Post-COVID Potentials in Mental Health

& Wellness Entrepreneurship

by

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Final seminar: 27 May 2022

ENTN19 Degree Project - New Venture Creation

Acknowledgements

Abstract

We aimed to map out the landscape of the Swedish mental health and wellness technology market in order to show that there is a growing community of mental health entrepreneurs focused on innovation, particularly in post-covid times. Prior to our work, the Swedish Mental Health Tech sector had not been mapped out or explored.

We gathered information on Swedish Mental Health Tech businesses from public databases to get a better view of the state of the industry. We interviewed six founders, three men, and three women, to understand more about the issues they encounter.

Despite the fact that the Well-Tech category contains the most businesses, we discovered that Med-Tech receives the most funding. Companies that target the overall well-being of their consumers obtain the greatest investment. Pre-seed and seed-stage companies do not attract many investments. We found that education and past personal experience in mental health boosted entrepreneurial motivations. The Swedish startup ecosystem was critical in the early phases of the company's development. In order to obtain investments, communicating the value proposition well was inevitable. We discovered gender disparities in obtaining funding. The founders' vision of the future was a driving force behind their success.

Keywords: Mental Health Tech, entrepreneurial motivation, stimulating factors, ecosystem, mental health.

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1. Introduction

There has been a rise in consumer interest and willingness to purchase products and services that promote and improve mental and physical health. The wellness market is becoming increasingly crowded, with the global wellness market steadily growing by 5 to 10 percent every year by more than $1.5 trillion (Callaghan et al., 2021). The well-being market has been expanding widely in many categories. Apart from addressing certain specific health issues, whether mental health or physical health, it also targets well-being as a consistent new trend that is consumer-valued and creates new behaviours and new actors in the market through the dynamic changes after the pandemic.

Callaghan et al. (2021) identified six dimensions of consumer attitudes and behaviours towards wellness: better health, better fitness, better nutrition, better appearance, better sleep, and better mindfulness. It shows that consumers have been increasingly attracted to mental health products and services, which affects the more significant shift toward the various wellness products and services in the market. The link between physical activity and mental well-being is the foundation for the global wellness industry's growth, which now accounts for 5.3 per cent of global economic output (Global Wellness Institute, 2021), influencing not only the healthcare industry but also other sub-industries that acknowledge and recognise these opportunities. Hence, the mental health tech market has increased rapidly and has been growing since the pandemic started.

Sweden's annual healthcare spending is around 11% of the GDP (The Commonwealth Fund, 2021), which makes healthcare one of the country's highest spending. During the pandemic in 2020, the government spent an exceptionally high amount of money on health and social care, 102 billion SEK (Sweden, 2021). At the same time, the COVID-19 pandemic accelerated the Digital Health industry by highlighting the drawbacks of the traditional healthcare setup. Mental health care technologies also benefited from this situation. The demand for mental health apps has increased significantly since people have not been able to access the traditional services during the pandemic (Inkster, 2021) over the past two years.

In 2020 the number of mental health applications available in the major App stores had increased by 30%, and people have been downloading them at a higher rate since 2021 (ORCHA, 2021). However, the mental health tech sector in Sweden was not growing as fast as in other parts of the

world in 2020 and only caught up in 2021 (Dealroom, 2022). Last year, people started turning to digital solutions to aid their psychological well-being in Sweden and recognising this, investments have doubled in the digital health sector. However, there is not much information regarding the mental health tech sector as such because research is yet to be done in this space.

On the other hand, the COVID-19 pandemic resulted in a mental health pandemic that globally influences social dynamics and the markets (apart from the direct effects of the pandemic on the markets). For example, the great resignation wave (Allman, 2021) is pushing up the tech industry's salaries up and reshaping the workplace and work-life balance. Another reaction to the pandemic came to the benefit of mental health tech. Mental health had been a global issue before the pandemic already. Ten years ago, the World Health Organisation predicted that by 2030 depression would become the leading cause of disability (WHO, 2012). Nevertheless, investments in this area were not significant. Now, however, in Sweden and other parts of the world, depression, anxiety and sleep problems have risen to record levels, which have been exacerbated by the pandemic related worries over health and financial consequences (McCracken et al. 2020).

We aim to broaden the knowledge about this specific field of entrepreneurship as support of innovation in the mental health sector has been long overdue. Apart from the need for innovation, the ventures targeting psychological well-being have a potentially widespread effect on public health outcomes. Most of the innovation in this sector produces preventive techniques or solutions that are more effective than the healthcare system, which typically operates in a reactive and inefficient way. However, there are important questions unanswered regarding the implementation and adoption of such innovative solutions, and therefore we would like to explore this area in more detail.

2. Theoretical framework

Since digitalisation has been reshaping entrepreneurial ecosystems, processes, measurable outcomes, and dynamics, some scholars suggest that researchers should focus more on digital entrepreneurial ecosystems (Acs et al. 2014, in Cavallo, Ghezzi, Rossi-Lamastra, 2021). It is crucial to understand how digital innovation happens and how policy is shaped to support it, especially since digitalisation has been growing in this field.

Information communication technological (ICT) innovation is relatively cheap. It mostly requires the internet to work and skilled people who can code, yet it generates rather high revenue and thus presents a good source of income for the economy (Wijesinghe, Hansson and Ekenberg, 2021).

Entrepreneurial ecosystems are defined in the literature as "sets of independent actors and factors coordinated so that they enable productive entrepreneurship within a particular territory" (Stam, 2015, p. 5. in Cavallo, Ghezzi, Rossi-Lamastra, 2021, p. 1844.). This definition points out that entrepreneurial ecosystems form in geographical areas within communities. These communities consist of nascent and seasoned entrepreneurs, support organisations, and regulatory bodies collaborating dynamically within the same space (Cavallo, Ghezzi, Rossi-Lamastra, 2021). To understand and analyse these complex systems, one must understand their building blocks, i.e. the stakeholders and the drivers of the entrepreneurial activity. Scholars have mainly identified universities, venture capital firms (VCs), incubators, and large corporations as the key players in these ecosystems (Cavallo, Ghezzi, Rossi-Lamastra, 2021). However, Cavallo, Ghezzi, and Rossi-Lamastra (2021) argue that small and medium-sized enterprises (SMEs) are significant ecosystem players, particularly in locations where VC funding is not easily accessible.

In addition to that, the impact generated by the entrepreneurial ecosystems has evoked the need for governance and improved, more targeted policy strategies. This is especially important in the health technology sector, where our main subject of interest, mental health technology, falls.

Sweden is one of the most innovative countries globally and has a very supportive startup ecosystem with a social safety net that encourages entrepreneurship and innovation. The government agency, VINNOVA, under the Ministry of Enterprise and Innovation, and Almi provide financial assistance and business development advice to entrepreneurs at all stages. Entrepreneurs can combine the various funding sources to fund the growth of their ventures. Traditionally, they would first turn to the so-called three Fs, friends, family, and 'fools' for investment, then angel investment and venture capital (VC). In addition to this, various other newer sources have become available such as crowdfunding, accelerators, incubators, and university-based seed funds (Bellavitis et al., 2017). At each stage of funding rounds, entrepreneurs need to reach certain milestones to enter the next round of funding. Reaching the stage of venture capital investment is considered a significant achievement. At this point, the firm, together with the VC, can decide the exit strategy, i.e. selling the company altogether or

continuing to develop it and reaching an IPO (initial product offering is the process in which a private company can offer shares to the general public).

In the Swedish ecosystem, failure is embraced and is seen as a valuable source of learning. The risk-taking of entrepreneurs is encouraged as well as strong collaborations between all the players. Sweden is also leading in digitalisation in most areas (Wijesinghe, Hansson and Ekenberg, 2021). The tech startup sector doubled in 2021, as well as venture capital investments in Swedish (tech) startups compared to the previous year (from 3.2BN EUR to 7.8BN EUR). The value of the Swedish startup ecosystem has also doubled during this period (122BN EUR in 2020, to 239BN EUR in 2021; Dealroom, 2022). The most impact investments were made to Swedish startups in 2021 within the EU. This includes social impact as well as environmental.

The different actors in the startup ecosystem develop ties and become dependent on each other, share their resources, and work towards common goals for mutual benefits (Escalfoni, Silva, Oliveira, 2020). Such communities not only reshape the urban environments and create infrastructures but also facilitate the development of strong social relationships that form the basis of sustainable economic growth. Thus, it is important to map out the mental health tech community in Sweden to uncover the collaboration and social relationships between the stakeholders. This will allow us to identify strengths and weaknesses and optimise the processes that drive innovation in this area. As a result of this process, we aim to understand better how innovation emerges in this sector and what obstacles there are to adopting such technology.

2.1 Mental Health Tech in the Nordics

12.3% of people living in Scandinavia struggle with poor mental health. Jensen, Torrissen, and Stickley (2020) explored non-medical solutions such as community-based arts programmes specifically designed to promote mental health through the different stages of life and how 'Arts on Prescription (AoP)' could reduce the overprescription of antidepressant medication used in Scandinavia. They pointed out that mental health and well-being significantly affect the socio-economics in Scandinavia and are the most substantial obstacles to the population's overall well-being. Their work also highlighted how non-medical solutions for managing mental health are essential and beneficial for consumers and open up opportunities for entrepreneurs and investors in this sector.

The psychological strains experienced during the pandemic have made people aware of their mental health, and more and more people have started turning to digital solutions to aid their psychological well-being.

In this context, the COVID-19 pandemic has not only raised the need for digital healthcare transformation but also increased efforts to reform how ventures launch their products to fit the new normal. Werle, Virzi and Govin (2021) argue that, in accordance with the increasing demand for digital innovations, healthcare companies should be obliged to overcome the immense challenges the pandemic has brought upon us. The companies should introduce new and evolving product offerings and services as new technology markets emerge while consumer behaviours and preferences shift to align with the situation. "Entrepreneurs should capitalise on this momentum by taking advantage of the opportunity to launch a new product in the healthcare technology space." (Werle et al. 2021, pp.2).

Depression, anxiety and insomnia are the three main factors influencing our mental health. McCracken et al. (2020) measured heightened levels in all three domains compared to previous national survey results. In addition, they found that having covid or covid-related worries were also important factors contributing to the higher scores in these three domains. They compared the results to those found in China and Italy in similar studies, where the governments' pandemic response was considered harsher than in Sweden, yet they found that the increased levels in the three domains were comparable nonetheless. The results of this study support our beliefs that there is a need to develop innovative mental health interventions that are suitable for pandemic and post-pandemic conditions, and therefore mental health entrepreneurs should be supported in their endeavours to innovate in this sector.

According to the economic prognosis, one of the consequences of the pandemic brought upon us a global unemployment crisis (see, for example, Cook, 2021). Due to unemployment, we can expect increased mental health problems such as depression and anxiety. Individuals with fewer resources are particularly vulnerable to the negative consequences of stress related crises. This situation created momentum for the mental health startup scene to move in and start addressing workplace related mental health problems as well as other mental health problems that affect work performance and workers' psychological well-being. The past years have seen an increasing number of startups emerging in the occupational health sector that focus on employee wellbeing and help employers support workers in their mental health.

Morower, Frąckowiak-Sochańska (2020) points out that in a crisis like the COVID-19 pandemic, the public mental health care should be integrated into the public health response strategy but it is difficult because public mental health care does not have sufficient resources to operate efficiently in crisis situations. The pandemic highlighted this void and presented the opportunity for the companies offering digital and/ or online mental health interventions to move into this space. This situation also prompted research on the quality of digital mental health interventions. Lagan et al. (2021) have created the publicly available Mhealth Index and Navigation Database (MIND), a database listing almost 300 mental health applications with the aim of making information on mental health applications transparent and accessible. They have also developed the MIND framework to assess the quality of these applications thoroughly.

2.1.1 Mental Health Tech in the context of the Digital Healthcare Sector in Sweden

The healthcare and eHealth strategies of the Nordic countries, including Sweden's, have created a strong alignment between healthcare and digital innovation. Sweden's goal for 2025 is to become the leading country in the digitisation of healthcare. This includes implementing solutions around patient care, preventive solutions, and technologies aiding self-care (Nordic Innovation, 2018).

