators for entrepreneurs and complete their systematic review with encouragement for future research within the ever- changing context in digitization. Lastly, Shepard's (2013) offers an exciting possibility of virtual efforts acting as a complement to traditional incubators.

An ever-changing digital landscape is currently shaping services and guidance to entrepreneurs. This study aims to further develop on the proposed concept of the virtual incubator and the increased efforts within the entrepreneurial ecosystem and its associated actors providing entrepreneurial support to increase their efforts to facilitate using digital products. To further develop on the incubators value proposition and extent their network as described by Roig-Tierno, Alcazár and Ribeiro-Navarette (2015), through virtual efforts. This study aims to contribute to and expand the knowledge of incubators and entrepreneurial support
and digital entrepreneurship. The research problem can, therefore, be concluded to how the entrepreneurial support actor, the incubator can further digitize its process and services. The research problem is sought out to be understood and explored by the following research questions:

1. How are incubators using and incorporating digital tools to develop their current product and service efforts?
2. What are the perceived challenges and opportunities of a virtual incubator process from the business incubators point of view?

As concluding remarks of the purpose of this research, the objective is further to provide knowledge to researchers and practitioners in the field of industrial engineering and management, entrepreneurial support, and digital entrepreneurship and the field of innovation. In the extension, the research hopes to provide practical implications for incubators, entrepreneurs, and policymakers. The two research questions will be addressed through multiple case analysis and qualitative data collection. The data will thereafter be analyzed, discussed, and compared with the literature review and the theoretical framework.

4. DELIMITATIONS

In this segment, the chosen boundaries are present for the research, and they should be considered intentional choices. The scope of the research is to further understand incubators and entrepreneurial support within Sweden. As argued by Rasmussen and Sørheim (2006), Sweden is concluded to be a fruitful country to investigate based on the high amount of academic literature

regarding entrepreneurship is written by Swedish researchers and further Sweden is ranked the second most innovative country in the world (WIPO, 2019). However, an important aspect is that every ecosystem has specific characteristics and have different technology and industry niches. The recaches were limited to looking at the entrepreneurial support and, expressly, the incubator's point of view. An important aspect is that this research primarily is analyzing the incubator's perspective on their services and purpose as opposed to the people enrolled in the programs. Lastly, there is an emerging trend of corporate incubators and their potential within the field of corporate innovation, and as evident in research by Köttig (2019), however, this research will not specifically look at the specific category of corporate incubators.

5. RESEARCH APPROACH

This study explores the field of entrepreneurial support by explicitly looking at incubators and digital service providers with the mission to support and aid entrepreneurs. The aim is to identify and link together aspects of how incubators work with tools, partnerships, and how they try to improve on their service offerings; moreover, this study investigates the proposed concept of the virtual incubator. Furthermore, this study wants to contribute to the progress made in the field of digital entrepreneurship, entrepreneurial support and improve on the general knowledge within the field of incubation research to provide a change in the context that incubators act within.

The chosen paradigm for this research is interpretivism to explore the research questions. This is an essential aspect, according to Collis and Hussey (2014), because it shapes the whole research. Interpretivism derives from a type of objections to the set of principles that describes the other major scientific paradigm positivism. These principles deal with the questions of social reality, if it is objective or subjective, or multiple reality's ones. In the contemporary scientific community, these paradigms are sometimes according to Collis and Hussey (2014) simplified to distinguishing between quantitative and qualitative research (positivism versus interpretivism). This research relies on extracting knowledge from the participants by talking and interacting with them and using their experience and knowledge as a foundation for understanding. Therefore, it can be concluded that this research is using an epistemological assumption of what knowledge is.

The research methodology used in this research is of an exploratory character. An exploratory study is used to describe a classification of research with the purpose of finding patterns and as opposed to testing a hypothesis to develop one for future and further research. As explained by Collis and Hussey (2014), case studies are frequently used as a technique to gain insights and explore the subject. Some aspects of triangulation have been implemented, combining multiple sources of data and research methods, as described by Bryman and Bell (2011). To further analyze and cross-reference the qualitative data collected in this research, data from incubators websites and printed material were used to verify and validate certain statements and information.

A common difficulty is choosing and investigating a far too wide area, and topic and Bryman and Bell (2011) argue for the importance of narrowing down the particular issue that is being researched. This should further be based on prior academic scholar's proposed issues that need further attention, i.e., fields that are presented as needing further research as presented as the gap analysis (Sandberg and Alvesson, 2011). The research questions could also be narrowed down, looking at a specific geographical region or a specific stakeholder as present in this research that focuses on incubators as entrepreneurial support actors and specifically in the region of Sweden.

The specific methodology used in this study can, therefore, be described as collecting data and analyzing multiple cases following Yin (2013). The case methodology is, according to Collis and Hussey (2014), a way to explore a phenomenon in a particular setting. The practical steps are the selection and choice of case or cases. Preliminary investigations, familiarizing with the context. Data collection, interviews, and observation. These data and findings are further limited to this

specific time of the carried-out research, the spring of 2020, and should be carefully understood as the constant change and dynamic processes in the field of entrepreneurial support, digital entrepreneurship, and digital tools. Flyvbjerg (2006) argues for the use of case methodology, responding to frequent misconception of that a case studies many times are biased and is impossible to generalize.

Due to the time constraints and the time available, the grounded theory presented by Corbin and Strauss (1990) in its complete form and process was concluded to be too extensive. However, there are inspirational thoughts derived from Charmaz's (2006) view of grounded theory, specifically in terms of an ongoing analysis of the data. Even though the data was not finalized transcribed and coded until the end, summaries and field notes where taken simultaneously throughout the data collection and can be described as a type of initial coding. Charmaz (2006) further argues for a more pragmatic approach to familiarizing yourself with the subject before interviewing as to respect the subjects. Furthermore, Charmaz (2006) states the importance of where the researchers themselves come from regarding background and

standpoint. An essential aspect of this research is, therefore, to disclaim that the authors of this research are currently and have been part of multiple projects around technology and digital transformation.

6. RESEARCH FRAMEWORK

The research framework and outline used in this research is an ongoing process of iteration between empirics, literature, and theory and the interdependent research question as drawing inspiration from research frameworks of Bryman and Bell (2011) and the authors Collis and Hussey's (2014).

The initial choice of field and preliminary research question, and after that, familiarization with the subject and an iterative process is formulating the research questions. The third step was to define the unit of analysis and choosing the incubators, and digital service providers as further to create an understanding of the entrepreneurial support and ecosystem. After that, the data collection began by carrying out semi-structured interviews. The data was an iterative process of coding, summarizing field notes, and some aspects of observing and using digital tools. The final data analysis was conducted through a thematic analysis, which is presented in chapter
3.7. As a final step, the findings were analyzed, and the literature review narrowed down in order to find conclusive answers to the research question.

