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ICT in Business and the Public Sector

Qualitative Research on: eMental care Trust Barriers and Mitigation Measures Within the Dutch Mental Healthcare

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MASTER'S THESIS

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Abstract

Background: eMental care, a subbranch of eHealth, refers to a technology that provides electronic mental health care. Trust barriers slow down or prevent adoption of eMental care by the patients group. This research addresses the complexity, impartiality and self-confidence issues revolved around trust barriers, which decelerate eMental care adoption and the used approach to mitigate these issues.

Objective: Firstly, this research aimed to collect in-depth data on the approach and measures taken by eMental care platform owners and service providers to cope with the existing trust barriers. Secondly, it aimed to detect opportunities to improve and accelerate eMental care adoption. Lastly, a theory was developed to address the knowledge gap regarding how platform owners and service providers approach trust barriers and which measures they take against those barriers

Methods: Desk- and field research was conducted to realize the objectives. Semi-structured interviews with 11 platform owners and service providers were conducted to collect in-depth data. The interviews were recorded and processed using verbatim transcribing. The data was analyzed using the six steps thematic analysis approach.

Results: The results imply that five types of measures consisting of impartiality, self-confidence, technology confidence, functional and non-functional complexity are taken to cope with the trust barriers. Furthermore, the results point out a rapid temporary increase in adoption due to the COVID-19 social distancing regulations, which declined rapidly back to normal levels once the regulations were loosened. The rapid decline highlights that current measures are insufficient to maintain the increase of adoption. Since the results also highlight newly emerged issues regarding the impact of practitioners, patients, external entities, the technology and platform owners on eMental care adoption, it is suspected that these issues could be the reason for the rapid decrease of adoption.

Conclusion: This research concludes that current measures help to mitigate the current issues regarding trust barriers. However, to accelerate the adoption, future research and additional measures against the newly emerged issues are crucial because adoption is a dynamic continuous process.

Descriptors: eHealth, eMental care, trust barrier, complexity, impartiality, self-confidence, slow adoption, platform owners, platform service providers, patients, and practitioners.

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Glossary

eMental care	A subbranch of eHealth in which the focus is on providing electronic mental health care using a multi-sided platform.
Multi-sided platform	A platform which provides service and creates value by offering interaction between two or more participants.
Multi-stakeholder platform	A platform which brings different groups together with the purpose of providing service.
Platform owners	The organizations that have developed the platform and offer the platform to other organizations.
Platform service provider	Organizations that subscribe to a platform owned by the platform owners and deliver the platform as a service to their clients/users/patients.
Functional measures	Measures of technological nature consisting of technological tools, features and modifications (extra information button, autonomous answering function and platform customization options).
Non-functional measures	Measures focused on psychological, sociological and human aspects (extra guidance, motivational techniques and educational process).
B1 level of writing	Intermediate level of independent users with knowledge of future tense, past tense, idioms, the passive, formal language, the dreaded "er" and irregularities.
Patient	A potential eHealth platform participant with mental issues that is treated or in need of treatment using general treatments combined or without the eMental care services.
Practitioner	A potential eHealth platform participant that is specialized in treatment of individuals with mental issues (psychologist, psychiatrist and other professional specialized in mental issues).

1. INTRODUCTION

This chapter introduces the research topic and provides preliminary knowledge on the subject. The section starts with background information, after which the problem statement, academic relevance, societal relevance, research question and objectives will be described. Finally, this chapter will end with research outlines.

1.1 Background

Information and Communications Technology (ICT) has become a crucial part of society. ICT can be defined as a set of tools and techniques that are combined to gather information and use it to create value (Ogundile et al., 2019). It is applied as a tool for many human endeavors. One of the most important aspects of life is health. Using eHealth, the quality of health care could be increased due to the flexible, accessible, and efficient nature of the technology, consequently increasing the importance of eHealth solutions. Currently, there are many limitations, such as financial and physical limitations, which decrease accessibility to health care. The use of eHealth technology could provide many advantages regarding better healthcare, due to better accessibility and quality of care. Besides less accessibility to health care due to some patients' financial and physical limitations, the COVID-19 crisis affecting the entire world has confronted society with the importance of accessibility to health care. Therefore, it is crucial to research this subject in-depth and try to draw on emerging technologies to make the adoption process efficient and well-motivated.