Digital healthcare solutions are making healthcare accessible, personalised and convenient to use; therefore, they have become a core component of sustainable healthcare. In the Nordics, health apps are not only seen as a wellness tool, but many people use them for managing long-term conditions. Since 2014, for example, mental health apps have become five times more sought after than in the previous years (Onefourzero, 2018). During the pandemic, the demand for immediate remote care has increased significantly. This trend was followed by the need for digital mental health care and solutions supporting healthy lifestyles (Nordic Interoperability, 2021).

The below figure shows the health conditions people sought digital solutions for the most between January 2019 and December 2020 based on the assessment of ORCHA digital health libraries (Nordic Interoperability, 2021). According to this, consumers have been engaging with digital solutions for mental health the most.
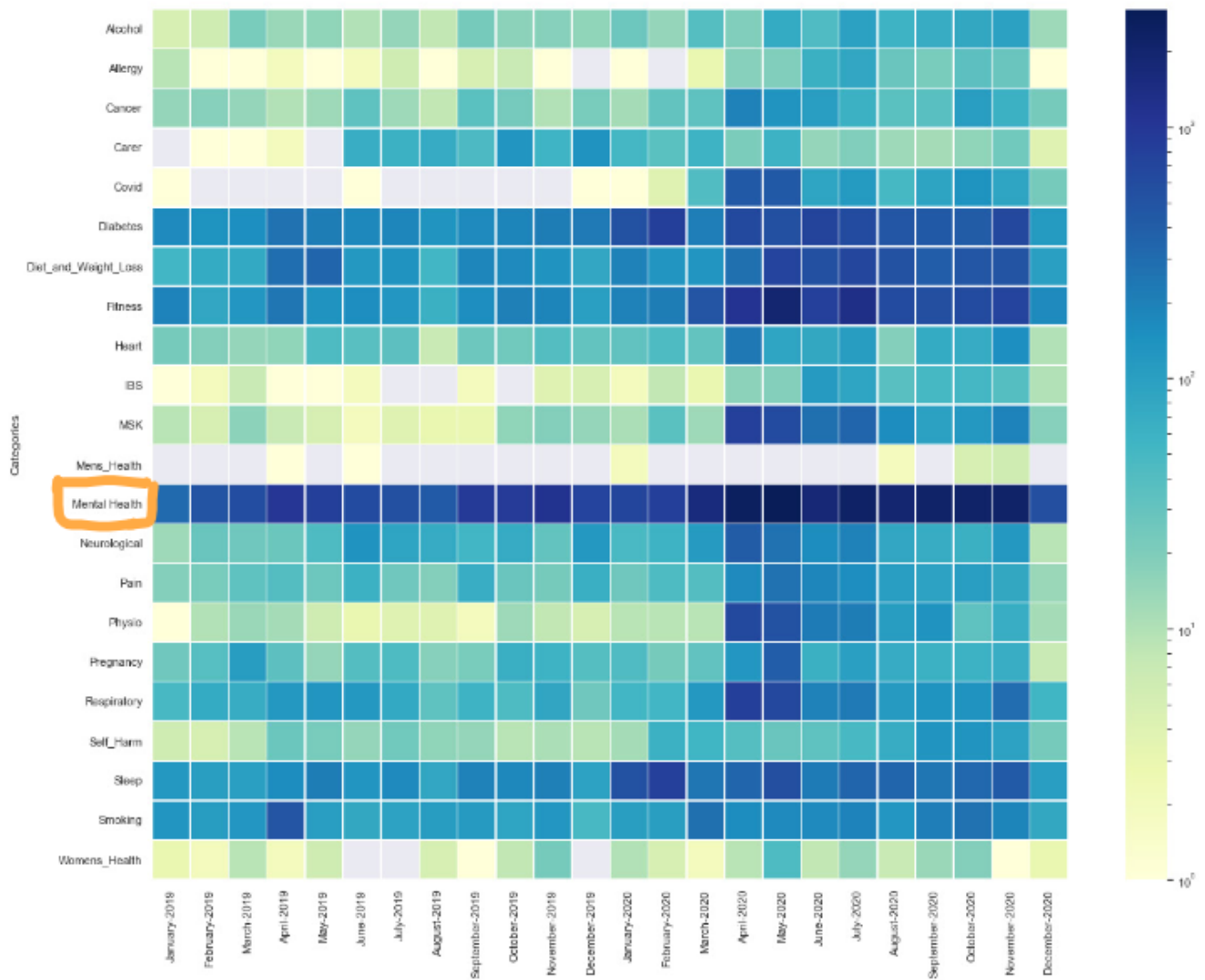
Figure 1: Search trends in ORCHA digital health libraries

Healthtech Nordic is one of the health tech startups' collaborations between Sweden, Denmark and Norway, focusing mainly on the Öresund-Kattegat-Skagerrak region, which contains Innovation Skåne, Invest in Skåne, Sahlgrenska Science Park and SmiLe Incubator in Sweden, Health Tech Hub Copenhagen in Denmark, and Norway Health Tech. Healthtech Nordic (2019) highlights that the Nordic region features world-class healthcare, research institutions, highly skilled hardware and software expertise, a thriving industry and a strong startup scene. They mark themselves as a 'home of Health Tech', in which they define the meaning of 'Health Tech' as the solution that contributes to the paradigm shift in healthcare through digitalisation, whether

it is artificial intelligence or information technology. They aim to 'connect the dots' between innovative solutions, healthcare and the global market (Healthtech Nordic, 2019). This approach highlights the relevance of exploring the entrepreneurial processes that are one of the main goals of this thesis to understand how and what characteristics make digital mental health startups successful.

2.2 Contribution of Mental Health Tech to mental health care

Poor mental health is associated with high socio-economic costs that make preventive interventions and the promotion of good mental health necessary. In order to understand how mental health innovation can contribute to overall better health and well-being, we highlight the following three options.

2.2.1 Mental Health Promotion

Positive mental health and well-being strategies aim to reduce the prevalence of mental illness in the general population by employing strategies proven to be effective in other areas of health such as cardiovascular disease or obesity. Solutions of this kind aim to enhance resilience and the ability to adapt to adverse situations by addressing psychosocial and physical aspects of well-being (Arango et al., 2018). Technologies of this kind are usually referred to as Well-Tech or Wellbeing Tech.

2.2.2 Mental Disorder Prevention

Prevention of mental illness is usually targeted at those most likely to develop it. These preventive health technologies aim to reduce the general risk factors for psychological disorders to develop or worsen. Multiple approaches can be used to identify groups most at risk and analyse data from the general public. This will help identify subpopulations with higher mental health risks than the average. Early detection is at the forefront of this kind of preventive approach (Arango et al., 2018).

2.2.3 Diagnosis/ Treatment

Along with early detection, precision diagnostics and targeted treatment solutions emerged in the digital mental health care sector. Software solutions in this category are subject to the same

regulations as medical devices, and they are referred to as Med Tech. They are based on the traditional ways of diagnosing and treating mental illness, such as standardised diagnostic measures and cognitive behavioural therapy. However, they are also enhanced by state-of-the-art technology, often using artificial intelligence (AI) and machine learning (ML) algorithms.

2.3 The role of Mental Health Tech entrepreneurship and innovation

The mental health technology ecosystem is still an emerging field. There are several unanswered questions for nascent entrepreneurs. We would like to gain insights into how and which perspectives and overall strategies could be feasible for the entrepreneurs to reach success in the health and wellness market and identify challenges that reduce the probability of success. In this work, we would like to explore the number of startups/ventures that are already applying technological innovation and how this shapes healthcare transformation in the post-Covid-19 times. Analysing the Health Tech capability and how it is translated into business models and marketing strategies could reveal the next wave of innovation (Undheim, 2021) in the mental health and wellness sector.

2.3.1 Combination of entrepreneurship and psychology as a helping profession

Psychology, a typically helping profession, began to move into the commercial sector, resulting in an unprecedented predicament. This transformation gave rise to two schools of thought: mental health entrepreneurship and mental health innovation. The two fields represent different values, viewpoints, and priorities. Mental health entrepreneurship is concerned with making money, whereas mental health innovation involves satisfying the psychological needs of wider groups of individuals whom the healthcare system has traditionally served.

An entrepreneur, by definition, is "someone who makes money by starting their own business, especially when this involves seeing a new opportunity and taking risks" (Cambridge Dictionary online, 2022).

The School of Social Entrepreneurship overturned the traditional view that satisfying societal needs should be non-profit, giving birth to the idea that serving society may be financially rewarding (Dees and Anderson, 2006).

In 1934 Joseph Schumpeter stated that entrepreneurs create value through innovation and declared that "the function of entrepreneurs is to reform or revolutionise the pattern of

production" (p, 132, in Dees and Anderson, 2006, p. 44.). In his 1985 book Innovation and Entrepreneurship, Peter Drucker pointed out that entrepreneurship can occur in any industry, including the public sector (Dees and Anderson, 2006).

In the context of the current project, it is critical to emphasise that mental health innovation can occur both within the healthcare system and in the commercial sector, where it will become a for-profit endeavour. 'Enterprising' is a term used by Dees and Anderson (2006) to describe the process of entrepreneurs combining business and philanthropic practices. This enterprising process refers to the steps entrepreneurs take while producing innovation for a larger societal good, i.e. when a charitable endeavour becomes a commercial endeavour. A mix of philanthropic impulses such as affiliative, altruistic, or expressive motivations blend with corporate and market-related economic motivations (Dees and Anderson, 2006).

2.3.2 Why is it essential to support digital innovation for population mental health?

To answer this question, first, we highlight the challenges of digital innovation to help the reader understand that digital innovation in its current form is not adequate yet to serve diverse populations. Therefore, this area needs to be supported from various angles, such as academia, governmental policy making, and the private sector. With the involvement of multiple stakeholders, Mental Health Tech will be able to effectively identify the areas where intervention or prevention is the most needed.

However, reliance on digital health solutions raises the digital divide and thus reinforces health inequalities. Lutz (2019) highlighted that these inequalities mirror the social inequalities existing in the given population. Apart from the gap in accessing and using technology, groups of people who are underrepresented in the 'big data' used in developing digital solutions will not be able to benefit from solutions relying on Machine Learning (ML) and Artificial Intelligence (AI) algorithms as their needs are not reflected in the data the algorithms are based on. Therefore it is essential to design algorithms that consider the needs of diverse populations (Naslund et al., 2019).

An example of the inequalities is that higher levels of education are considered to be protective against mental illness. Linder et al. (2020) observed that despite growing education levels in the studied community, the frequency of psychiatric illnesses grew in the lower-educated segment of

the population to the point where the protective impact of the increased number of highly educated individuals was offset. This could be because the number of foreign-born people has risen in parallel with income disparities throughout time. Low income is linked to an increased risk of mental illness. These data show that there may be an unmet mental health care need among low-income populations in Sweden (Linder et al., 2020). In parallel to this, Olsson et al. (2019) investigated whether gender, education, and country of birth were associated with unmet needs for mental health care. They examined the perceived need for mental health care and found gender and education-related inequalities but not ones related to the country of birth.

Nonetheless, Mental Health Tech has the potential to increase the accessibility of mental health care in low socioeconomic populations by addressing diverse needs in a personalised fashion (Friis-Healy et al., 2021). However, it is vital to support digital innovation in mental health by empowering the various stakeholders in order for this potential to materialise. Friis-Healy et al. (2021) offer the REACT framework involving five key recommendations to reduce the digital divide and systemic health inequalities, particularly in the immigrant population.