7. SAMPLING

50 different public and private incubators were chosen to fit our purpose and, after that, contacted to be part of a video interview that was recorded. We prioritized amongst the respondents to fit the research purpose. Furthermore, this research used two instances of snowball sampling, which is a technique and sampling style, where researchers ask the subject whom they collect data from for future or other interesting subjects to interview (Collis and Hussey 2014). The practical implications of snowball sampling can be described as the last question in the data collection that is stated as "Do you have anyone you believe would be interesting to talk with concerning this research question?". One respondent also suggested another respondent without being asked.

Many researchers prior have focused on the Vinnova Excellence program (Aaboen, 2009; Aaboen et al., 2016) and university incubators. However, the previous research failed to uncover is the thinning line of what an incubator can be and what they provide in a digital context for entrepreneurs. The selected sample or a subset of the population, as described by Collis and Hussey (2014), are many times considered better if it is chosen randomly. However, in the paradigm of interpretivism, it is of less importance, as argued by Collis and Hussey's (2014).

This research used non-probability sampling and mainly adopted characteristics from purposive and judgmental sampling, where the selected sample is specifically chosen to provide valuable information regarding the purpose. However, the use of creating categories of respondents being public incubators, private incubators, and digital service providers acted in a similar fashion as quota sampling. The predetermined characteristics and the chosen sample in each quota shared similar characteristics. Non-random sampling is infected by bias and interpretation, and it is up to the researchers to highlight the possible occurrence of these. An example of this is the prominent selection bias in many researchers' convenience sample. It offers a quick way of selecting the sample, but it lacks representation and creates a selection bias. Therefore, aspects of selection bias and representativeness and generalization have been carefully analyzed in the sample.

The use of the resource gathering platform Thehub.io was analyzed to find incubators and entrepreneurial support actors. The Hub is a free community-based platform to help entrepreneurs

grow their startups and list public and private incubators as well as venture capital firms and investors. The issue with our quotas is the potential limits in superficial characteristics such as ownership and public and private categorization. An important aspect is, however, to understand that the contacted respondents all registered on The Hub, which may indicate some preference or strategy to work with these kinds of digital initiatives and external partnerships.

8. DATA COLLECTION

Two pilot study interviews were initially conducted before the empirical data collection began, with two experienced people that know about entrepreneurship and innovation. The interviews lasted between 30 to 40 minutes, to analyze the proposed interview questions to avoid misunderstandings and remove biases from the formulated questions. Furthermore, the pilot study acted as guidance in terms of if they were relevant to our research questions. The initial plan for this research was further to conduct a workshop with one of the incubators discussing the questions, using and working with digital tools, and collect data through this kind of interaction. However, due to the COVID-19 pandemic, this was not possible when incubators are held closed, and social distancing has been enforced. Several discussions with digital service providers where used and discussed their tools were, however, carried out through video conference. During this more ethnographic type of data collection, however, focus on writing field notes and recorded the discussion.

The interview questions were based on literature from the review, exploring incubation, entrepreneurial support, and the context of digitalization and the future of incubators and their potential in incorporating digital tools. The structure of the interviews follows a semi-structured character with the focus on the developed themes instead of the importance of the actual questions and having them answered in a structured manner. This research collects data of six public incubators, three private incubators, three digital service providers, and two interviews with the governmental agency Vinnova. The interview was initialized by framing the questions and giving the subject a context. Therefore, the importance of the subject defining their chosen wording is vital as referenced by Collis and Hussey (2014) Easteby-Smith, Thorpe and Jackson (2012) argue for when semi-structured interviews are appropriate. The prominent pandemic of COVID-19 further influences the practicality of interviews, and a general avoidance of face- to-face communication has been used. Collis and Hussey (2014) further describe both phone and online as tools for interviews, which have mainly been used throughout this research. The respondents were initially contacted via email. Lastly, follow up questions is highly encouraged to increase clarity, depth, and avoidance of potential bias.

The specific research of entrepreneurship and the more general field of innovation associated research are many times semantical and based on the subject's understanding of, for example, ”virtual”, ”digitalization” and ”digital tools”. A critical aspect of this research is investigating the interviewed subjects' understanding and definition of these types of words and concepts to gain unity in the research vis a vi the same language is spoken. The context in the field of incubator and entrepreneurial facilitation is in some respects already given. A prominent issue is found in many newly launched projects, and that is the emerging desire to be innovative and original; therefore, similar projects are named and categorized differently by the founders to seem unique and new. Therefore, concepts in the field of entrepreneurial support and ecosystem are named and branded as many things making unity and language use a more complex aspect of the research.

9. RESPONDENTS

The common theme for all respondents is that they share the mission to support entrepreneurs in one way or another in their process of developing startups. They have been divided into four different subcategories based on characteristics of their ownership, mission, and vision and general-purpose, which are Public incubators, Private incubators, Digital Service providers, and

the governmental agency of innovation, Vinnova. It is essential to understand these differences because of the differences in responses. All interviews were conducted using different types of video communication tools; the ones used were Skype, Google Hangout, and Microsoft Teams. All the interviewee's names have been anonymized, as well as the specific incubators. However, based on characteristic important, the digital service providers and Vinnova has been named to provide a better understanding of their responses.

9.1 Public incubators

Public incubators are characterized by their non-profit profile and are usually a collaboration of multiple actors. Our empirical data contains, for example, university incubators that work together with a holding company that invests in projects and entrepreneurs. Many times, university incubators, science parks, and public incubators are differentiated, but for this specific research question, the notion of non-profit aspects are weighted as the most significant characteristic. Other are owned or co-owned by municipalities and cities with the primary goal to stimulate regional growth and to create local job opportunities. All the public incubators offer physical office space or co-working spaces. The public incubator's niche and specialization were dependent on their region, but the incubators had no explicit niches. All the interviewed respondents in this category are visualized in Table 1.

Table 1. Public incubators

ID	Organization	Interviewee	Ownership	Time
1	Public incubator 1	Business coach	Public	37 minutes
2	Public incubator 2	Business coach	Public	35 minutes
3	Public incubator 3	Business coach	Public	37 minutes
4	Public incubator 4	CEO	Public	45 minutes
5	Public incubator 5	CEO	Public	26 minutes
6	Public incubator 6	CEO	Public	49 minutes

9.2 Private incubators

The private incubators have a for-profit aspect and are in the cases of our respondents driven mainly by investing in the companies and receiving equity. Therefore, a similar mechanic to venture capital is found. Furthermore, corporate incubators are very prominent in this category of incubators, where big corporations host incubator programs for startups or intrapreneurs, i.e., company employees that are creating a startup within an existing company, in this research was limit the research to looking at the private incubators with an investment and equity basis and are not looking at the corporate incubators. In terms of specialization, the private incubators were even more general as opposed to the public incubator and had no specific industry niches. All the respondents in the categories of private incubators are visualized in Table 2.