The importance of technology has also been noticed by researchers, which has resulted in a big collection of data regarding technology adoption. The results of these studies have pointed out that there are different reasons for adoption failures, however, all of them are centered around adoption barriers. Some of the research points out barriers regarding wealth, knowledge, concerns around negative outcomes, accessibility, political corruption (Ogundile et al., 2019), complexity, culture and aversion of technology (Heyden et al., 2017), while other research concludes barriers regarding identity, privacy, uncertainty (Ahuja et al., 2020) and multi-stakeholder platforms (Louxa et al., 2020). Most of these barriers are well

researched, which has resulted in multiple theories, frameworks and techniques such as Diffusion of Innovation (DOI) theory, Technological-Organizational-Environmental (TOE) framework, managerial techniques regarding top-down and bottom-up change initiation that are discussed in detail during the literature review. These theories, frameworks and techniques have helped to overcome the ICT adoption barriers to some extent. However, it is often overlooked that healthcare technologies are based on a multi-stakeholder platform that still results in issues for eHealth adoption, since it can only function well when all stakeholders participate. In some situations, the stakeholders do not adopt the technology due to adoption barriers. This decreases the added value of the platform as crucial stakeholder input is missing.

1.2 Problem statement

The focus of this research is on eMental care, an element of a national eHealth platform in which the goal is to provide electronic mental care. The stakeholder groups regarding eMental care platforms are a collection of practitioners, the administrative staff that work for the practitioners, the technology suppliers, the technology owners, the government and the patients. To make the adoption of eMental care a success, these groups of stakeholders need to participate. This is a problem in the case of eMental care, as the patient group is reluctant to adopt the technology. A study conducted on the preferences of young people in relation to eMental care highlighted that only 16% of 231 participants choose eMental care treatment, emphasizing the adoption problem (Bradford & Rickwood, 2014).

The main reason behind the aversion that patients have regarding eMental care is lack of trust and personal contact (Paige et al., 2016) and (Boers et al., 2020). A research conducted by Berkowsky et al. (2015) concluded that, in order to trust eHealth, there should be confidence in the technology. This confidence is hard to obtain if the technology is complex for many users (Berkowsky et al., 2015). The complexity of eHealth has in this case resulted in less trust among patients. This is especially true among elderly patients with low self-confidence, since they cannot grasp the technology or perform the self-diagnosis where they must use digital questionaries to diagnose their own mental state (Milos Nymberg et al., 2019). Furthermore, elderly patients prefer the social aspect in which they can speak to a

practitioner and double check if they understood everything properly. Another research conducted by Sillence & Blythe (2019) concluded that the trust in eHealth is dependent on the impartiality of the given health information and the platform. Therefore, advertising extensively on an eHealth platform had a negative impact on patients' trust level. This resulted in less participation from the patients, diminishing the success of eHealth technology (Sillence & Blythe, 2019). The factors and issues mentioned above also apply to the adoption of eMental care technologies.

1.3 Academic relevance

The sources of the trust issues mentioned above have been investigated, but an aspect that is overlooked is how platform owners and platform service providers cope with these issues to increase trust and adoption level by patients. This has resulted in a knowledge gap regarding the process which refers to the approach platform owners and platform service providers take to cope with these issues by taking certain measures. Filling the knowledge gap by interviewing platform owners and platform service providers extends academic knowledge on their approach and the measures taken, consequently providing the opportunity to research if there are sufficient measures taken and how this situation could be improved. This substantiates the scientific relevance of this research.

1.4 Societal relevance

Besides its academic relevance, the importance of this research arises from the understanding that we could improve the mental care system by adopting the eMental care technology. Research has shown that eHealth and eMental care adoption could result in cost reduction due to efficiency regarding replacement of face-to-face interventions by online interventions. A research conducted by Smith et al. (2011) on the cost-effectiveness of health care systems for alcohol use disorder concluded that widely spread introduction of eHealth would increase efficiency of the Dutch mental healthcare consequently resulting in cost-benefits (Smit, et al., 2011). Furthermore, it could result in better information and better care accessibility due to the shared data principle where practitioners can easily share patient data when consent is given and where patients can follow treatments from their own home (Noriaki et al., 2004). In addition, adopting relevant eMental care technologies could improve the management of information,