- *Real-world evidence* data is needed on effectiveness and implementation trials for clinicians and consumers to make informed choices.
- *Educating consumers and providers* on how to self-evaluate which apps or solutions fit their needs the most.
- *Adaptive interventions* to optimise care can be created by leveraging novel clinical trial methodologies (such as Multiple Optimisation Strategy or SMART trials).
- *Creating digital mental healthcare for diverse populations* to fit a wide range of user needs.
- *Trust building* among the consumers and providers towards the digital mental health solutions and the Mental Health Tech ecosystem.
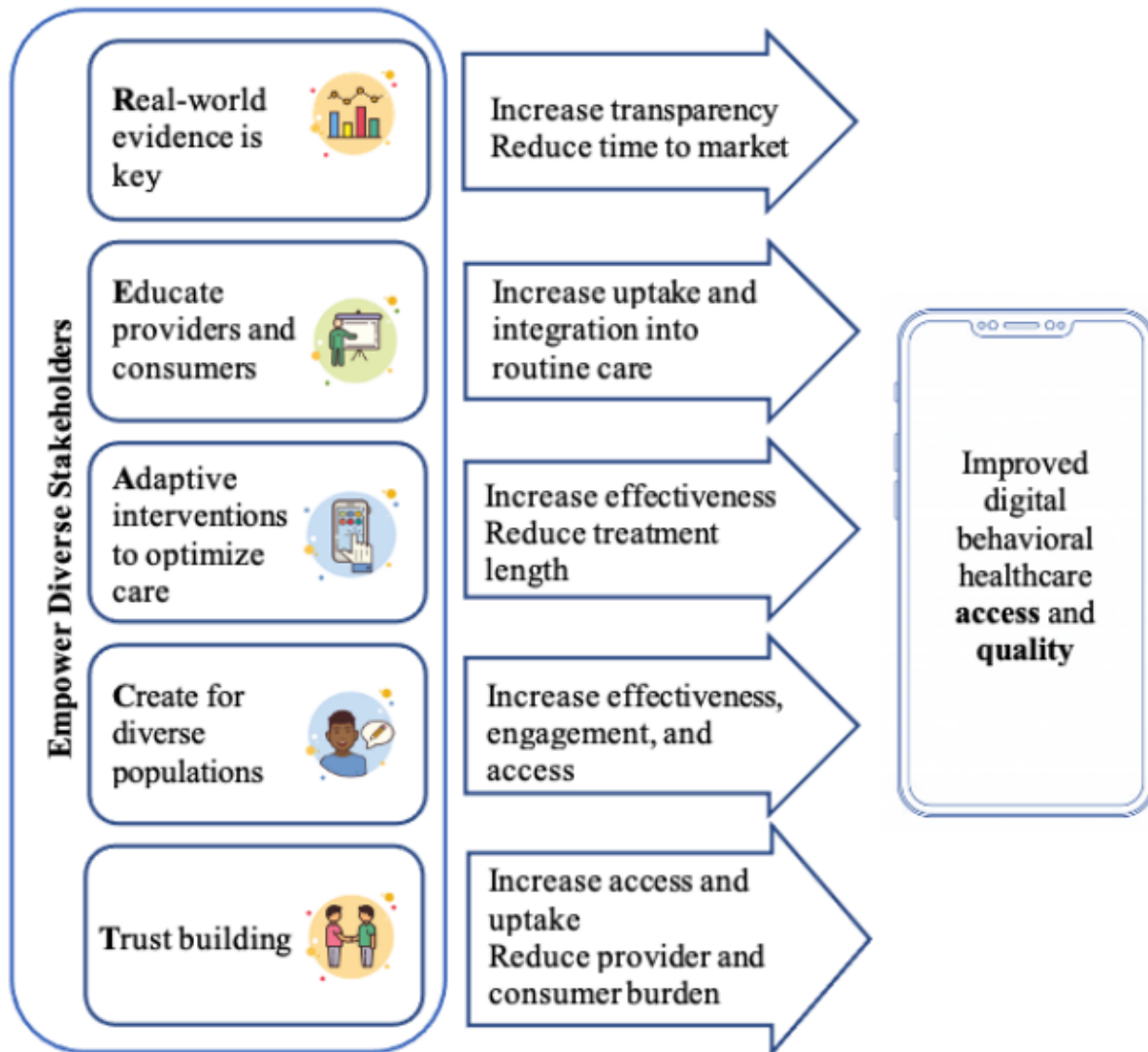
Figure 2: Friis-Healy et al. (2021): *Ecosystem-wide recommendations to increase digital mental health access and quality*

2.4 Convergence Mental Health

Convergence mental health, 'a convergence science approach applied to solving global mental health challenges'(Eyre et al. 2021, p. 1.) is a framework proposed by Eyre et al. (2021) in their recently published book titled Convergence Mental Health: A Transdisciplinary Approach to Innovation. We face a global mental health crisis in the twenty-first century, particularly in the aftermath of the pandemic. We are confronted with a global mental health crisis that existing psychiatric practices cannot fully address with their siloed focus on biological information,

frequently unscientific psychodynamic approach and "trial-and-error" medication management (Smith et al. 2020).

We agree with Smith et al. (2020), who suggest that a paradigm shift is required to meet the 21st century's mental health challenges. Convergence science integrates techniques, information, and tools from various sectors, including science, technology, education, psychiatry, psychology, medicinal sciences, entrepreneurship, patients, and many more. To address this dilemma, academia, government, and industry must collaborate.

The current thesis exemplifies how convergence in mental health can be applied under the Mental Health Innovation Diplomacy. We recognise the importance of entrepreneurship in the mental health ecosystem, and we focus on innovation. This brings us to our research questions, which cover the main aspects of entrepreneurship in the emerging field of Mental Health Technology.

2.5 Research questions

Our goal is to map out the landscape of Mental Health Tech businesses in Sweden so that we can have a better picture of what solutions are currently available and how this group of entrepreneurs can be supported within the ecosystem to produce real, significant benefits for people with mental health problems.

- *How does Mental Health Tech innovation arise,*
- *and how does it get adopted in Sweden?*
- *What are the stimulating factors,*
- *and what are the obstacles to developing Mental Health Tech innovation in Sweden?*

3. Methods

In this chapter, we will outline the philosophical assumptions that guide our understanding of research methodology, allow us to identify research methods, and then realise and design our methodological choices. As Bell, Bryman & Harley (2018) addressed, business research methods tend to be more eclectic and explained in minor detail compared to other social sciences due to the emergent nature of the field or/and the diverse range of disciplines. This means that we could

also find it difficult to identify examples of existing research methods to inform our work. Thus we would like to draw attention and understanding to research methodology through certain selected philosophical assumptions in order to be able to select applicable methods with the result of answering our research questions.

We aim to examine the behaviours and factors between the entrepreneurs and the ecosystem through semi-structured interviewing, which would allow us to keep an open mind about what we need to know about, therefore the concepts and theories that can emerge from the data we collect (Bell, Bryman & Harley, 2018).

3.1 Ontological & Epistemological Framework

Ontology refers to theories about the nature of reality. Our goal is to understand the reality of mental health entrepreneurship and identify the stimulating factors for developing Mental Health Tech innovation in Sweden. The ontological assumptions would determine the factors we seek to understand through our research. "By understanding ontology and thus our own ontological assumptions, we can design research studies which are most effective in capturing the reality which we seek to understand" (Bell, Bryman & Harley, 2018, pp.72). The importance of ontology can be understood by considering two positions: objectivism and constructionism.

Bell, Bryman & Harley (2018) argued that constructionism is the view that social phenomena are made real by research processes themselves. When we conduct research, we assign meanings to the phenomena we study, and it is this assignment of meaning that constitutes the reality of the objects of study. Therefore we decided to apply the concept of constructionism, where we could see reality as something that people are in the process of constructing. In this view, constructionism suggests that the findings are constructed in and through interactions.

Epistemology is the particular understanding of how we can gain knowledge of reality (Bell, Bryman & Harley, 2018). We attempted to gain knowledge by interviewing important actors, the mental health tech startup founders, hoping that it would lead us to understand how they shape, understand, adapt and emerge within the startup ecosystem in Sweden. Due to this fact, epistemology is underpinned by ontology and is crucially important in business research, according to Bell, Bryman & Harley (2018). Since it would "allow us to answer the question of how we should conduct research" (Bell, Bryman & Harley, 2018, pp.75), we are seeking to make sense of business-related phenomena by gathering and analysing data. Applying epistemology to

our methodology would provide us with the means to ensure that the knowledge we produce is sound (Bell, Bryman & Harley, 2018).

3.1.1 Theoretical Perspective

Qualitative researchers are more influenced by interpretivism. Bell, Bryman & Harley (2018) addressed that *interpretivism* in terms of approaching data collection and data analysis signifies the way for us – the researchers, to be capable of perceiving and obtaining the insights from organising semi-structured interviews with the founders of mental health startups in the Swedish ecosystem.

Thereby, we could capture those founders' perspectives and insight in their own words and the analysis we undertake (Bell, Bryman & Harley, 2018) to reflect the issues and topics identified by research participants as the important factors in understanding the phenomenon of our research findings (Leitch et al. 2010) throughout focusing on the perspectives of research participants during data collection and analysis. According to Bell, Bryman & Harley (2018), this is the interpretive approach's motif.

"Interpretivist stance is a preference for research methods that elicit participants' world views in relation to the topic of interest, and for analyses that ground concepts and connections between them in the words and elicited perspectives of participants." (Bell, Bryman & Harley, 2018, pp.79), thus we choose to apply an interpretivist approach in our research methodology.

Symbolic interactionism has been viewed as one perspective underpinning qualitative research, having a rich intellectual heritage that spans more than a century and would deliver an understanding of human health behaviour, which is mainly rooted in social psychology (Benzies & Allen, 2001). Due to this, the symbolic interactionism method would lead us to enter the field of Mental Health Tech and receive the means to conduct our research.

Symbolic interactionism is an approach within the interpretivist view. It is an excellent research method for interpretive description studies because it addresses practice problems across the applied disciplines. Therefore, implementing interpretivism and symbolic interactionism through semi-structured interviews is a natural choice for our research methods.

3.2 Research Design

Grounded theory builds on the process of inductive theory building and seeks to ensure that the theory is arising from the data and not from other sources. Grounded theory as a methodology is based on symbolic interactionism that looks for the understanding of meaningful matrices that guide our lives (Crotty, 2003).

This methodology involves the construction of hypotheses and theories through collecting and analysing data (Strauss & Corbin, 1994). We took an inductive approach to apply grounded theory through inductive reasoning, which began with questions and some collection of data. In this way, the data collected, ideas and concepts would become apparent to us. According to Allan (2003), the research findings "emerge" from the data. As more data is collected and re-reviewed, we could group them into higher-level concepts and legitimate categories. Furthermore, these categories, in the end, become our research results. To this extent, grounded theory is the method that allows us to choose existing theoretical frameworks, develop them, and only then collect data to assess the validity of our research questions (Allan, 2003).

One of the most common approaches to qualitative data analysis is often referred to as thematic analysis (Bell, Bryman & Harley, 2018), particularly when it comes to searching for themes besides using grounded theory.

As stated by Ryan and Bernard (2003), applying thematic analysis to search for themes would require us to look for:

- *Repetitions*: Apply to topics that recur again and again. The emphasis on repetition shall become the most common criteria for us to establish a pattern within the data warrants and consider it a theme. This may refer to recurrence across interview transcripts, as is often the case, across data sources.
- *Similarities and differences*: This is the approach we could use to explore how interviewees might answer our research question in different ways from each other.
- *Missing data*: A reflection on what is not in the data.

These three occurrences are what we expect to focus on in order to finalise our themes.

3.3 Methods Used

3.3.1 Mapping out the landscape

Collecting secondary data, or in other terms, 'mapping' would allow us to design questions, sort and 'map' out the objects or the answers according to how they are seen or thought of by our interviewees in regards of our research questions (Association for Qualitative Research, n.d.) This method is a considerably effective enabling technique that allows people's own categorisations and understandings of an issue or a market to be exposed and explored.

Talend.com (n.d.) defines mapping as the process of matching fields from one database to another. It is the first step to facilitating data management and is the way to make it practicable for the researchers to collect and analyse the data. We decided to map out the landscape of Mental Health Tech companies as we intended to collect them into a spreadsheet to establish the context of our research questions.