Table 2. Private incubators

ID	Organization	Interviewee	Ownership	Time
7	Private incubator 1	Partner	Private	26 minutes
8	Private incubator 2	CEO	Private	74 minutes
9	Private incubator 3	Business coach	Private	60 minutes

3.5.3 Digital service providers

These types of initiatives or companies have been cluster into a group called "*Digital service providers*". This group of entrepreneurial ecosystems supports and creates value for both incubators and entrepreneurs in the development process by providing tools to facilitate

entrepreneurial work. Below, a comprehensive description will be presented for each digital service provider. All the respondents in these categories visualized in Table 3.

Table 3. Digital service providers

ID	Organization	Interviewee	Ownership	Time
10	Cubimo Advisor	Founder	Private	67 minutes
11	Keys Ecosystem	Founder	Private	60 minutes
12	Made in the Now - AVVA	Founder	Private	61 minutes

Cubimo Advisor

Cubimo Advisor is an online coaching platform that is a part of their virtual incubator. It connects entrepreneurs with experts through an app. The entrepreneur can select from several categories depending on their needs and then choose a specific business coach (Figure 2). The coach provides information about their professional expertise, and the coaching is formed as one or many video calls. The coach also decides the cost of their coaching, seen as price per hour in (Figure 1). (*Cubimo Advisor i App Store*, 2020)

Figure 2. Cubimo Advisor - Category

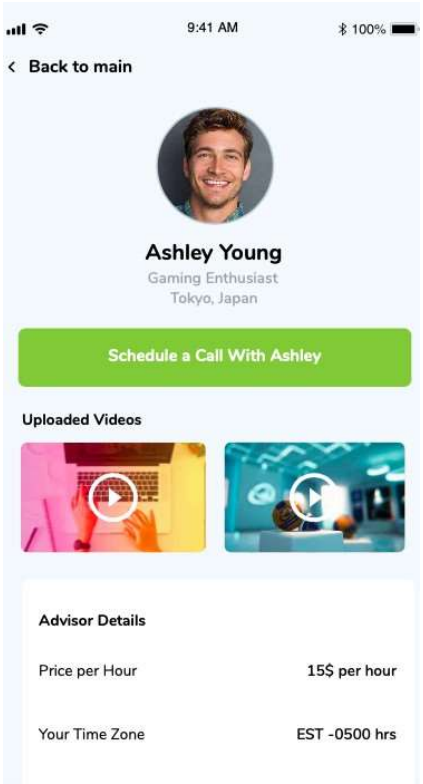

Figure 1. Cubimo Advisor - Coach

Made in The Now - AVVA

Made in The Now is a digital service provider that has developed a validation tool called AVVA. AVVA is an algorithmic validation tool that gathers humans' options to reveal hidden weaknesses and strengths in a team or individual. This is made through several questions that the respondent should answer on a scale from 1 to 10 (Figure 3). After the respondent has answered all the questions, a probability of the success rate is then illustrated in a circular diagram with a backdown description of the different classifications (Figure 4). (*AVVA - The smartest way to evaluate your next venture.*, 2020)

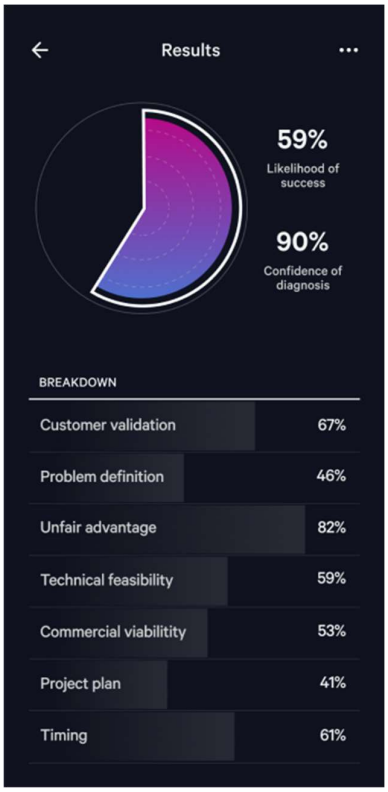

Figure 4. AVVA - Breakdown

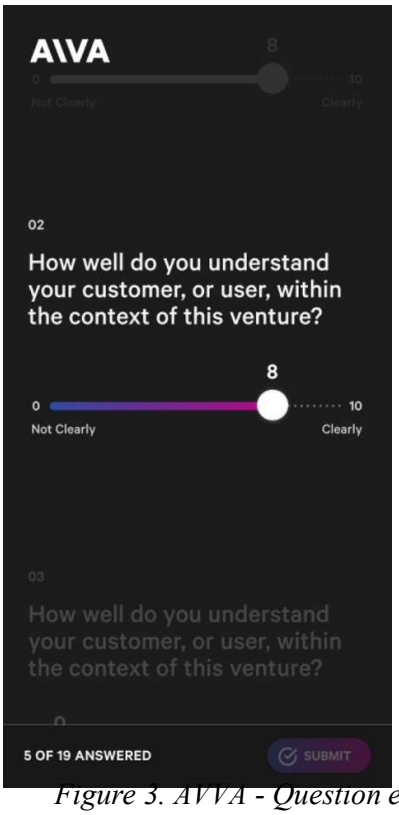

Figure 3. AVVA - Question example

Keys Ecosystem

Keys Ecosystem has the purpose to navigates and support knowledge to entrepreneurs in the entrepreneurial ecosystem. Through providing a free of charge survey-based matchmaking for entrepreneurs and different actors within the entrepreneurial ecosystem (Figure 5) and (Figure 6). The application presents various suggestions on resources that may be suitable for the entrepreneur's agenda after the survey-questions have been answered on the premise of which stage the entrepreneur is in, which industry and the niche they are pursuing and if they live in Stockholm or want to move there. The result is a tailored email with a list of resources available to contact for the entrepreneur. (*Keys Stockholm*, 2020)

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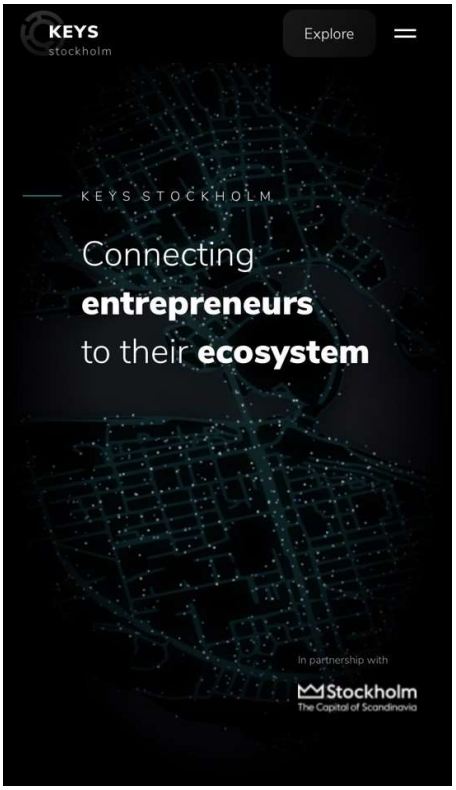