accessibility of health services, continuity of mental care services and higher quality of safety (Gagnon, et al., 2014). Another benefit is the solution that eMental care offers to cultural issues. An example is the gender preferences of patients for their practitioners. A research conducted by Adudu (2007) concluded that preferences for male or female practitioners exist. In this study, 22 out of 55 male patients preferred a male practitioner, while four preferred a female practitioner and 29 were indifferent (Adudu, 2007). Another research conducted by Cartwright (1967) concluded that 75% of female patients register with female practitioners (Cartwright, 1967). Even though these studies are outdated, recent studies conducted by Delgado et al. (2011) and Akintunde (2019) concluded that patients will always have their preferences based on experience, religion, culture, gender and education when visiting a practitioner (Delgado, et al., 2011); (Akintunde, 2019). These preferences are often difficult to meet, since the Dutch healthcare industry totals at 343.000 health practitioners consisting of 92.000 male and 252.000 female practitioners (CBS, 2020). These shortages are also visible within mental care and have grown due to the COVID-19 crisis. Next to the travel risks, practitioner shortages and limitations of COVID-19, some patients, specifically elderly people, do not even have the means to visit the practitioners. In some of these cases, this can result in dangerous situations, delayed diagnoses, bad information accessibility, bad health services accessibility, bad continuity of mental care services and lower quality of safety because the (preferred) practitioner was not available or mental healthcare was not accessible. These issues could be partially intercepted by the adoption of eMental care technology. With the adoption of eMental care technology, there will be a big shift from meeting a practitioner in person to receiving a digital diagnosis, making private diagnoses from home possible. This could result in less delayed diagnoses, better information accessibility, better health services accessibility, better continuity of mental care services and higher quality of safety, further substantiating the social relevance of this research.

1.5 Research question and objectives

As discussed in the problem statement eMental care technology is based on a multi-stakeholder platform which can only function well when all stakeholders participate. In the cases of eMental care the patient group is sceptic and has trust issues decreasing participation and adoption. The goal of this research is to investigate how platform owners and service providers cope with the trust issues of patients regarding

eMental care adoption. Through this process, the aim is to grasp and map out the approach used by platform owners and service providers on development of measures against adoption barriers consequently, increasing the adoption of eMental care. Additionally, this also provides a model that could be used for increasing the adoption of multi-stakeholder platforms in general. Based on the current measures this research also aims to detect opportunities for improvement and acceleration of adoption. Therefore, this research will focus on answering the following research question: *"How do platform owners and service providers cope with trust issues from patients related to a multi-stakeholder platform like eMental care in order to increase adoption within Dutch mental healthcare (GGZ)?"* This research provided qualitative data on the perspective of platform owners and service providers explaining how they mitigate trust issues regarding eMental care. The data was analyzed to see if there is potential for improvement and the knowledge gap regarding platform owners and service providers perspective in relation to their approach on coping with the trust barriers was addressed. In addition, a theory and conceptual model was developed to clearly describe and visualize the perspective/approach of platform owners and service providers regarding trust barriers, measures and process to accelerate adoption.

1.6 Research outlines

This paper starts with a literature review obtaining a solid theoretical foundation regarding eHealth and eMental care adoption barriers. Besides the literature review, an exploratory approach combined with semi-structured in-depth interviews were used as research methods to collect qualitative data to develop concepts and answer the research question. This will be discussed in the *Methodology* part of this paper. In the chapter *Results*, the collected data is processed and analyzed by coding the interview transcripts using the thematic analysis approach. The six steps thematic analysis approach was utilized to prepare the data for the discussion. The discussion revealed the perspective on adoption combined with measures taken by eMental care platform owners and service providers and provided interesting insight regarding newly emerging issues. This led to opportunities for improvements and future research, showing the relevance of the results and providing the data needed to draw a conclusion. In the final chapter *Conclusion*, the data from the problem statement, objectives, methodology, results and discussion are gathered to draw a final conclusion.