3.3.2 Multiple case studies: Purposive sampling & Maximum variation sampling

Purposive sampling is a sampling technique that would allow us to rely on our own analysis and assessment when choosing the interviewees to participate in our study (Dudovskiy, 2016). According to Dudovskiy (2016), purposive sampling shall be appropriate for the limited number of primary data sources and participants we contribute to the study. Hence implementing a purposive sampling technique in our research would benefit the need to choose cases that help achieve and answer our research questions instead of applying random sampling and choosing participants who may not be available or are irrelevant to our research questions. We can use purposive sampling to choose the founders whose availability and relevance are compatible with our study (Dudovskiy, 2016).
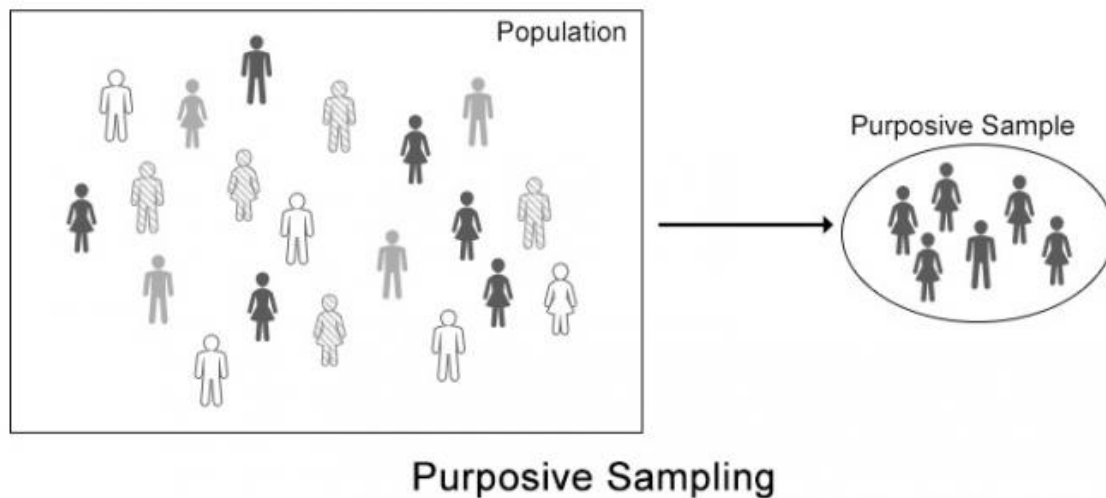
Figure 3: Dudovskiy (2016): *Purposive sampling*

Maximum variation sampling is one of the most commonly employed purposeful sampling strategies, according to Sandelowski (1995). This strategy involves selecting individuals, groups, or settings with a large number of attributes to include all or most types of individuals, groups, or settings in the investigation. This approach enables the presentation of numerous perspectives of persons that highlight the world's complexity (Creswell, 2002).

3.3.3 Active interviewing method and Semi-structured interview

Active interviewing is a research method that departs from standardised approaches in reciprocal engagement between interview participants (Hathaway, 2019). Furthermore, it is an interpretive practice that involves the respondent and interviewer as conversational ongoing interpretive structures (Holstein et al. 2012). Interviewers would attempt to be neutral and not influence the interviewees' answers. On the other hand, we as the active interviewers are encouraged to intentionally seek to generate and shape responses to our questions as participants in the narrative production. Due to this action, the interviewees are also encouraged to produce their narrative and emphasise their stories, according to Hathaway (2019).

George (2022) pointed out that a semi-structured interview is a data collection method that relies on asking questions within a predetermined thematic framework in which the questions are not set in order or phrasing. This interview method is often qualitative in nature and is used as an exploratory tool in most research fields in social sciences and business research. Semi-structured

interviews would allow us to give our interviewees the same theoretical framework but allow us, the interviewers, to investigate different facets of the research questions.

Semi-structured interviews combine the elements of structured and unstructured interviews, allowing us to design a thematic framework beforehand without the possibility of facing distractions while encouraging two-way communication (George, 2022). This interview method allows for obtaining more in-depth information and insights from the interviewees due to the open-ended nature of the interview structure. The interviewees can be asked to clarify, elaborate, or rephrase their answers if needed. After that, we could justify and conceptualise our analysis from the interviews as well as discuss the findings, and eventually arrive at our conclusion.

Thereby, we chose to apply both an active interviewing method and a semi-structured interview in order to be able to conduct the open-ended questions and consider interviewers and interviewees as equal partners in constructing meaning around the interview. As a result, we could then identify themes that answer our research questions. We conducted interviews on Zoom and Google meets due to the convenience and efficiency concerning limitations of time and distance.

3.4 Mapping out the Mental Health and Wellbeing tech startup scene

Before our work, the Swedish mental health tech startup sector had not been mapped out or explored. The outbreak of the Covid-19 epidemic has increased the demand for digital mental health services and accelerated Sweden's digitalisation within the healthcare sector. As a result, we aim to learn more about emerging innovation and its adoption in this industry.

To begin, we utilised the resources of Skåne Startups, a non–profit organisation that connects startups with investors, to compile a list of all the Swedish mental health tech startups we could discover. Companies that employ technology to diagnose, monitor, treat, or prevent mental illness were categorised as Mental Health Tech Startups. Companies that employ technology to promote mental health were also included.

We collected information about each of them in the publicly accessible databases to get a better overview of the current state of this industry. We used the following databases:

Allabolag.se

Crunchbase.com
Dealroom.co
LinkedIn.com
Healthtechnordic.com

We identified 36 companies under the Mental Health Tech category. Three of them have discontinued their services, two of them were acquired by other, larger companies, and one reached IPO (initial public offering). This left us with 30 companies to examine closer.

We identified three company types by which we categorised the startups further. *Well-Tech* companies develop mental health-promoting solutions to prevent mental illness from occurring. Companies categorised as *Health Tech*, in general, do not directly provide interventions to either treat or prevent mental illness but operate as a platform that connects people with psychologists or psychotherapists. *Med-Tech* companies provide either precision diagnostics or treatment for mental illness.

Company type	Company name
Well-Tech	29K
	Bluecall
	Call Knut
	Exhale
	Happy at Work
	Lifesum
	MoodHero
	NudgeLabs
	OmMej
	Online Therapy
	Oyama

	Progress Me
	POOW Application
	Recilio
	Remente
	SocialAcademy
	TwoAct
	Wellbefy
	Winningtemp
Health Tech in general	Din Psycholog
	Lägereld
	Meela
Med-Tech	Ablemind
	Alex Therapeutics
	Flow Neuroscience
	Mantis Photonics
	Mendi

The companies are in different funding stages ranging from Pre-seed to Series C. The different funding stages are conventionally defined as follows (based on Lozhko, 2021):

- *Pre-seed:* This is the initial stage of finance, during which the founders invest their own money, seek funding from family, friends, and 'fools,' and apply for grants and Angel investments.
- *Seed*: A startup's high growth is frequently stimulated by the second investment stage. A startup at this stage already has a team and a product, and one or more sales channels. At this stage, a startup's objective is to scale the firm using its cost-effective channels and new funding.
- *Series A*: Series A capital gives several years to the startup to develop its products and team and implement its go-to-market strategy. A team and a product with verifiable sales

channels are in place, and money moves through these channels in considerable volumes. This is a period of rapid growth.

- *Series B*: A startup company has been on the market for years at this point. Series B financing is required to develop the business further, boost competitiveness, and gain a more significant market share. The goal of this funding stage is for the project to become profitable. Because the investment risk is smaller than in the previous stages, the funding amount can be higher than in Series A.

- *Series C*: By this stage, a project has demonstrated its market viability and success. When a startup enters Series C, it intends to take on a larger market share. It might wish to buy or develop more products and services or buy a competitor. In Series C, a company becomes profitable and capable of developing on its own without external finance. As a next step, a Series D funding round can prepare the company for IPO.

We could not obtain funding data for three companies: 29K, Online Therapy, and TwoAct. The table below shows the companies grouped by their funding stages.

Funding stage	Company name
Pre-Seed	POOW Application
	Lägereld
	Happy at Work
	Oyama
	MoodHero
	Recilio
	Meela
	Mantis Photonics
	Exhale
	NudgeLabs
Seed	Competencer
	Ahum
	SocialAcademy

	Wellbefy
	OmMej
	Progress Me
	Din Psycholog
	Ablemind
	Call Knut
Series A	Remente
	Bluecall
	Flow Neuroscience
	Alex Therapeutics
	Mindler
	Mendi
Series B	Winningtemp
Series C	Lifesum

3.5 Case Selection

As highlighted above, we chose to conduct multiple case studies to answer our research questions. After collecting sufficient information to have a good overview of the companies currently operating on the market, we conducted in-depth interviews with six purposely selected founders. We took the purposive sampling approach (Bell, Bryman & Harley, 2019, p. 390) when choosing the companies to capture the issues we are exploring in this thesis in sufficient breadth. The companies we selected, in our view, typically represent the companies in the Mental Health Tech sector in their given stages.

The interview requests were sent to 16 selected founders based on three different startup stages of their venture development, *Early Stage, Growth Stage* and *Expansion phase,* to obtain a better overall picture of the mental health startup landscape. These stages do not necessarily overlap with the stages of funding because, in the case of the Growth stage, we counted in companies still in the Pre-seed stages of funding but are currently raising their Seed round. We applied the same logic to the Expansion phase too. We defined these stages in the following way.

- *Early-stage*: the venture has a minimal viable product but has not yet acquired paying customers.
- *Growth stage*: the venture has a product already used by some paying customers but is financially not yet sustainable.
- *Expansion phase*: the venture has a product and paying customers and is expanding towards other countries than Sweden.

We sent out interview requests through LinkedIn and followed this up with emails. Where it was possible, we invited founders to be interviewed in person. Eight founders did not answer our messages.

Finally, eight founders responded that they were willing to participate in the interviews, but two of them had to cancel. We interviewed six founders in the end. Among the interviewees, there were three female and three male founders.

Before the interview, we gathered the founders' histories, experiences, and the core stories of their entrepreneurial journeys. We appreciate their narratives. Founders were encouraged to share their insights because Mental Health Tech is still not commonly recognised as a dominant area, even within the Health Tech ecosystem. As "the greater the researcher's experience with the respondents, the more accurate or valid the findings will be — the time the interviewer spent learning about interviewees before the interview delivered additional advantages." (Wijesinghe, Hansson & Ekenberg. 2021, p.4)

In order to answer our research questions, we interviewed the founders of the following startups:

| **Oyama** | Founded in 2019, Oyama created a mobile mental health application in which people can join an anonymised peer-support community, write their journals, and receive guidance based on tools from psychotherapies to build healthy and sustainable habits. Oyama aims to enable individuals to evolve into balanced humans so they can take care of themselves and others too. They currently offer their service to employers who want to look after their employees' psychological well-being. Oyama raised 1.44M SEK to date and is currently preparing for its subsequent funding round. | **Early stage** |

Meela	Meela was founded in 2021. Their platform makes it possible to offer "personalised mental health care for women. Powered by their research-based matching algorithm, Meela matches women to their right fit therapist and therapy based on their personal preferences, psychological needs, and symptoms. By tracking the patient in therapy, Meela delivers outcome-based and precise mental health care" (meelahealth.com, accessed on 19/04/2022). They have raised 1.4M SEK so far and are preparing for their next funding round.	**Early stage**
Wellbefy	Founded in 2017, Wellbefy has created a SaaS (software as a service) platform for employers to be proactive about their employees' health and work environment by tracking health data and measuring physical activity and stress levels. They provide detailed analysis and suggestions for action so employers can react and act at the right place and time to boost employee health and well-being. They have raised 1.4M SEK to date and are currently fundraising.	**Growth stage**
Recilio	Recilio was founded in 2020. They created a SaaS service for employers motivated to create healthy workplaces. Recilio provides mental health promotion and special programmes tailored to the organisation's specific needs. They are in the growth phase and are currently fundraising. To date, they have raised 1M SEK.	**Growth stage**
Din Psykolog	Founded in 2019, Din Psykolog has come a long way in offering access to online psychological services helping people to avoid long waiting times and making appointments with psychologists available at any time. They have raised 5.5M SEK to date.	**Expansion stage**

Flow Neuroscience	Founded in 2016, Flow Neuroscience develops a new kind of depression treatment that combines an easy-to-use brain stimulation headset with an engaging, personalised mobile app to target both the physical and behavioural elements of major depressive disorder (MDD). They have recently closed their Series A funding round and have raised 110M SEK.	Expansion stage

3.6 Data Collection

Data collection is the key element of any research project (Bell, Bryman & Harley, 2018). Based on what we explained in Chapter 3.3, we would be able to conduct open-ended interviews by applying the active interviewing method and semi-structured interview as our selected data collection methods. Furthermore, this would allow us to investigate any differences or similarities in data collected from the participants during the interviews. Eventually, the data would emerge with the objective findings for us as the researchers to justify and conceptualise the analysis.