Figure 5. Keys - Introduction

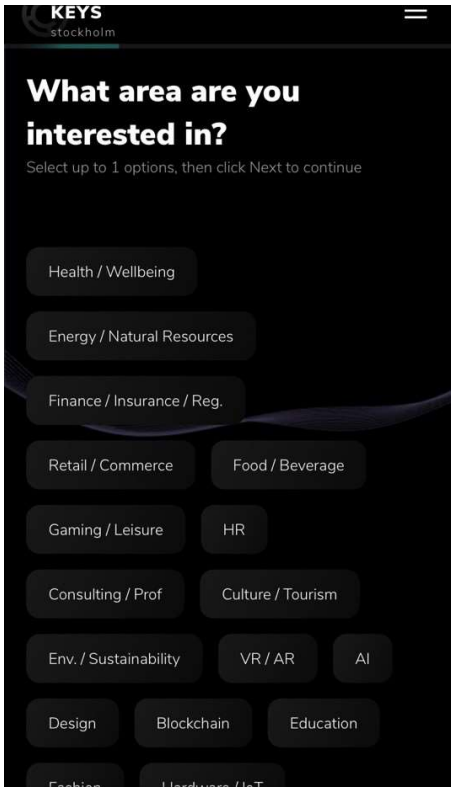

Figure 6. Keys - Question

Vinnova

Vinnova is an essential actor within the entrepreneurial ecosystem as they are the governmental agency of Innovation in Sweden (Vinnova, 2020). The purpose of Vinnova is to build and develop on Sweden's innovation capacity and contribute to sustainable growth. Vinnova further supports specific actors within the ecosystem i.e., public incubators with funding and resources. The two interviews had the purpose of gaining a better macro understanding of the whole region of Sweden and their further efforts to improve Sweden's capacity and entrepreneurial support. The respondents from Vinnova are visualized in Table 4.

Table 4. Vinnova

ID	Organization	Interviewee	Ownership	Time
13	Vinnova	Program manager	Governmental	46 minutes
14	Vinnova	Incubator program manager	Governmental	56 minutes

3.6 Literature review and connection to questions

Collis and Hussey (2014) refer to the literature review as critically evaluating the existing knowledge of a topic. This further acts as a guide for the research. The systematic literature search was carried out through the Uppsala University Library search tool, where literature was found based on queries as a" Virtual incubator" and further synonyms. The research field is also highly influenced by the more general incubator literature, which has been reviewed by Hacket and Dilts (2004) and Milan (2016). The further contextualize the incubators, the more general concepts of entrepreneurial support, and entrepreneurial ecosystem have been reviewed. Moreover, much of the literature review is attempted to understand the ongoing change within the field and to understand further the increased digitization and use of social media and digital tools.

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3.7 Operationalization and interview guide

The reviewed literature after that acted as inspiration and guidance to formulate relevant areas and questions (Appendix 1) to shape the collection of the empirical data. Each question in the interview is inspired by prior research and the specific study is highlighted with a factor. Question 1, 3 and 7 in the interview guide (Appendix 1) is motivated by studies from (Peters, et al. 2004; Cantù, 2017; Shih and Aaboen, 2019) with the incubator purpose as the factor, the motivation and factor for each question are highlighted in Table 5.

Table 5. Operationalization

Factor	Research	Question(s)
Incubator purpose	(Cantù, 2017) (Peters et al., 2004) (Shih and Aaboen, 2019)	1, 3, 7
Incubator process	(Schwartz and Hornych, 2010) (Bruneel et al., 2012) (Bruneel et al., 2012)	2, 4, 6
Services	(Aaboen, 2009) (Hackett and Dilts, 2004) (Durão et al., 2005) (Bergek and Norrman, 2008) (Carayannis and Von Zedtwitz, 2005)	5
Change of entrepreneurs	(Giones and Brem, 2017) (Defourny and Nyssens, 2017) (Rasmussen and Sørheim, 2006) (Martin et al., 2013)	8
Ecosystem and partners	(Song, 2015) (Mack and Mayer, 2016)	9, 11
Tools and measurement	(Shih and Aaboen, 2019) (Soetanto and Jack, 2016)	10, 12

10. DATA ANALYSIS

Analyzing the data, Collis and Hussey (2014) refer to an approach based on research from Morse (1994) through four key steps. Comprehending, or understanding the data. Synthesizing, or put the data in the context of literature and research. Then theorizing or developing patterns and link it with theory. Recontextualizing, and using the data to create a higher degree of generalization. The data is gathered through recordings audio and notes taken during the interview to initially receive an understanding of the coding and the potential themes that occur throughout the data collection.

This research follows the thematic analysis approach by Braun and Clarke (2006), which is based on the premise of creating themes derived from codes. The codes can be found in the transcript interview data, and patterns with repeated keywords and topics were extracted to a separate document of codes, in this process initialized headings for the similar codes as a way of understanding their context.

The coding process was done separately, resulting in 330 codes, after cross-referencing them and merging them, the initial codes were concluded to 200. Attride-Stirling (2001) provided a systematic and practical guide for how to analyze empirical data in a thematic network. This is further an attempt to ensure transparency and disclosure of the analysis. The process begins with extracting the so-called basic themes from the 200 codes, explained as the ”lowest-order premises evident in the text” (Attride-Stirling, 2001 p388). After that, the basic themes are clustered together into the next level of abstraction, in an organizing theme. These themes are finally capturing a combined global theme. In the process of abstracting the codes to basic themes, this was done separately by the researchers and then cross-referenced and merged, resulting in 60 basic themes. After that, the third round was further fitting the basic themes into organizing themes, which

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resulted in 17 organizing themes that were paired with illustrative quotations. The final round was concluded with five global themes.
The identification of the global themes has been an iterative process but mainly conducted and finalized after all the data were collected. The themes can be viewed as a result of patterns across the collected data, repeated topics, and keywords both regarding the individual interview itself but also compared to the entire set of data. The two last interviews were further conducted with the premise of presenting the initially found organizing themes to confirm their relevance further and to validate the analysis further. The data analysis follows an inductive approach, and the coding and themes were attempted to be gathered from the data itself as opposed to using pre-existing concepts and themes from theory. An important aspect is, however, the subjective bias that always exists when conducting research and the notion that a researcher always is influenced by prior scholars.