2. LITERATURE REVIEW

The focus of this research is to investigate the perspectives of platform owners and service providers on reducing mistrust of patients regarding eMental care technology. Due to the exploratory nature of the research, a limited amount of existing literature was expected. Therefore, to research this subject and map out the current literature, the focus was put on a thematic structure starting with barriers of ICT adoption in general, instead of focusing specifically on eMental care. The focus was on perspective/approach since these aspects describe the process which contains data regarding the steps taken and decisions made by platform owners and service providers on how they increase adoption. Therefore, there was a focus on finding data regarding perspectives and approach in relation with adoption of ICT in general. Based on that, measures against ICT adoption barriers were researched to discover whether the problem has been addressed. The extensive pool of research on that matter shifted the focus from ICT adoption in general to eHealth adoption specifically. Many healthcare subparts are combined with ICT and have been extensively researched, except the adoption of ICT within mental care and the issues this entails. This resulted in the next theme regarding eMental care adoption barriers. Many researchers have focused on tracking down the barriers for ICT adoption in mental care (Berkowsky et al., 2015), (Paige et al., 2016), (van der Vaart et al., 2016) while none have researched what measures are being taken to break through these barriers and whether there is room for improvement. This resulted in the last subject for the literature review on mitigation measures, the adoption barriers and the gap in the literature. The following question was formed to fill the gap: *"How do platform owners and service providers cope with trust issues from patients related to a multi-stakeholder platform like eMental care in order to increase adoption within Dutch mental healthcare (GGZ)?"* For a visualized representation of the key themes researched during the literature review, see *"Figure 1. key themes for literature review"*.

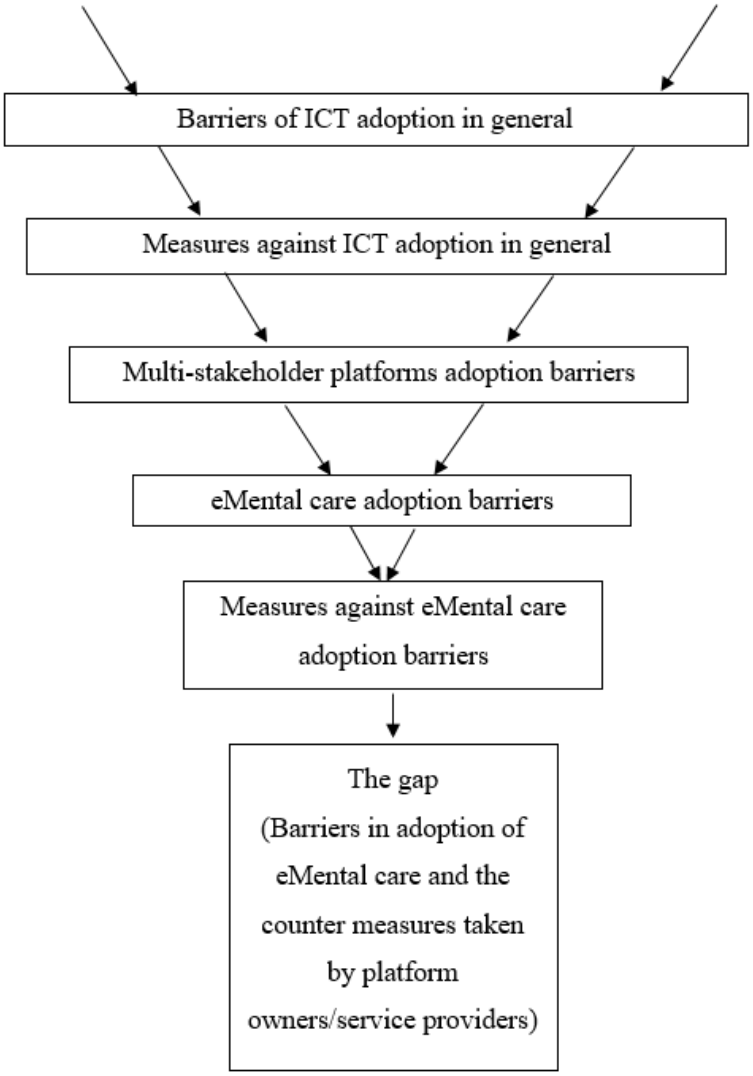

Figure 1. Key themes for literature review

The thematic approach mentioned above has resulted in the following literature review. The use of ICT to create value is used in a broad scale of industries. Some examples are the financial industry, transport industry, construction, tourism, marketing, education, pharmaceutical, enterprises and the government (Ogundile et al., 2019). Besides that, ICT is used extensively for personal purposes. A research conducted by the British Journal of Educational Technology concluded that ICT has rapidly been adopted inside homes to assist in education or to make life more comfortable (Wellington, 2001). Based on this, it can be concluded that ICT provides many benefits. Researchers have noticed this, and hence, have started to investigate how they can make the ICT adoption process more efficient and effective. In the next sections of this paragraph the results of existing literature regarding barriers and measures is synthesized and described.