We conducted all interviews remotely via Zoom and Google Meets in Sweden between March 2022 and April 2022. Each interview was 45-60 minutes long with semi-structured interview questions (see Appendix 1) to discover the entrepreneurs' personal experiences of stimulating and hindering factors in progressing their business and getting their product adopted.

The interview questions provided a holistic view of the founders' personal aspects, their business aspects, and the factors stimulating and obstacles hindering their business development.

Furthermore, the interviews allowed insights into the adoption of their solution by healthcare and the wider public. All the interviews were conducted in an active conversation style rather than a question-and-answer session. This methodological approach is fundamental and appropriate for qualitative research and is often used in qualitative research in social sciences. It allowed collecting narratives from our interview subjects in a conversational way to gain insights into their lived experiences during their venture building process (Holstein & Gubrium, 2003).

All the mental health tech startup founders voluntarily participated with consent that we are allowed to record the interview and publish their answers in our thesis.

3.7 Data Analysis

After conducting interviews with six Mental Health Tech startup founders in Sweden, we obtained sufficient data for our analysis. We audio-recorded and transcribed every interview. This process helped us break down data into parts that were then labelled through the thematic analysis method. We linked the process of making sense of the data with our research questions, along with the literature review and our theoretical framework. As Bell, Bryman & Harley (2018) pointed out, conducting data analysis radically reduces the data. We reduced the large and varied amount of information gathered to make sense of it by grouping textual material into themes, leading to research findings and further discussion.

We consider the interpretation of secondary data as data analysis too. The data we collected and analysed from our interviews is considered primary data because we – researchers- collected the data and conducted the analysis ourselves. On the other hand, secondary data analysis means that someone else analyses the data, which also increases the value of our investigation (Bell, Bryman & Harley, 2018).

Since the possibilities for secondary data analysis have grown exponentially since digitalisation and the spread of the internet, we gathered secondary data. We viewed this data as other potential sources of information that allowed us to arrive at more sound conclusions from our findings.

3.7.1 Analysis of secondary data

We used descriptive statistics to derive inferences from the collected secondary data.
We found 36 startups, out of which three ceased operations, larger firms acquired 2, and 1 reached IPO. We discovered that the largest number of companies are developing in the Well-Tech sector, followed by Health Tech and Med Tech, the smallest group.
Collectively these companies raised 829.2M SEK since their launch. They give jobs to 715 people. The oldest company was founded in 2011 and provides access to psychological therapies online, thus falls under the Health Tech in general category.
The average time to reach the Seed stage is three years. Series A took five years, eight years to reach Series B and 9 to reach Series C. Only two companies have grown past Series A in our

database: Winningtemp, which focuses on well-being at the workplace, and Lifesum, which helps its users develop healthy eating habits.

Most of the series A companies are developing in the Med Tech field, but we can find Well-Tech among them too. We can find companies from all the three major categories (Well-Tech, Med Tech and health tech in general, in the pre-seed and seed stages.

3.7.2 Thematic analysis of interviews

From the 6 interviews with the founders of the Swedish Mental Health Tech startups, we identified the following five themes.

1. **Education and prior experience in mental health.**	*"I was a clinical psychologist, so back in 2014, I think it was when I graduated that I went directly into the world of psychiatry and tried to treat people with the help of therapy. (…) when I decided that I was not going to do clinical psychology anymore in that kind of setting…" (Founder 6).*
	"It is very important to have the psychology knowledge behind it because then you see the bigger picture and not just the data they show you." (Founder 2)
	"First, I was focusing on training, physical health. Studied health management and saw a broader perspective in how leadership and organisation can help with health. I saw the problem and I wanted to solve this problem with my knowledge." (Founder 1)

	"...I've always had an interest in mental health, and I found that there is no digital access for seeing a therapist…" (Founder 4)
	"I always had a strong interest in psychology. I later on also wanted to understand why people don't go to psychotherapy. In my early 20s, after a difficult, codependent relationship, I found myself depressed when it ended. I had to go through this process of finding a psychotherapist myself, and I learned a lot about myself. And I deepened my interest in this. I also realised how difficult it is to go to the therapist. I just now realised that there are some unresolved childhood things. That's pointed me towards working with psychology" (Founder 3).
	"So during my studies, you know, there's a lot of discussions around how important it is for a patient and a therapist to match up because the strength of a therapeutic alliance is directly correlated to what that treatment outcome will be (…) it was during my studies that I started to understand that there was a gap between what the research was saying was very important for clinical success and the practice of psychotherapy specifically (…) also then I had conversations with my mother who was a therapist, and you know from her

	experience that sometimes she would get patients that she didn't think would be a good fit for her…" (Founder 5)
2. Accessibility to incubators and funding.	*"If you were a doctor, then they could help you, but we were just students. So we just turned to the venture lab, and we did get a place. (...) Mental health (fundraising) is still dropping and lagging way behind compared to cancer research or vaccine research."* (Founder 2) *"It was exciting right away to take on the world of venture capital and try to scale something quite quickly. I decided early on to access the first incubator, then it went from there into the venture capital world, and we raised money. (...) So we kickstarted by going directly into an incubator here in Malmo which is called MINC. I sent an email. The way I remember was that they asked one of the CEOs if he was willing to meet me and just discuss the idea. (...) I was very naive, but he still said, come in, join the incubator and we will help you. After that we tried to raise a little bit of money from Almi. And first we got 100,000 SEK. It went from there." (Founder 6)* *"Swedish innovation ecosystem, in general, has a good system and even if you fail, you*

are not gonna be too broke, this ecosystem reduce risks in general" (Founder 4)

"The Swedish ecosystem was very supportive, especially in the early stage, and we could have grown faster if the team was right and cofunders worked full time. (...) but investors in the ecosystem have a hard time understanding mental health even though this market is increasing a lot. Many investors today don't have any knowledge about it, mainly because they come from a business background and not a health background (...) now it's easier to get funding because tech is a growing industry and mental health is a big problem in society..." (Founder 1)

"We've gotten a lot of grants from Vinnova and we're in a business incubator called Founders Loft. They've also given us a lot of grants, and I think without those initial grants, it would have been very difficult. (...) We received a lot of non-monetary support with a lot of business coaching as well. We found that the ecosystem has been very welcoming and encouraging." (Founder 5)

"In Malmö we only got into one incubator and that didn't involve any money. To go to the MINC incubator we would have had to

	relocate. We didn't really get the right contacts for investors from the ecosystem. We didn't get into any of the support programmes. (...) Nordics are a society of well-being so there is not a lot of mental health innovation due to financial means and education. In the US investors are taking more risks and it's easier to get [mental health] innovation off the ground." (Founder 3)
3. Communication	*"I learned how to communicate innovation with curiosity and passion I have for the topic though I had no business communication background, but I continuously had to be solution oriented. (...) you just have to go out there and talk about your innovation, your idea. That's how you learn how to communicate your innovation and you learn from feedback and input, same thing goes for the product…" (Founder 3)* *"You kind of have to invent the wheel. You kind of have to understand how to put yourself under pressure, and how you can communicate with others in a way that they, that particular person [the investor] would actually understand what you want to do (...) both traditional and digital marketing, so basically you have a website, you have landing pages, you try to compress the information as much as possible. And what is*

	very, very important in our business is that we don't overstate something. And we don't claim something that we cannot really prove with clinical evidence. So we are really clear on that..." (Founder 6)
	"...talking about return on investment is something that is magic words. Normally that gets through to people with the large pages of occupational health that are backed by science (...) to be able to explain your value proposition and why it's actually a genuine problem to solve, that what is also a helpful thing towards getting investors, they wanna see like in our pitch deck like literally, the second slide is traction and it's all numbers like clinical retention rates, sale retention rates and NPS scores and all of that. Because they depend on that…" (Founder 5)
	"...what we are communicating most often is that you get a roughly for times return on investment for everything you do that can be said to be an intervention from large meta studies. So when I'm delivering those numbers, I'm backed by large institutes and I'm backed by, you know, the power of aggregated data. This has been very important for us…" (Founder 2)

4. Gender inequality	*"I think female founders struggle a little bit with being confident to say yeah, it is about the money, but it's also about the impact and the two can exist together instead of shying away from one or the other (...) usually we speak a lot about how men innovate or choose topics of innovation where they can make money and how women on the other hand choose topics where they can solve social problems and they might not be so financially sustainable (...) and I do think there is a feeling within the investment ecosystem that they're really trying to diversify their portfolios…"* (Founder 5)
	"The odds are not in our favour as female founders, just to make it clear by, referring to that report from 2021 that venture capital funding went to 1% of women only, and all the rest went to men founders (...) and what's even more sad is that in mixed teams we're looking at roughly 11% success rate, so if you have somebody from a minority within your co-founding team, then the chance of you receiving funding is 0…" (Founder 2)
	"...throughout communication and the questions female founders face compared to male founders, they [male founders] get asked about their venture values and growth, but we

	[female founders] don't get that kind of push, we only get, 'Why haven't you done this?', even if we have stronger revenue. We always descend (…) and female founders always get preventive questions. The tough ones. And while males tend to get non profit promotion questions…" (Founder 1)
5. Futurity vision	*"It's not about the money in the end. For me, it's about solving a problem. It's about being it (…) for in five years I still see myself still working with my venture, if it is that some other company can come along and say we're going to be pushing this venture ahead and just being able to pump in so much more money making this work we're going to make it huge, but it really is about solving that issue. If somebody else can do it, we will sell the venture, they would have my blessing to go ahead…" (Founder 2)*
	"…we're not that focused on our competitors. We're trying to do our thing and make sure we deliver on that. And if somebody does it better, and so be it (…) our ambition is to make us the first line of treatment for depression, mild and moderate depression, I realise that it's not very humble to say that but looking at just the effect numbers, the data, it makes more sense than traditional mental health treatment, and I expect us to have other treatments

	developed, as we are a fast growing business…" (Founder 6)
	"We want to give as much value, much more features on our platform to the customers as much as possible, we wish to become more global and expand on the market" (Founder 4)
	"...we just create a lot of good opportunities for our customers and get a lot of good feedback from them as we are helping them (...) but also maybe not being in just only the Swedish market, we would like to expand to Nordic markets and just build a wonderful organisation and also be a leading star within our network…" (Founder 1)
	"...we will take our venture to the UK. We hope to be a very international company…" (Founder 5)
	"...now we're getting funding in Finland instead. The whole team is in Finland and there is no additional funding, so it's cheaper to stay in Finland. We started focusing on the Finnish market…" (Founder 3)

3.8 Limitations

3.8.1 Research Design

In this work, we chose to take an inductive approach and examine our research questions in a qualitative research design. The main limitation of the qualitative design is that the results of such design are difficult to replicate because they reflect the researchers' perception of reality which can not be generalised. Lincoln and Guba (1994) propose *authenticity* as one of the primary criteria of validity and reliability in qualitative research. It 'places responsibility on the researchers to fairly represent different viewpoints within social settings' (Bell, Bryman & Harley, 2019, p. 365). In order to establish quality in quantitative research, reliability and validity are not the best concepts for evaluation as they originate from quantitative research design based on the objectivist-positivist worldview. Objectivist epistemology views the world around us as existent and given (objective) regardless of the consciousness and experience of humans (Crotty, 2003). As opposed to this, our work is informed by the constructionist epistemology that views the world around us as the construct of our subjective cognition that is highly shaped by the culture we come from and influences our interpretations. Schwandt states that constructivists are "deeply committed to the contrary view that what we take to be objective knowledge and truth is the result of perspective, [...] Constructivists emphasise the instrumental and practical function of theory construction and knowing' (1994, p. 125. in Crotty, 2003, p. 57).