11. VALIDITY AND RELIABILITY

We used a pilot interview testing the initial interview guide. Further, along the process of data collection, we conducted follow up interviews on some of the subjects to understand if we had understood their statements and opinions correctly. The preliminary basic themes were further validated by two interviews with a more concrete object of understanding their validity. The question of saturation of theoretical concepts is also a critical aspect brought up by Charmaz (2006), a practical example is that if you ask respondents the same questions you are going to hear the same concepts but if you pursue analytical questions there is potential for the interviews and data collection to evolve. Therefore, aspects of constant comparison have been used to reach a stop in the data collection once there are no new properties brought up by respondents. A concluding remark is that the goal was to reach a kind of exhaustion at this particular time. This is contrary to claiming reached saturation based on a few cases, which frequently is hard to either confirm or validate.

Reliability or the precision of the measurement, i.e., if this research were to be replicated, would the researchers receive similar results? By using a protocol and describing the process of iteration in the interview guide and methodological decisions, the purpose of this research in the aspect of reliability aims to be as high as possible in the context of interpretivism. This research used a protocol, according to Bryman and Bell (2011), to ensure the aspect of reliability.

- Being clear and concise with changes and updates in methodology and data collection.
- Describing the research process, step by step.
- Using the appropriate appendices for first to last interview guide and how the sample was chosen.

Validity is described by Collis and Hussey (2014) as to what extent the research measures and tests the said issue it is supposed to measure. The generalizability is the notion of how the results from a particular sample can be extended to other samples and populations (Collis and Hussey 2014). Another important aspect, as described by Bryman and Bell (2011), is that this research in regard to empirics and analysis has been carried out to the researcher's best knowledge. This is important to recognize based on that coding, analyzing themes, and moving forwards in abstraction levels heavily relies on the researcher's interpretation. The coding and theme generation are, therefore, a subject for biased interpretation, which, of course, is occurring throughout the research and in the conducted interviews and data collection.

12. ETHICAL CONSIDERATIONS

Ethical considerations are something all researchers should have in mind while carrying out their research. Aspects of harming the participants that are part of the research or breaching their privacy or lying to them are essential breaches of ethics. Bryman and Bell (2011) propose a list of aspects that are important to consider that were taken into consideration in this specific research. This research has, therefore, carefully considered aspects of providing interviewees with the

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opportunity to withdraw, the right to anonymity, and confidentiality. The initial step of the interview was, therefore, to inform participants of recording and how their responses would be used. This was later confirmed, and explicit consent was sought out to provide the organization name. Due to the possibility of harm to participants in terms of self-esteem and possible evaluation of a career aspect, this research chose to anonymize the names of the participants on the premise that it did not add anything to the research itself.

The practical guidelines used in this research derive from Bryman and Bell (2011) but furthermore from Uppsala University's ethical guidelines. Within business research, there are four core ethical principles according to Bryman and Bell (2011), this is divided into different areas: *Harm to participants, Lack of informed consent, Invasion of privacy, Deception involvement.* The author Collis and Hussey (2014) explicitly discusses the aspect of harming the participants and how the researches deal with the aspects of privacy aspects. Potential research subjects were contacted early in the process, to allow the participants to have permission from management to be part of the research. An important reason for this is an aspect within voluntary participation because people might have an issue with receiving consent from their management to participate in research and want to inspect our collected data so that everything is interpreted correctly.

Anonymity and confidentiality aspect can in quantitative surveys lead to more responses, whereas in interviews, the subject's role and the company can, according to Collis and Hussey (2014), be a significant appreciation in the context for the research. In this case, it is essential to receive a confirmation by participants. In cases this is not possible, companies can be referred to in more general terms as Collis and Hussey (2014 p.33) "An engineering company" or "company A, B, C and so on."

13. LIMITATIONS

During the 2020 epidemic of COVID-19, some limitations regarding data collection have been an occurring limiting factor. The most significant impact in terms of methodology for this research is the reason for canceled events and a minimizing of physical interactions and meetings. Therefore, some choices in terms of methodology have been redirected into video conferences and online meetings as opposed to the prior mentioned workshops and more ethnographic and observational aspects of research. Furthermore, the pandemic has created an entirely new situation for many of the respondents, which has unimaginably colored their responses.

14. FINDINGS

This section aims to present the findings of the study, and the thematic analysis was deriving into five global themes. The codes were interpreted into underlying themes and then combined to organizing themes. These were then clustered to the final level of global themes. These were then clustered to the final level of global themes, with was the change of entrepreneurship, the process of a startup and incubator, partners collaboration and ecosystem, incubator services, and the digital tools and online assistance. The global themes and the findings from the interview are presented under each subchapter, and an overview of each is visualized in Table 6. The respondents were categorized following their mission and funding structure.

The thematic classification is derived from the coding process, and quotes should be considered a representation of several answers mainly divided into general agreements or contrary beliefs and disagreements. To understand how incubators are incorporating digital tools and how they develop their current product and service efforts. It is essential to understand each interviewed incubator's current strategy in terms of working with improvement but especially also how they interpret and present their current product and service efforts.

Understanding the challenges and opportunities to an online virtual incubator is very important to understand what exactly a virtual incubator is. Prior research has failed to unveil an exact and

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unified definition of what a virtual incubator is, and similar types of efforts are named Electronic incubator or Virtual hub. However, in this research, only two incubators name themselves as virtual incubators, which describes the phenomena as using digital tools in their incubator process. The fundamental aspect of the research question, therefore, turns to understand the use of digital tools within the incubator process to enhance further their efforts in delivering on their specific missions.

Thematic analysis – Basic to Global Themes

Table 6. Thematic analysis

Basic Themes	**Organizing Themes**	**Global Themes**
Inclusive values when starting a company Both genders represented Impact and sustainability Different backgrounds and ethnicities	Value-based entrepreneurship *"4-5 years ago there was no talk about circular economy, about sustainability and now it's required to get money…"*	Change of entrepreneurship
Available digital resources More globalized world Increased ways of funding Hackathons and contests Imitative entrepreneurship Fast entrepreneurship	Accessibility *"Platforms like Kickstarter etc. gives more opportunities to finance their companies and their innovations..."*	
Glorification of founders Interest from Corporations Increased capital flow	Popularity *"Inflation in people turning to entrepreneurship because of success cases…"*	
Finding the right team Idea solving a real problem Who should start the company Customer development	Validation *"Ideas has to be validated as to what problem it solves and who's paying for it"*	The process of a Startup and Incubator
Recruiting talents Connect to investors Scalable business models Education and learning Development of service and products Technical consultant assistance	Growth *"We work a lot with setting goals and finding ways to follow up and prepare them for growth"*	
Common core values Portfolio fit to the incubator Individual characteristics Evaluating the scalability in the business models Degree of innovation	Selection "*You apply in competition with others who applied for the opportunity, so we only take in the sharpest ideas."*	
Measuring and analyzing data in the incubation process Increase interest from corporations Increase in new private initiatives to support entrepreneurs	Change and future "Digital support could absolutely be a way forward, and make incubators more demanding a data driven"	
Public incubators selected by Vinnova as being excellent member-based industry association (SISP) Public sector incubator collaboration networks (Ignite)	Incubator networks and Governmental support *"Public incubators work quite tightly and we have regular meetups with other's in the Vinnova program and SISP."*	