2.1 Barriers of ICT adoption in general

Current research has resulted in a collection of literature regarding barriers that make ICT adoption in general difficult. In some cases, there are financial barriers on national, organizational and individual level that prevent a smooth adoption. In these situations, obtaining the assets to adopt ICT is simply not possible. Research has shown that this is mostly an issue in third world countries, where poverty is a problem (Ogundile et al., 2019). In these countries poverty results in financial limitations on national level where the country does not have the financial means to adopt emerging technologies, or the organizations cannot finance ICT and individuals cannot afford ICT. Another barrier is the negative impact of adoption on other aspects within the situation. Research by Ogundile et al. (2019) concluded that the adoption of ICT within Nigerian education has had benefits regarding the entrepreneurial preparation of students, however, there were some concerns from educators that ICT could cause distractions for the students diminishing their educational performance (Ogundile et al., 2019). Another research conducted by Shamimul et al. (2018) showed that ICT adoption in education could result in ICT addiction if not controlled (Shamimul et al., 2018) concerning educators, parents and guardians. Other barriers regarding ICT adoption are political corruption on national level, lack of knowledge/ expertise on organizational and individual level and uncertainty of adoption (Ogundile et al., 2019). Additionally, complexity of multi-stakeholder platforms (Louxa et al., 2020), organizational- individual identity in which the world is changing faster than the humans (Ahuja et al., 2020) and organizational-individual culture in which people do not want to change (Heyden et al., 2017) result in barriers. For the discussed barriers, the following measures have been developed.

2.2 Measures against ICT adoption barriers in general

The above-mentioned barriers for ICT adoption have all been researched extensively by firms and universities. This has resulted in multiple solutions, for example the Diffusion of Innovation (DOI) theory of Professor Everett Rogers, which explains the adoption of new technologies by different adoption groups. The DOI theory describes different stages of adoption and how product and service providers can anticipate on the adoption process to successfully provide their products and services

(Rogers, 1976). Furthermore, research has resulted in managerial techniques regarding the adoption of ICT and acceptance/aversion of change (Heyden et al., 2017). This research emphasized different approaches regarding top-down and bottom-up change management that could result in different acceptance levels by employees. The research concluded that a change initiated by middle management (MM) seems to be more accepted by employees than a change initiated by the top management (TM) since MM has a closer relation with the employees. In addition, research has provided frameworks such as the Technological-Organizational-Environmental (TOE) framework created by Tornatzky and Fleisher in 1990. This framework assists organizations in the process of adopting new emerging technologies, while considering relevant external and internal technologies. These theories, techniques and frameworks have functioned as measures against adoption barriers and have successfully been implemented in multiple industries where they have led to successful adoption of emerging ICT technologies. In other industries, particularly in mental healthcare, it still seems to be difficult to adopt ICT technologies even now that the theories, techniques and frameworks mentioned above are available. For one thing, the adoption of technological solutions within the Dutch mental health care seems to be slow, since patients prefer the normal treatment over eMental care (Meurk et al., 2016). Several reasons for the slow adoption are described in the next paragraphs.

2.3 Adoption of multi-stakeholder platforms

First of all, eMental care is based on a multi-stakeholder platform. Therefore, it is crucial to investigate which barriers influence the adoption of multi-stakeholder platforms before focusing on the adoption of eMental care. Existing literature describes cost on organizational level as one of the adoption barriers. The initial investment for organizations can increase fast since the platform requires hardware, reorganizational and user learning cost. On top of that these costs also depend on the decisions made by business partners. If business partners decide not to adopt the platform than the costs increase even more (Louxa et al., 2020). Secondly the chicken and egg dilemma causes problems for adoption. Organizations will only adopt a multi-stakeholder platform when it results in value. However, the value offered by a multi-stakeholder platform depends on how many organizations adopt the platform hence someone must start with adopting (Sören Wallbach et al., 2019). This problem is mentioned on B2B

level while it also plays a role on individual level regarding eMental care platforms. Here value of platform adoption depends on adoption level by individual stakeholders. This is discussed in the next paragraph.