The other primary criteria that Guba and Lincoln propose is *trustworthiness*. Trustworthiness comprises four further criteria that can be seen as equivalent to criteria used in quantitative research (Bell, Bryman & Harley, 2019, p. 363.):

- *Credibility* is the equivalent of internal validity; that is, we can reasonably believe that our findings can not be explained with alternative causes.
- *Transferability* is equivalent to external validity, which means that our findings are generalisable to different groups of people or - in our case- different hubs within the Swedish entrepreneurial ecosystem.
- *Dependability* is equivalent to reliability, which means producing replicable results. To enhance the dependability of our thesis, we recorded every interview in which we applied the active listening technique originally described by Carl Rogers in 1951 (2012) for use in psychotherapy to ensure that our interpretation of the founders' perceptions is correct.

- *Confirmability* can be put in parallel with objectivity, which means that both writers of this thesis agreed on their interpretations from the interviews.

3.8.2 Secondary Data Collection

We collected data in two steps. First, to map out the current state of the mental health tech sector in Sweden, we reviewed the publicly available sources to collect secondary data on the companies, and later, by interviewing the founders of the selected companies.

Our access to the available databases limited secondary data collection due to constrained resources. The collected data was incomplete as some of the details were not disclosed to our sources or were behind the paywall.

3.8.3 Case Selection

The purposive sampling strategy's main limitation is that it is prone to the researchers' bias as they are making subjective decisions when choosing subjects to interview. This approach also does not enable controlling for variables such as the interviewees' prior entrepreneurial or industry experiences. We applied the Maximum Variation Sampling approach to select the cases, making it impossible to generalise our findings to the rest of the examined population (Bell, Bryman & Harley, 2019). Although our aim with this approach was not generalisability per se but to gather information about issues surrounding most of the development stages in the venture development.

3.8.4. Active Interviewing

We conducted semi-structured interviews in the active interviewing style, which introduced bias in a way that all participants in such an interview process create meaning; therefore, it may be possible that the way the questions were asked in the interview shaped the content and meaning of the response (Holstein & Gubrium, 2003). We aimed to overcome this by utilising the active listening technique described above, which involves repeating the information to the interviewee paraphrased to make sure that we understand what they mean by their answers correctly.

3.8.5 Thematic Analysis

The main limitation of thematic analysis is that it lacks specific procedures that are widely adopted (Bell, Bryman & Harley, 2019). Due to its flexibility, it might result in inconsistencies and a lack of coherence when constructing themes based on the collected data (Nowell et al., 2017). We aimed to overcome these limitations by independently coding the interviews for themes and then cross-referencing each other's themes to reach a consensus.

3.9 Ethical considerations

For interviewees to open up about their personal lives in qualitative interviews, the researcher must first establish trust. We explained the goal of our study to our interview subjects and advised them that they could refuse to answer some questions if they felt uncomfortable. All of our interviewees were informed that the conversation would be recorded, and they all agreed to that. We might have chosen to keep the interviews anonymous, but the mental health startup landscape would not have been made available to the public in that case. We asked the participants if we could use their firm names in our report and any future reports based on this one because we believe these companies must be highlighted in order to demonstrate the scale and importance of the Mental Health Tech sector. Although some of them chose to be cautious in their responses to specific questions, they all agreed.

4. Findings

In this chapter, we will present the findings based on the empirical data gathered through secondary data collection and semi-structured interviews.

4.1 Landscape

From the 36 companies we identified, we excluded six based on them being either failed or acquired by others. We also excluded one company because it reached an IPO. We collected data on the total investments the companies obtained throughout their lifetime. As we explained in chapter 3.4, the companies can be grouped into three categories based on the problems they are solving: Well-Tech, Health Tech in general, and Med-Tech. The below diagram shows how investments are distributed across these categories. We can see that Med-Tech is getting the most

investments despite the highest number of companies in the Well-Tech category. Platforms digitising the existing mental health care that we labelled as Health Tech in general are also getting more investments than Well-tech.
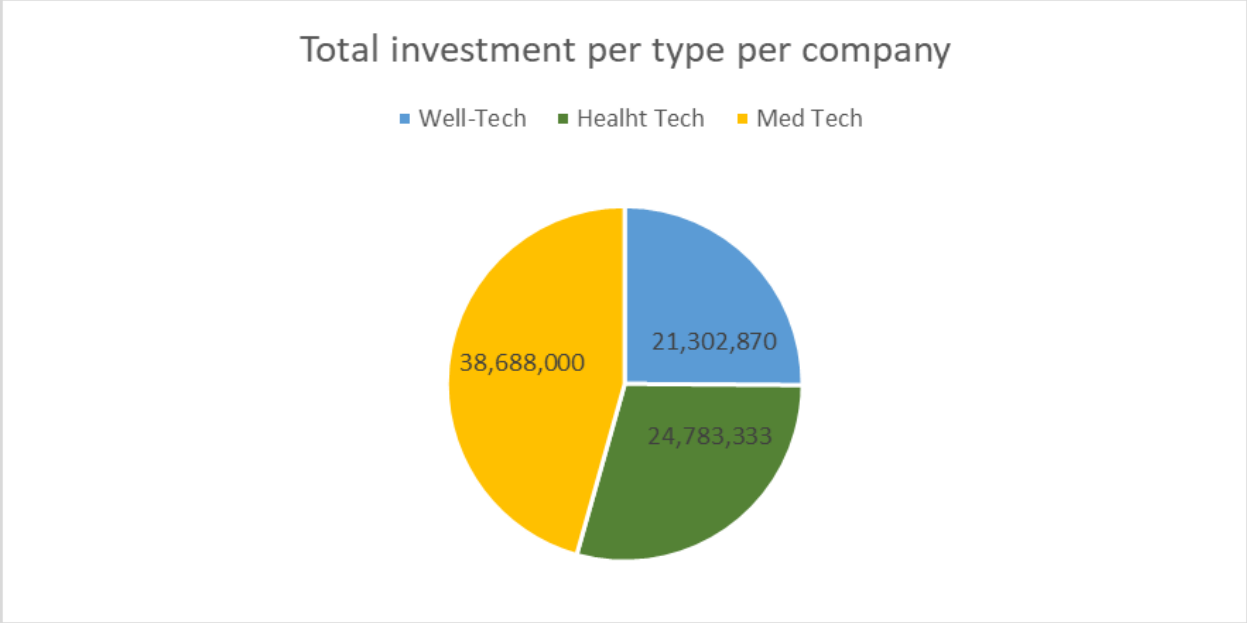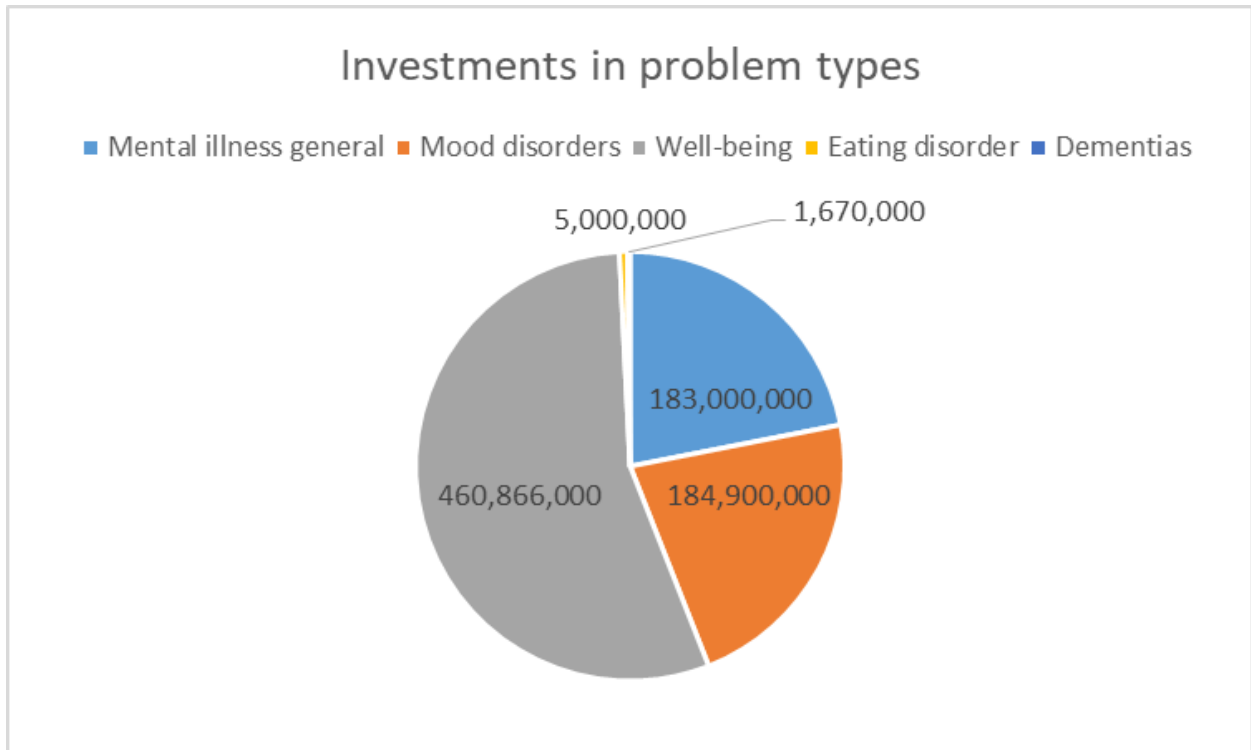

Figure 4: Distribution of total investments across company categories

The companies also differ in the type of mental health issue they address: Mental illness in general, mood disorders, well-being, dementia, and eating disorders. Investments are distributed across these categories, as shown in Figure 5. We can see that companies focusing on the general well-being of their users obtain the most investments, and mood disorders such as depression and anxiety are funded as much as mental illness in general. However, we did not control for the company's funding stage, and in the well-being category, there is a company that has reached the Series C stage so far.

Nevertheless, it is interesting to see that mental illness in general and mood disorders are the second most funded area. This could be explained by the fact that anxiety, depression and sleep issues are on the rise (McCracken et al. 2020), and people, in general, are more aware of these problems; therefore, we hypothesise that this category attracts more investments.