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Generation deal flow for the incubators	Hackathon and competitions *"Hackathon is idea and team formation, and we get quite a lot of*	Partners collaboration and ecosystem

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	companies coming from these type of competitions"	
Incubators collaborate with University in the same region Local initiatives, startup hubs and organizations Regional collaborations with banks and Almi for investment and company lending	Regional and local *"Regional differences, In the big cities, startups and taps come every 5 minutes, which they may not do in smaller cities."*	
Technical partners Community's interactions Connect to investors	Network *"The limitations are primarily trust-building and serendipitous networking that occurs at physical events. For this reason, the best incubator would probably be the one that manages to successfully*	Incubator services
Coaching through digital meetings Assigned mentors for the startups and entrepreneurs	Coaching *"So independent eyes and, coaching and customer validation is very important."*	
Angel investors networks Hosting of demo days (Pitch for investors) Grants and public funding Venture capital and equity funding	Funding *"So, Sweden should invest in value creation in Sweden, where jobs are created, so it is a question of state funding or private venture capital."*	
Survey-based validation models (Made in the now) Resource gathering different actors in the ecosystem. Measuring degree of innovativeness	Validation *"In recent weeks, we have built up some digital tools to be able to make the right decision and validate to coach properly and save a lot of data about the founders."*	Digital tools and online assistance
Finding the right team members Connecting startups with relevant advisors Getting connected with investors	Matchmaking *"It's about matchmaking these fundamentals with entrepreneurs and startups. With serious and longitudinal actors, it's like a dating process to find the best fit."*	
Finding all the actors Finding relevant partnerships Receiving the right help	Resources ecosystem *"It took me months to understand all the actors and what they do and where entrepreneurs should turn"*	
Video conference tools Online workshops and seminars Virtual demo days Planning and distributing tools (Trello, Asana and Slack)	Communication *"Now with the Corona crisis, everything is at its peak and incubators have to run their business completely digitally and that is what we have done."*	

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15. CHANGE OF ENTREPRENEURSHIP

All the respondents agreed that the entrepreneur is always developing, changing, and finding a standard definition is troublesome. Entrepreneurs and startups that are aware of sustainability have a strategy to incorporate a diverse team and want to make an impact is a crucial aspect from the incubator's point of view. A majority of the respondents also argued for the increase in speed, based on the premise of digitalization and societal acceptance, phrasing it as entrepreneurship has never been this accessible or accepted. *"Then we have also added categories for sustainability and gender equality, which are two categories that we also consider necessary for you to be able to enter for admission, where you must at least have a plan on how you intend to address these issues."* (Public incubator 1)
"The IMPACT aspect, 4-5 years ago there was no talk of the circular economy, about sustainability, and now it's just what you get money for almost. Sustainability, the impact is right in time, and It's a HUGE paradigm shift" (Public incubator 4)

A demand brought up by half of the interviews regarding the need to further expand on their marketing and targeted audience. Two incubators specifically mention the similar characteristics of entrepreneurs applying to them. One of the argued reasons is that there are a niche and specific industry focus in the incubator's geographical placement. The marketing and targeting of a particular type of people with similar backgrounds. *"Incubators become more industry and industry-specific, which can be dangerous in the diversity aspect if this becomes that everything will be the same, and there is no diversity."* (Public incubator 4)

Entrepreneurship and the creation of a startup have also become more accessible where the majority of respondents argue that it is easier to start a business today than before. One frequently mentioned aspect is the plethora of digital resources that are available for peoples interested in becoming an entrepreneur or launching a startup. *"There are tools to quickly build so you can quickly test and quickly validate. Wix.com, is one example where you can simulate your dream product to launch in less than an hour"* (Public incubator 2)

Another aspect of entrepreneurship that was criticized by some of the incubators was the notion of fast entrepreneurship and the increase in copying already established business ideas without really developing them. The respondents all came from a different understanding of these phenomena, where some of the incubators actively engaged and believed this can be the future of entrepreneurship others were more concerned about the lack of innovativeness. *"This kind of rock and roll "landing page AB test, two weeks later, 2 million users"* (Public incubator 5).

Lastly, an essential ongoing trend and change within the field of entrepreneurship is the upwards trend in popularity and status, and this can be seen as a result of multiple factors brought up in our data collection. The most common explanation is the glorification of startup founders, where examples as Elon Musk, Klarna, and Spotify are brought up as success cases and acting as inspiration. Furthermore, it is the increased interest from corporations through sponsorships and even the increasing popularity in activities from corporations launching their incubators.

To summarize this section, the incubators are experiencing a change of entrepreneurship. Aspects of sustainability, diversity, and value-based entrepreneurship are becoming more important, and the entrepreneurs with these focuses are evaluated more positively. Furthermore, the aspect of accessibility is apparent; never before has it been easier to become an entrepreneur, and the barriers are lowered through digitization and globalization. However, the notion of faster and more accessible entrepreneurship differentiates the respondents into positive and negative attitudes

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amongst respondents. Entrepreneurship is becoming more popular, by the glorification of the startup life and founders. Furthermore, there seems to be an increase in social status and also in capital flow to startups.

16. THE PROCESS OF A STARTUP AND INCUBATOR

One reoccurring aspect of the startup and the incubator process has been the topic of validation. The word incubator process is used in a different context with different meanings. Incubators use validation as a process to confirm that the startup has understood an aspect such as customers correctly. The initial shape of a startup is the idea, and all the incubators emphasize the importance that the idea should solve a real problem. The process of validating the idea, therefore, begins as the first step in the process.

“It is a process, and it is well described, and incubators have worked with it in 20 years. It needs an idea that needs to be validated because someone has a problem that the idea will solve; someone has to pay for it. Someone has to produce and execute the idea, some production." (Cubimo)

Validation is further an essential part of understanding who should run and be in charge of the startup and how the team should be built. As suggested previously, diversity and combining different perspectives and skills is argued by many of the respondents as a critical aspect of forming a good team. There is further a process in validating the team members and the founder. There is a difference between how the respondents prioritized and ranked the team and founders, and what the most valuable aspects are within a successful startup. Some incubators prioritize and focus on the idea, product, or service itself. "For you to understand the difference is about bringing in individuals who have a driving force and often ideas for building companies. But there is no company, they need to meet other people and connect with often technology meets business and then you build a team for around, and then you scale it up there and do validation of the business ideas" (Privat incubator 1)

The process of growth is listed as one fundamental aspect of what an incubator tries to infuse to the startup. There are many ways they do this; this research tries to separate these efforts connected to the specific services they offer versus the general process of the incubator and startup. One of the main processes is selecting, developing, and an overall effort to work with scalable business models that are prominent with a majority of respondents. However, some actors focus more on provides more general startup advice for small business owners and also actors looking at more significant business to business selling companies relying heavily on isolated partnerships with specific industry niches.