2.4 eMental care adoption and barriers

On the subject of eMental care, plenty of research has been conducted abroad. Within the Netherlands, however, the available research is limited. Therefore, this research will mainly focus on research that has been conducted abroad to collect secondary data. Research focused on practitioners and their intention to use eMental care pointed out that the use and intention to use eMental care is high within the Dutch mental healthcare. This research, which focused on the guided online self-management interventions regarding use, facilitators and barriers, highlighted that half of 771 practitioners surveyed mentioned that they use eMental care or have the intention to use it (van der Vaart et al., 2016). This points out that practitioners are open to eMental care adoption and seem to have no problems with barriers. However, the focus of this research was on the practitioners and experts, so it does not describe barriers for patients, nor does it describe the measures that have already been taken. In addition, literature describes that eMental care projects often seem to fail and miss out on the benefits because the healthcare/mental care industry is a complex and multidimensional industry in which stakeholders do not always see the necessity of the technological change, making adoption more difficult (Gagnon, et al., 2014). Furthermore, research has concluded that eHealth technologies are implemented based on complex multi-stakeholder platforms that sometimes exceed the capabilities of some users resulting in less adoption. In this case the value of the platform is dependent on the size of the platform's user group (Louxa et al., 2020). Furthermore, research has shown that the stakeholders' (patient group) is sceptic about the eMental care technology and does not trust it due to impartiality concerns. Therefore, this group does not adopt the multi-stakeholder based technology diminishing the value which depends on input from all stakeholders (Berkowsky et al., 2015) and (Sillence & Blythe, 2019). This emphasizes the importance of trust in the adoption process, since a lack of trust directly results in lower adoption and less multi-stakeholder value. By virtue of this, this research paid extra attention to trust in order to find out how trust impacts adoption.

2.4.1 Impact of trust on eMental care adoption

Literature describes trust as an overarching entity for the adoption issues regarding complexity, impartiality and self-confidence mentioned above (Hoff & Bashir, 2015) and (Sillence & Blythe, 2019). Normally, when a treatment is provided, there are two parties that must trust each other. First, there is the actor referred to as the trustor, which could be a patient who trusts someone or something. Secondly, there is the actor referred to as the trustee, which could be a practitioner who is trusted by a patient. In order to create trust between the two actors, it is crucial to exchange information on identity (Vedder et al., 2014). In the example mentioned above regarding the practitioner as a trustee and patient as a trustor, the patient could inform on the practitioner's education and experience to create trust based on professional accomplishments. However, with eMental care, patients find themselves in situations in which they have to rely on technologies and systems that they do not know. Logically, this results in less adoption, since patients have a hard time trusting a technology that they are not familiar with nor have experience with. Additionally, trust is influenced by other factors. The models developed by Hoff & Bashir (2015) emphasize three main layers of variability regarding the human trust in automation. "*Figure 2. Three-layered conceptualization of trust variability"* gives a visual representation of these three trust layers, consisting of dispositional trust (the human operator), situational trust (the environment) and learned trust (the automated system). Each layer of this model contains its own factors which influence human trust (Hoff & Bashir, 2015).

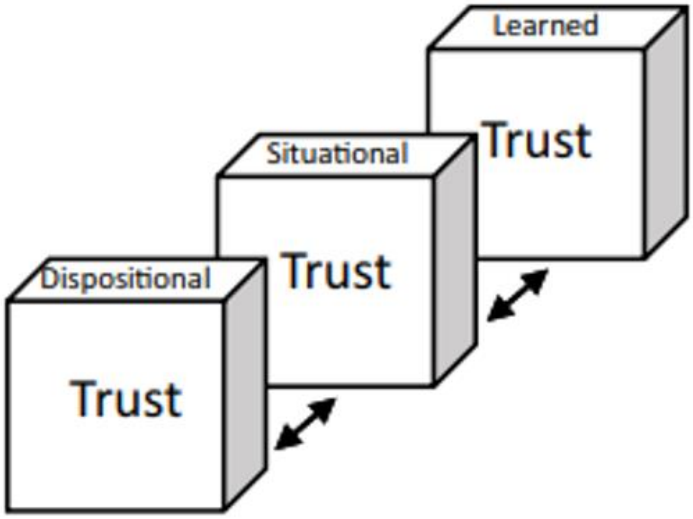

Figure 2. Three-layered conceptualization of trust variability developed by *(Hoff & Bashir, 2015)*