Figure 5: Distribution of total investments across problems addressed

So far in Sweden, the investments mostly went to companies already in advanced stages. Pre-seed and Seed stage companies are not attracting high investments, probably due to various factors but mainly because the risk associated with the early stages is the highest. However, given the recent increase in digital health in Sweden, it is surprising that early-stage Mental Health Tech companies are not attracting significant investments. However, the number of pre-seed companies is the highest in our sample, meaning that these companies are surviving on 'soft funding' and are probably well supported by the Swedish startup ecosystem, such as incubators, accelerators, and other types of support organisations (Bellavitis et al. 2017) as explained in Chapter 2.
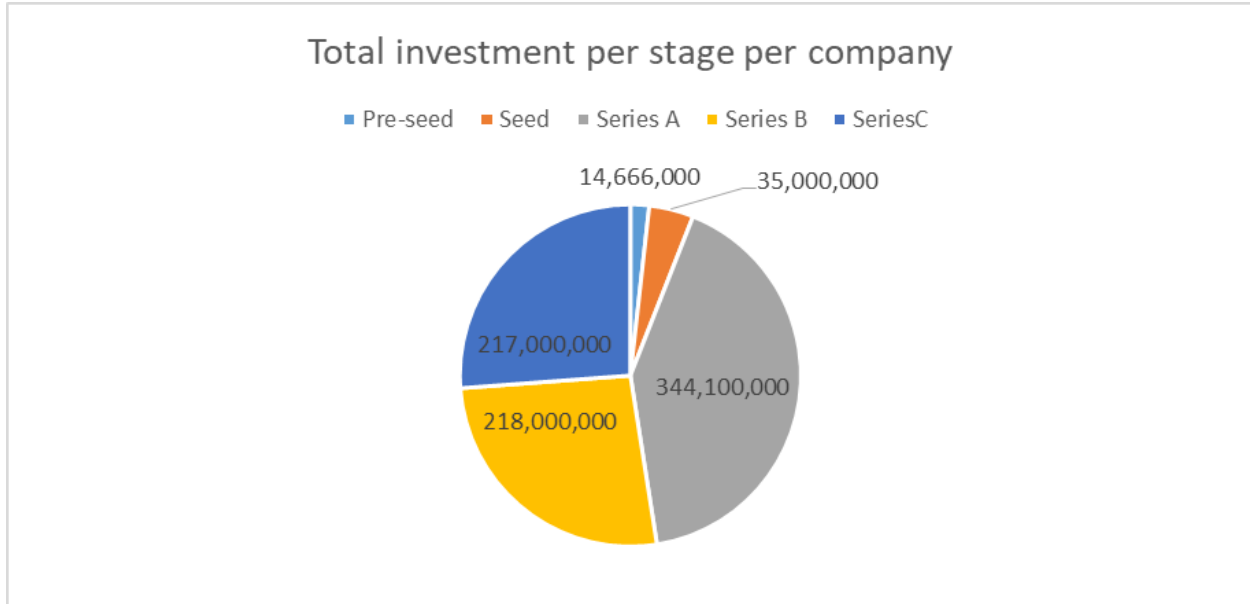
Figure 6: Distribution of total investments in funding stages per company

4.2 Themes

Below we introduce the themes that we identified from the interviews.

4.2.1 Education and prior experience in mental health

According to the personal experiences of all our interview subjects, their prior education and/or prior experience in mental health contribute a significant influence and determination on elevating, establishing and developing their startups. Their incisive motive for building their startups is based on their personal experience and background in mental health other than economic and financial growth. These are the factors we found influencing and stimulating their startups' performance.

4.2.2 Accessibility to incubators and funding

Another important key stimulating factor in venture development, based on what we found from the interviews with the selected founders, is the level of accessibility to incubators. Two of the founders revealed their difficulties in approaching and getting insightful information from the incubators, which led to another crucial factor in the different levels of success criteria: access to funding. Moreover, we have found a lack of understanding and collaboration between Mental

Health Tech with the incubators and the investors. That is another factor in determining the success or failure of the ventures.

However, according to our secondary data, the number of pre-seed firms is the largest in our sample, indicating that these businesses rely on 'soft capital' and are likely either supported by the Swedish startup ecosystem, which includes incubators, accelerators and other types of financial support or 'bootstrapping'. Bootstrapping is a term used to describe the self-supporting process of entrepreneurs in the early stages of their ventures before they obtain external funding.

4.2.3 Communication

The fact that good communication genuinely is one of the essential factors in measuring and gaining success of the Mental Health Tech startup. We recognise the circumstances of the founders who could not deliver their startup value proposition to the incubators, the investors, or even their potential customers. Meanwhile, the founders who maintain and develop good communication skills to deliver their value proposition earned success in fundraising and market progress.

4.2.4 Gender Inequality

As we decided to conduct the interviews with awareness of the importance of gender equality, we interviewed three female founders and three male founders. We, as many before us, such as Belkhir (1998), Berger & Kuckertz (2016), and Yang et al. (2018), discovered gender inequality within the ecosystem. All three female founders expressed the same challenge and circumstances in getting funding, facing discrimination and challenge due to the bias towards their gender. One of the male founders also experienced the struggle in getting funding. However, he recognised the difficulty in delivering his ventures' value proposition to both the market and investors. This highlights that gender gap and bias remain issues in the Swedish ecosystem.

4.2.5 Futurity Vision,

The vision of how the founders see their venture growing for future years is another vital stimulation factor in defining the success criteria of ventures. Regardless of them remaining in the position of the founder and owning the majority of the equity, or selling their ventures if they receive good conditions that meet their venture's core value, all of the founders we interviewed

are determined to develop their ventures bigger and better. Their main goal is to bring awareness and more significant changes to society rather than being concerned with financial growth. Although they have plans to continue raising funds to expand their team and market outside Sweden.

5. Discussion

In this chapter, we will discuss the findings of this thesis, how they answer our research questions, and their connection to the scientific literature.

5.1 Uncovered patterns

During the interviewing process, we uncovered specific patterns that were not in the focus of our research, but we found them relevant to our theory-building that is concerned with discovering potentials in the mental health tech sector.

5.1.1 Prevention focused ventures find it harder to raise funding than intervention-focused ones.

Ideally, prevention should aim to stop mental health problems from developing. However, in reality, the Mental Health Tech sector mainly targets the sub-clinical mood disorders in the population and develops solutions that stop these mental health problems from escalating into clinically significant disorders. 48% of sick leave requests in 2020 were due to mental health. Försäkringskassan (the Swedish Social Insurance Agency) paid 18.13 Billion SEK in sickness benefits in 2020 to people who took leave due to their mental health (Socialförsäkringen i siffror 2021). Prevention in this area would result in enormous savings for the public sector. However, we noticed throughout our interviews that prevention-focused ventures find it harder to raise funding. This pattern is supported by the data collected about the ventures during the mapping phase. Even though most firms are in the Well-Tech category, we found that Med-Tech receives the most funding. Platforms that digitise existing mental health treatment, categorised as Health tech in general, are likewise receiving more funding than Well-Tech (see Chapter 4.1).

Prevention focused ventures

"The investors did not recognise the mental health innovation. In Malmö, we only got into one incubator, and that didn't involve any money." (Founder 3).

"From a mental health perspective, if we're looking at funding from these types of large hospitals, they are so caught in just getting by day by day that they are not even able to think about innovation." (Founder 2)

Intervention-focused ventures

"Digital access for [healthcare] business is viable to get money. It is an open market if that tech or idea could attract money from the investors." (Founder 4)

"Telehealth, primarily getting a lot of funding and remote patient monitoring, for example, has gotten a lot of money, but there are certain sections, especially the treatment sections." (Founder 6)

Two of the founders interviewed brought up their experience with the investors' reasoning that no real innovation is happening in this area. Mette Gross, an Angel Investor, confirmed in personal correspondence that this is indeed the general view of investing in Mental Health Tech (K. Vikuk 2022, personal correspondence, 31 March). This is in contrast with experiences in the Mental Health Tech sector in the US, where the pandemic has significantly accelerated investments into preventive as well as reactive digital solutions to the extent that the FDA (the Food and Drug Administration governmental agency in the US) has loosened regulations around Mental Health Tech interventions. This coincided with the European Medical Device Regulations coming to effect from May 2021, which were developed to more strictly regulate the health technology industry than the previous regulations, the Medical Device Directive, in place. We theorise that in the background of difficulties obtaining funding for preventive approaches could also be the difficulty of presenting evidence that they would work. The way founders communicate their value proposition to investors and their target audiences could also be inefficient. Another reason behind this could be that the intervention approaches are well known and researched compared to preventive approaches, and in this case, ventures turning them into digital solutions to increase scalability. Therefore, when the innovation does not lie in the

methods themselves but in the way they are delivered, it is easier to communicate the value proposition.

5.1.2 'The Valley of Death'

There is a stage when the venture needs more funding than Angel investors can offer but is not ready yet for venture capital. This funding gap is referred to as the 'The Valley of Death'. This happens during the innovation process after the basic research and business strategy for commercialisation have been developed (Wilson et al., 2018). However, there does not seem to be a consensus in practice or in policy regarding whether a funding gap exists or whether this phenomenon results from poor financing strategy on the entrepreneurs' side (Cumming & Groh, 2018). One option to bridge this funding issue could be if the so-called Family Offices would be better connected to the innovation system, according to Daniel Persson, CEO of Minc, a Malmö-based startup incubator, and Zhenni Liang, manager of Skåne Startups (K. Vikuk 2022, personal correspondence, 13 April). This, however, affects ventures in all areas, not only in the Mental Health Tech sector and therefore, we are not going to elaborate on this finding further.

> *"We're actually looking for quite a few [venture capital] because our product is a high end product, so it's actually considered quite a costly price" (Founder 2)*

> *"...we only have [business] angels and from when we started, these angels are sometimes easier in the beginning to get on board, but they don't have that much money, they don't have a big amount of funding as we are trying to get more funding (...) we are looking for bigger investors, then we'll look into all the attractions and all the numbers and KPI, that is more important…" (Founder 1)*

> *"We applied for venture capital funding too but we often failed because those were too advanced for us." (Founder 3)*

5.1.3 Gap between psychology education and innovation

Traditionally psychology students go on to train as therapists or work in research. One of our interviewees pointed out that there is a stigma towards those who end up working in the

innovation field within the profession. Even though innovation is much needed in the mental health care from intervention as well as prevention point of view, yet psychologist training lacks education in the transdisciplinary innovation system and entrepreneurship.

> *"...when I graduated, I went directly into the world of psychiatry and tried to treat people with the help of therapy. Obviously, in that situation where people are quite ill, there is not a very sustainable solution available, and by sustainable, I mean that we need to create new kinds of solutions, and that should be technical solutions, if we really want to have a big impact on the problem (...) Creating new technical solutions will address the problem, I don't think it's sustainable for a longer period of time to just scale up the amount of therapists and doctors in society, even if that were possible, which is not really the case because we don't have that much money in the system to hire all these people. And there's even also not that many of them"* (Founder 6)

> *"...there's such a discrepancy between that and people don't even understand that these are diseases of the brain, you need to have brian diseases to be mentally ill, and there seems to still be a gap, research is lagging behind, and the tech is not getting what it needs..."* (Founder 2)

Mental health problems in the modern-day and age have become more widely known and more complex due to the post-industrial societal developments. It is widely recognised that they have a huge societal and economic impact, especially since the outbreak of COVID-19. According to WHO (2021), depression is a leading cause of disability worldwide. Nevertheless, psychological problems and mental illness are treated in isolation by psychologists and psychiatrists, the latter being mainly focused on the biological causes of the illness, lacking a holistic and preventive approach. On the other hand, entrepreneurship education facilitates entrepreneurial motivations and could potentially contribute to more meaningful innovation in the mental health sector if offered to psychology students (Porfírio et al., 2022). In addition, Convergence Mental Health (Eyre et al. 2021) offers a suitable theoretical framework for collaboration across different disciplines for psychologist entrepreneurs.

"There's like a grey zone between psychology and innovation. My professor is the only reason why I knew about the Venture Lab. She's working on health programmes for them. That was how she even knew about the system and how she told us that. I think that perhaps there is a better closure. At least to prevent this gap to be not as large. (...) It was just that there is no binding place between innovation and psychology. These two are completely separate from each other, so in psychology to move into the innovative sphere, it's something that is very different and difficult. This transition is not natural. You don't know any place where you can connect these two. (...) I actually have colleagues of mine right now that they're working with interface design. They are psychologists, but they got into this other type of corporate sphere where they can use their strengths in another way that is removed from the classical psychological things." (Founder 2)

5.2 Research questions answered

In exploring Sweden's Mental Health and Wellness Tech sector, we found the following answers to our research questions.

5.2.1 The stimulating factors of mental health tech innovation.

The Swedish innovation ecosystem sufficiently supports mental health tech startups in the early stages. Their work allows founders to take lower risks when starting their venture.

"The Swedish innovation and startup ecosystem is really playing a big role in supporting and to build your startup, especially at an early stage. Incubator accelerated to give us help and support and the right network since when we're all step one." (Founder 1).