Recruitment, talents, and matchmaking could all be seen as services provided by the incubator but also an ongoing process to build the most suitable team to carry out the activities needed to become a successful startup. This process is many times carried out in an event type of setting, with a majority of respondents hosting matchmaking evenings, activities and invite potential talents and people interested in either joining a startup or the incubator itself as an entrepreneur.*" We usually host a team-up where our startups can meet people who are passionate about entrepreneurship and can get involved in a startup, and we try to do this at least once a year, so we try and match people with each other."* (Public incubator 1)

All the incubators further have the objective of educating the entrepreneurs to create a community of learning. Many of the respondents, therefore, host workshops, seminars, and weekly

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tasks for the incubated startups to prepare them for growing their business. A compelling differentiation was, however, that one respondent did not see this as the incubator's primary goal, but more of a result and consequence in the objective of growing the company.

"You will probably receive different answers depending on which incubator you ask about their purpose, and of course these kinds of the program leads to learning and general education of entrepreneurship, but in the same way as you learn something by walking through a park. This meaning that the main objective is not educating entrepreneurs, but it can be seen as a result of it" (Keys Ecosystem)

Furthermore, the exact process of how incubators host educational instances in their process follows similar trends across all respondents. By having an individual mentor or coach for the team. Through a general form of learning that is more standardized to all incubated startups in the incubator. One of the private incubator programs has what they call a "plug ‘n play" kind of process, with the purpose of efficiently transferring the process when opening new programs around the world. However, all the respondents have a structured program and process for startups and entrepreneurs joining. An important aspect is, however, brought up by one incubator, that there are examples of more community based and flexible incubator programs. *"There is a difference between companies coming from a clear incubated process and companies coming from a co-working space and community. Sometimes it can develop to a business you create for your friends."* (Vinnova)

When incubators screen potential entrepreneurs and startups to join their respective programs, there are many deciding factors and aspects they evaluate. A frequently brought up aspect is the regional specificities and the incubator's branding. A majority of the incubators discuss the different number of applicants, which varies heavily. The incubator program itself, as one respondent frames it, can be more or less popular amongst entrepreneurs and startups. The incubators selection is dependent on their specific niche, where some emphasize their industry focus, i.e., life science, deep tech, and capital-intensive projects, while a minority of respondents are more open to all applications. This could be summarized as that incubators are looking for suiting companies into their already established portfolio of startups.

In this process, every incubator has an online application as the first step, where a minority of incubators do an initial assessment and testing of founders and the ideas. Two of the respondents further intensively look for innovativeness and using specific models to measure the potential innovativeness in the startup's ideas.

Developing and improving on the incubator's process is frequently occurring, and all respondents touch on the subject of the future roadmap of incubators and its process. However, the findings regarding improvement are hard to unify, and opinions and statements have a great variety. A reoccurring theme is the aspect of data and digitization, and some argue as this being the main factor that will ensure success for incubators supporting entrepreneurs. In contrast, others believe it to be more of a complementing aspect that can be incorporated. *"incubators should gradually transition to digital tools, but without giving up the personalized angle, that is the most important attribute of incubation programs."* (Keys Ecosystem)

In terms of public and private initiatives, two respondents from public incubators argued for the possibility of a future of less governmental sponsoring because the public incubators are in an

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upwards trend in terms of creating revenue by themselves. A future possibility is, therefore, that public funding of incubators will lower, and more private initiative will occur.

"I think the government will soon realize that these (public incubators) are going so well so that we will stop sponsoring, so I think we will see more private initiatives. There is also a possibility, and if you look at the big companies, they realized that they do not create a single creative idea. And they often sponsor competitions and want to be in the startup environment. This leads to some difficulties, and some large companies that entrepreneurs do not want to be associated with will have difficulty for this." (Public incubator 2)

The last important aspect is how some incubators are working towards becoming more data- driven in their process, working more with measuring, gathering of data, and using it to improve. Specifically, one incubator stands out in this aspect, where they actively try to quantify every step of the process from selecting the startups and validating the team and idea. This to track improvements throughout the program. Meanwhile, the majority of incubators make efforts, tracking these kinds of parameters it is more dependent on the individual coaches, tracking their assigned startups in a less formally structured way.
To summarize, validation and understanding of the needs are crucial for the incubated companies. The validation process concerns the idea, the team, and understanding the customer. The question of growth is very prominent in the findings, and the incubators infuse growth mainly through matchmaking events and activities for startups to recruit. The incubator process of knowledge transfer and creating a community of learning as well as individual coaching, are two critical processes. The application process shares similarities across the spectrum of mainly being online, and in the same matter, the digitization and a more data- driven approach are further seen as a potential improvement and future way forward.

17. DISCUSSION

17.1Change of entrepreneurship

In terms of understanding the entrepreneur and the change, thereof, the lack of common definition and understanding as according to (Henrekson and Stenkula, 2010) is coherent throughout our findings. Many discussions surround the different types of entrepreneurs and the trouble with looking at a startup within in-deep and technical industries such as mining compared to an app developer or an even more significant difference by looking at someone selling vegan candy. This type of categorization also is brought up by (Giones and Brem, 2017), where they list three categories of entrepreneurship in the context of digitization: Technology, Digital technology, and digital entrepreneurship the incubators. The high risks associated with technology entrepreneurship as described accurately by one incubator as opposed to the type of fast entrepreneurship associated with digital entrepreneurship. These aspects differ widely in our findings on the premise that different incubators select and work with different types of startups.

A typical response from the incubators was also the type of fast, consumer-targeted products and service-based entrepreneurship that shares similarities (Henrekson and Stenkula, 2010) imitative entrepreneurship, were products, services, and business models are imitated or copied. One incubator was, however, very positive to this type of entrepreneurship, mentioning a type of open innovation, in bringing together multiple products and combining them. Another example is the E-scooters that flooded the streets of Sweden, where suddenly, ten different actors with similar business ideas battled the markets of the consumers. There seems to be a difference amongst incubators specifically to the process of selection, where some incubators solemnly focus on more

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innovative ideas and cherish and measure the innovation degree of every applying startup. On the contrary, some of the incubators are more open in their selection, seeing it more as a support effort in guiding as many as possible.