For dispositional variability, as can be seen in *"Figure 3. Dispositional trust factors",* culture, age, gender and personality traits are of importance. Dispositional trust variability describes the overall tendency of humans to have trust. This part is based on internal fixed aspects of an individual. For example, culture has a big impact, since culture shapes an individual in a certain way that is hard to change afterwards. On top of that culture itself is a fixed entity that does not change. Some cultures are more automation averse, resulting in less automation acceptance by the individuals that follow that culture. Other examples are age, gender and personal traits, since elderly people tend to have more aversion towards automations and females tend to have more acceptance towards automations (Hoff & Bashir, 2015). This layer of trust is fixed and cannot be influenced since your age, gender is decided at birth and culture, personality traits shaped from birth.

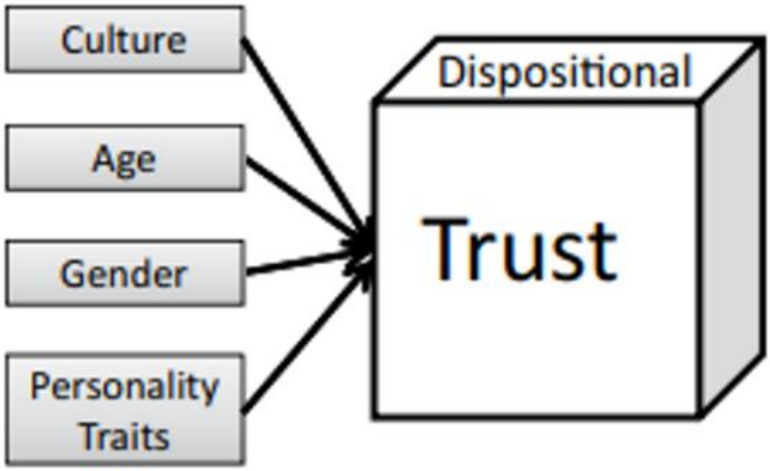

Figure 3. Dispositional trust factors developed by *(Hoff & Bashir, 2015)*

The second layer describes the situational trust in which external as well as internal variability play a role. The external variability revolves around the system and its properties. Here, complexity impacts trust to a high extent (Hoff & Bashir, 2015). In addition, the internal variability revolves around non-fixed characteristics of individuals. An important factor is an individual's self-confidence, which impacts their trust level. In contrast to the dispositional internal factors, these factors are not fixed and can be influenced by environmental changes. See "*Figure 4. Situational trust factors"* for all the situational trust factors.