"Swedish innovation ecosystem in general has a good system and even if you fail, you are not gonna be too broke, this ecosystem reduces risks in general" (Founder 4).

"We've gotten a lot of grants from Vinnova and we're in a business incubator called Founders Loft. They've also given us a lot of grants, and I think without those initial grants, it would have been very difficult you know, they really helped lift our venture up into something bigger since the beginning, so definitely through the ecosystem. (...) We

received a lot of monetary support with a lot of business coaching as well, and found that the ecosystem has been very welcoming and encouraging. Mental health tech industry is getting enough recognition and there's a lot of innovation happening in this space. (...) There's a lot of apps and behavioural apps and things like that popping up. So I think the people in the ecosystem, especially since the pandemic, have realised that this is like what the World Health Organisation said, it's now the biggest disease burden in the world. I think there's a lot of growing public consciousness that mental health is something that we need to take seriously and have a lot of innovation within this space."
(Founder 5)

"...I would say that there are probably possibilities that we haven't really examined. There are great programmes that we have gone to and and gone through in Sweden, up in Stockholm for example. You have some kind of Health Tech network connection (...) the ecosystem, as we went through, especially on Med Tech, they can go global, it was amazing and was actually free because the government is supporting it (...) The incubator in Malmö has such a great network organisation, and that's what I really like..."
(Founder 6).

The EU legislation requires employers to look after their employees' mental health, which opens the way for innovations in the occupational health area. Some prevention-focused ventures moved into this space after initially trying to operate in B2C format. B2B, however, seems to be a more viable business model.

"Our focus has always been B2B because we always wanted to reach out to those people who might not be able to get help or don't understand that they need help [within the company]." *(Founder 1)*

"...because therapists have their own company, so we basically earn from these groups of therapists as well, and the consumers (patients) then pay to the therapist separately..."
(Founder 5)

"We started as B2C but we realised that we didn't have enough to invest into marketing, then in 2021 we started co-develop with companies and getting some funding. Now we know that the B2B market is huge and trendier in Europe right now. The most viable business model right now is B2B" (Founder 3)

5.2.2 The obstacles to innovation in the mental health tech sector

The conflicting role of entrepreneur and psychologist

The area of mental health innovation challenges the barrier between business and psychology as a helping profession. It creates a bridge between the two areas that are very different in nature, just like in the case of social entrepreneurship, where the social support system has traditionally been non-profit, but now the expectation of being non-profit is challenged by creating a business out of supporting people (Dees and Anderson, 2006). Mental health entrepreneurship and mental health innovation are two fields that represent different values, perspectives and priorities: mental health entrepreneurship is focused on generating income. In contrast, mental health innovation focuses on meeting the psychological needs of larger groups of people that have traditionally been met by psychiatry and the healthcare system.

Lack of public awareness

This is still acutely present in society. However, there is a need for a paradigm shift in approaching mental health on a broader scale due to the mental health crisis that surfaced during the covid-19 pandemic. People are only starting to become open to mental health technologies in the EU compared to the US and UK, where the mental health tech market is growing more dynamically (Inkster, 2021, ORCHA, 2021, Dealroom, 2022, Nordic Interoperability, 2021).

No action is taken in response to mental health assessments in the workplace

Despite problems such as workplace burnout being uncovered; no action is taken in response. The reasons behind this could be that there are no solutions available to the employers, or they are unaware of the available solutions. Cook (2021) emphasises that employers need to have a data-driven approach to monitoring the situation and figure out how to prevent it. Cook suggests the following steps: 1. quantify the problem, 2. identify the root causes, 3. develop tailored retention programmes.

Less funding is available for mental health than physical health

Much less funding is available for mental health than physical health (WHO, 2020) despite depression being one of the leading causes of disability worldwide (WHO, 2021).

EU regulations have become stricter

The EU regulations (Keutzer & Simonsson,2020) on digital interventions have become stricter in the past years, making it more difficult for the software industry to develop in the medical space. In addition to this, the lack of clarity in regulations related to mental health 'software as a medical device' as opposed to physical health technology created confusion in the Health Tech sector. This has made it more difficult to innovate for mental health entrepreneurs in the Med Tech field.

Difficulty finding funding in later stages

Finding funding in later stages after the Seed round is challenging, and there is a "grey zone" in the first growth stage of the company, commonly referred to as 'the valley of death' (Wilson et al. 2018). Despite the early stages being supported, businesses tend to get stuck after the first round of funding. However, this is mainly true in the preventive area because those ventures that focus on intervention and digitise the existing interventions are not experiencing such obstacles. It could be because it is hard for preventive interventions to communicate their value proposition due to the lack of hard scientific data available (Milne-Ives et al., 2020, O'Reilly et al., 2018).

5.2.3 How does innovation emerge in the mental health tech sector?

Most founders we interviewed went through an effectuation process that is defined by Sarasvathi (2001) as "taking a set of means as given and focusing on selecting between possible effects that can be created with that set of means" (p. 245). Most of the founders we interviewed either studied psychology or were interested in mental health due to personal reasons. They recognised that the skills and knowledge (i.e. the means) they acquired through their studies and personal and professional experience could be helpful for the general public in resolving all sorts of mental health problems. According to Baron (2006), to recognise opportunities, entrepreneurs have to be alert. This also requires an active engagement in the searching for opportunities and prior knowledge of the industry, the market or the potential customers. In our case, most entrepreneurs have a background in psychology or have personal experience of mental health problems and therefore know the industry or the customers well. Driven by their interest and

motivation to help others, they were actively searching for the opportunity to use their skill set in a way that benefits others.

Many of our interviewees mentioned that a huge factor in their decision to start the business was meeting the right people at the right time and luck. By luck, they referred to meeting the right investor or the market opening up opportunities.

5.2.4 How does innovation coming from the mental health tech sector get adopted?

Three of our interviewees expressed their frustration that the public healthcare system operates very slowly, and although some regions are open to digital innovation, mental health is not their priority. A narrative review conducted by Ganapathy et al. (2021) uncovered the following reasons behind the public sector's slow adoption of digital mental health solutions: *lack of information, training and infrastructure, and the ambiguous regulatory landscape*. The small amount of reliable scientific evidence due to Mental Health Tech being an emerging field could also be a barrier to adopting mental health technologies in the public sector.

Mental health innovation mostly happens in the private sector that has recognised the disparity between the need for accessible intervention and prevention and the lack of supply by the public sector. This view is supported by the research done by Olsson et al. (2021a), who looked at questionnaire and register data from 3987 people aged 19–64 years obtained from a random population-based sample from western Sweden. They found that 29% of those responders who perceived the need for mental health care did not seek care, and 25% of those who sought care found it inefficient. Easy accessibility and personalised care could be the answer to this problem.

6. Conclusion

6.1 The aim of this study

The reason we conducted this study was to map out the landscape of the Mental Health and Wellness technology sector in Sweden to show that there is a growing community of mental health entrepreneurs that focus on innovation by shifting the paradigm in how we approach mental health as a society, particularly in the post covid times, and also the way we view mental illness and care. This community is the basis of convergence science in mental health. They are

the pioneers of mental health innovation diplomacy marrying knowledge and practice from professions that have so far been existing alongside but operated independently. This sector needs to be supported in the entrepreneurial community because it brings about changes that benefit society on an emotional and public health level while reducing the social cost of the mental health pandemic we see happening globally. In seeking answers to our research questions, we wanted to identify key aspects in which the policymakers and the entrepreneurial ecosystems can support this community of innovators.

6.2 Implications of our findings

Our data shows that the companies that address different aspects of mental health are not equally supported. For example, there are almost five times more Well-Tech companies solving everyday mental health problems than Med Tech ones that develop precision diagnostic tools and medical devices to treat depression. Yet, Med Tech receives the most of the investments. Although we acknowledge that developing in the Med Tech sector is more time consuming and costly, we believe that this does not justify the lack of investments in mental health promotion and prevention.

We also found that the different mental illness groups are not getting enough attention from both the entrepreneur and the investor side. For example, only one company addresses eating disorders, and one addresses dementia. Mood disorders such as depression, stress and anxiety are more popular among entrepreneurs, but we have not found companies addressing substance misuse despite the death rates due to substance misuse being almost as high as from suicide (Statista, 2022 a,b). These results indicate a gap between mental health professionals and entrepreneurship that needs to be bridged to serve society's real needs with innovation in mental health.

Since most of our interviewees had education in psychology and some form of personal experience with mental health that directed them towards this area of entrepreneurship, providing some form of entrepreneurship education as part of higher education in psychology could open up new fronts for innovation. This is in line with the findings of Porfirio et al. (2022), who found that opening up entrepreneurship education to psychology students facilitates their entrepreneurial motivations.

Entrepreneurial motivations of mental health professionals could also be enhanced if the adoption of innovation would be easier within the public sector. We propose that the healthcare sector opens up for testing new developments in a more systematised way as today it is difficult to access 'testbeds' for health entrepreneurs in Sweden. One option could be for Sweden to join the e-Mental Health Innovation and Transnational Implementation Platform North-West Europe (eMEN).

We also found that after the seed stage, obtaining investments becomes more difficult and companies risk ending up in the 'Valley of death'. Creating nationwide, systematic and well-regulated testbeds for mental health innovation has the potential to minimise the risk associated with such technology adoption and therefore could facilitate investments in this sector.

6.3 Limitations of this research

When collecting secondary data from public databases we lacked access to certain data. Missing data is defined as the data value that is not stored for a variable in the observation whilst we collected the data (Kang, 2013). This means that these companies are not well represented in our research analysis or are completely left out. While collecting this data we found companies that have ceased their operations but we had no means to research them further in order to find out what caused their failure. This is information that could be useful when making decisions about the ways Mental Health Tech companies could be supported and therefore it warrants further research.

No anonymity made respondents cautious in their answers to some of the questions therefore their answers may not represent the reality they are experiencing or give a better picture of the reality than how they really experience it. No data was obtained on the external funding broken down to company years and calendar years but this could be something to research in the future along with investors' attitudes towards and willingness to invest in Mental Health Tech.

We had a small sample size and more interviews may have resulted in better-defined themes. Also, companies in different stages of development could be assessed separately and comparisons could be made between different company types and the problems that they are solving.

6.4 Recommendations for future research

Mental Health Tech startups that have ceased their operations present us with an opportunity for future researchers in order to uncover hindering factors throughout the developing process of Mental Health Tech startups. Attracting attention and pushing research and acknowledgement from the insight process at each level might potentially contain some intriguing and novel considerations on what variables led those firms to fail, and what factors or in what manner led them to succeed.

Moreover, exploring and analysing more of the external funding data might also be an interesting and valuable matter for further research to understand investors' attitudes and behaviours toward Mental Health Tech startups in the Swedish ecosystem. As a consequence of this, we could possibly uncover new factors in the fundraising methods and the 'secret sauce' throughout the Mental Health Tech startup sector.

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Appendix 1: Interview Questions

Personal Aspects

1. What is the problem you are solving

2. Why is it important to you? How did you come up with this idea?

3. What was the point when you decided to start your own business

Business Aspects

4. How did you kick-start your business

5. What is your value proposition and how you deliver it to the market (how you clearly communicate them)

6. How do you see your business in the 5 years time (still working on it/sale it to sb else)

7. How do you measure your business success

8. Do you feel like your team composition is sufficient?

Stimulating Factors & Obstacles

9. Do you feel that the Swedish innovation ecosystem is supporting your venture?

10. Do you think that the MH tech industry is getting enough recognition?

11. Is the MH tech industry getting enough funding?

12. Are early stage startups in MH tech supported?

Adoption

13. Is the healthcare system open towards MH tech innovation?

14. Are B2B users open towards your solution?

15. Are B2C (or consumers) open to your solution?

More questions

16. Who are your main users?

17. Main competitors?

18. How long have you been working on this?

19. How many co-founders are in your team?

20. How much funding have you managed to secure to date?

21. Does your team own the majority of the company?

22. How did you grow, were there obstacles to getting funding incertain stages? Whis was the most difficult/ easy founding round?

23. What stage are you at now?

24. What is your business model?