A significant differentiation is the question of interchangeably using entrepreneurship and self-employed, as argued by (Mcquaid, 2002; Bjuggren et al., 2012) but to understand the importance of the pursuit of growth within entrepreneurship. The increase in popularity differs throughout our respondents, but a commonality is an aspect of the glorification of startups and its associated founders. This increase in popularity could be associated with the increase of entrepreneurial education from university and training programs (Rasmussen and Sørheim,
2006). However, it is hard to know which aspect came first, the peaked interest, or the educational efforts.

A reoccurring aspect of the selection process is also that many incubators emphasize looking at parameters such as potential impact and diversity strategy when selecting entrepreneurs to join their program. Furthermore, this finding seems to be prominent across more steps of the incubator and startup process. One direct example is within how incubators support the startups in their branding and packaging, impact and diversity has become almost like a hygiene factor and something that must be part of a startup. The aspects of social entrepreneurship (Defourny and Nyssens, 2017) and green entrepreneurship (Fellnhofer et al., 2014) can, therefore, be seen as even more important aspects for startups to consider when pursuing their ideas. It is suggested that taking these aspects into consideration might receive more entrepreneurial support.

Lastly, the parameter of digital entrepreneurship and the associated new opportunities and challenges as researched by Richter et al., (2017), it is prominent that social media and online communication is creating a new landscape for entrepreneurial support. All the responding incubators believe that the main entry and reach of new incubate is through their website and through their social media channels. With 80% of entrepreneurs using social media as, according to Mack et al., (2017), the incubator, therefore, could benefit from being active in these outlets.

17.2 The process of a startup and incubator

The process for startups (Baron and Shane, 2004) share similarities with our proposed findings of the incubator process. A reoccurring theme is a validation, so incubators try to promote within their process ways to promote validation in terms of idea, team, and knowledge of customers. The two first steps, as argued by Baron and Shane (2004), the idea phase and
decision to process, are, however, outside of the incubator process. The incubator process, therefore, starts most frequently with an already validated business idea, whereas some incubators also have other programs named pre-incubators for the earlier phases present in Baron and Shane (2004). The process of the incubator, therefore, is to remove some of the obstacles and concerns that are brought up by Shane (2009) and Rubin et al., (2015) knowledge, funding, and networking.

The specific incubator process is different amongst the incubators, but the fundamentals share many similarities across them all. Aspects of monitoring the startups, providing them with knowledge and networking opportunities, and preparing them for funding are all prominent in this research's findings and are aligned with Rubin et al., (2015). The specificities of how these targets are reached are usually of a combination of activities. Mainly physical events and through a community building in each of the incubators. In regard to the customization of the process for each startup in the incubator process, Phan et al., (2005) research argue for the necessity to see every startup's specific need and tailor the process on a more individual premise. Morrison and Bergin-Seers (2002) further

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develop to the lack of tailored programs; however, research by Giones and Brem (2017) argues that entrepreneurship-supported models are becoming even more unified. The question regarding customization is in our findings non- conclusive. Every incubator state that they, in some way, customize their process.

When looking at the aspect of growth, in terms of revenue and recruitment, it is useful to look at Torun et al., (2018) research on benchmarking for incubators, average jobs created, survival, rate, and growth in sales is an example of essential measurements for benchmarking that incubators can be measured on. The aspect of selection of startups from the incubator's point of view that Aerts (2007) argue many times are biased has the potential of incubators selecting portfolio fitting startups with already established validation and growth potential. In terms of educating entrepreneurs, an essential factor is knowledge transfer and within the process and to, for example, use tools and methods as suggested by Cakula et al., (2013). Furthermore, like Rubin et al., (2015) agues, there is significant potential in using the incubator alumni's and creating a network of a learning culture that exchanges knowledge and experience.

The aspect of improving upon the process is two-folded, partly looking at a change in incentive and ownership; many of the interviewed incubators argued for the potential growth of private initiative within the entrepreneurial support. Research from Shih and Aaboen (2019) also argues for a potential pitfall where public incubators might face an obstacle where dealing and understanding the public funding model is massively time-consuming and might remove some of the time and effort put into the startups. However, as argued in our findings, the public incubator models have upside in terms of that the incubator has the potential to act with little to no self-interest in their guidance to the startups. The second part of improvements is the data-driven approach in incorporating more measuring and data-driven insights. This finding is not coherent throughout our interviewees but is highlighted frequently by some of the incubators. It is noteworthy to understand that these incubators have already established a structure for measuring and using data in every step of their process. From selecting the startups, to validate them to invest in them lastly. The incubators incorporating a more data- driven approach argues that the potential insights make it easier to improve their process.

Regarding the generations of incubators (Bruneel et al., 2012; Mian, et al., 2016), and the notion of three generations of the incubator with a difference in purpose and primary process to achieve this, there is a possibility that the COVID-19 crisis is pushing the development further, through networking, coaching and office space moving to a virtual space where none of our respondents physically have met for the past months. However, it might be an overestimation to argue that there is an ongoing shift in their mission and process anything more than that the physical meetings are moved online.

18. CONCLUSION

The increasing digitization is changing entrepreneurship and, therefore, the associated barriers and obstacles that entrepreneurs face. Therefore, entrepreneurial support actors need to stay relevant and continuously work with improving their efforts. The digital context has made entrepreneurship more accessible, faster processes, and new types of receiving support. To further be successful, entrepreneurs need to know which resources are available and where to turn for the right type of help.

The incubators play an essential role in the entrepreneurial ecosystem, acting as a broker and matchmaker of services to the startups. A community for entrepreneurs that they receive coaching,

consultant help and are introduced to the incubator`s networks to receive funding and expertise. The incubators endure a wide variety in their usage of tools and methodology, and this is mainly promoted and incorporated by individual coaches and entrepreneurs rather than a structured and systematic strategy to develop their current product and services. One concluding remark is, therefore, that incubators would benefit from progressively adopting a more digital process, incentivized by government policy to create a more open and collaborative environment. Without data-driven insights, there is a potential for gut-feeling decisions and advice from incubators and coaches, which has the potential to hinder entrepreneurs. Incubators should, therefore, gradually transition to incorporating more digital tools and processes without sacrificing the personalized angle.

The entrepreneurial ecosystem has limitations and boundaries and is heavily relied on regional partnerships and is frequently measured on regional success factors, i.e., job creation. The potential opportunities of a virtual incubator process should, therefore, act as a complement to an already established incubator. This can assist more people to join the incubator and reach a wider variety of entrepreneurs. The challenges of a virtual incubator are primarily the issue of building trust and the serendipitous networking that occurs through physical interaction. The digital tools further have the potential to act as microservices used by the incubator to develop their services further making each step of their process more efficient and relevant to the ongoing trends in the entrepreneurial ecosystem and for the digital entrepreneurs.

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