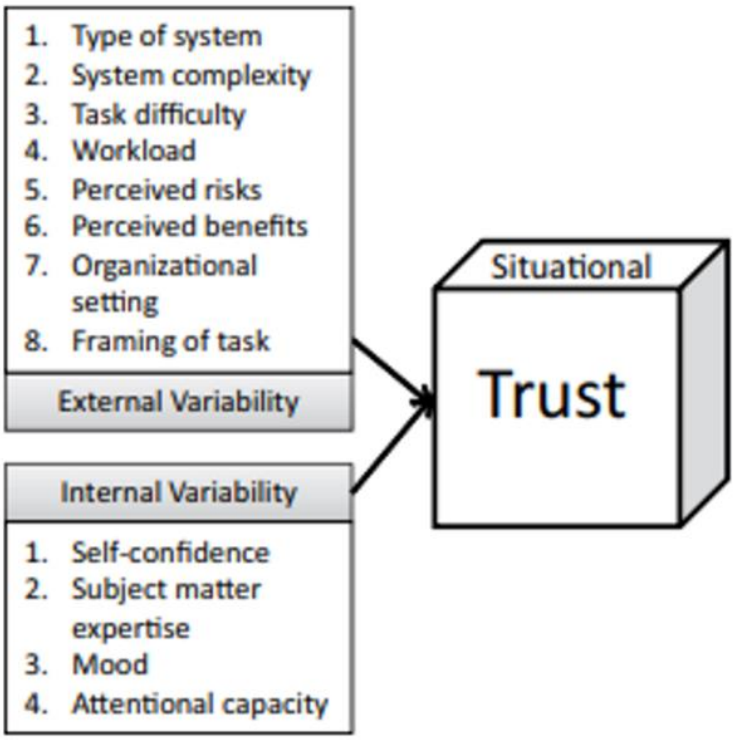

Figure 4. Situational trust factors developed by *(Hoff & Bashir, 2015)*

The third layer is about learned trust, which revolves around individual experiences. This layer is not fixed and can be influenced by positive and negative experiences in the past. Here, two types of learned trust are distinguished. First is the *"initial learned trust"* which impacts the trust level before using a system based on experience, followed by the *"dynamic learned trust"* which is impacted during the usage of the system. The second type is variable since it is impacted by the performance of the system during usage. The importance of these layers of trust in relation to adoption have been shown to exist in a majority of other research regarding trust. Firstly, research has shown that it is human nature to show aversion towards change, as it results in stepping beyond the comfort-zone into a new and perhaps stressful complex situation. This is an example of the first layer of trust variability, "*dispositional trust",* combined with the second layer *"situational variability of trust"*. In addition, research has pointed out that patients are sceptic about eMental care technology mostly due to previous experiences and influences from their surroundings, referring to the third layer *"initial learned variability of trust"*.

Based on the current literature, it can be concluded that trust has a high impact on adoption. The models developed by Hoff & Bashir (2015) describe trust as an overarching entity that contains factors which

could influence an individual's trust level negatively or positively (Hoff & Bashir, 2015). Additional research describes that issues regarding technology complexity, patients' confidence and the level of impartiality cause a trust barrier and limit the adoption of eMental by patients (Sillence & Blythe, 2019). Consequently, lower adoption by patients results in less input from patients diminishing the benefits of the multi-stakeholder platform which can only function well when all stakeholders participate. Therefore, these issues need to be mitigated in order to benefit from eMental care technology.

2.5 Measures against eMental care adoption barriers

With the current literature in mind, it can be concluded that adopting ICT in general could be challenging due to a pool of issues that result in barriers. These barriers have been researched to some extent, and solutions have been offered to make adoption more efficient. However, some barriers still cause problems within healthcare and mental care. Research has concluded that complex multi-stakeholder platforms, the self-confidence level of patients and impartiality level of platforms are issues that result in a trust barrier playing a big role in the adoption of eMental care. The existence of this barrier and how it slows down the adoption of eMental care technology within the Dutch mental healthcare has been researched, but how platform owners and platform services providers cope with this barrier has not been researched. Previous research has mainly focused on managerial mindsets in relation to the flexibility and ability of a company to innovate successfully (Wart et al., 2016). Research has shown that in all situations concerning adoption and innovation, the right mindset where leaders are proactive eager to learn and aware of short and long-term advantages of technological innovations has resulted in faster and more successful adoption processes (Wart et al., 2016). In other situations where a managerial mindset has simplification of the platform high on the priority list, the mindset resulted in higher level of user confidence. Here, research pointed out that increasing the level of confidence can results in higher level of trust, increasing the adoption level of the platform by the users. Moreover, research indicates that high levels of impartiality regarding advertising and other commercial actions can lead to higher levels of trust, resulting in higher adoption levels by users (Berkowsky et al., 2015). To summarize, current literature describes the issues that cause trust barriers for eMental care adoption, however, it does not specifically mention measures that eMental care platform owners and service

providers taken against those adoption barriers. This raises the question of what platform owners and platform service providers are doing to increase adoption of eMental care with the knowledge of the barriers.

2.6 The gap

Based on the existing literature described above, it can be concluded that ICT adoption barriers have been researched extensively within different industries. Research has pointed out what the main barriers are, and which measures can be taken against those barriers. Even with the luxury of measures against main barriers, some barriers still cause a delay in adoption of eMental care. eMental care is based on a multi-stakeholder platform which can only function well when all stakeholders participate. The barrier regarding trust issues from patients as a result of complex technology, low patient self-confidence and impartiality level of a platform is addressed well enough to prove the impact of these issues and how they prevent patient participation. However, no data has been collected during earlier studies regarding measures on this subject. This has resulted in a gap in the literature. Before researching which measures can increase the adoption of eMental care, it is of high importance to address the gap of what measures eMental care platform owners and platform service providers are taking regarding those aspects to increase adoption of eMental care. Therefore, this research focuses on investigating how platform owners and platform service providers break through the barrier of trust. Collecting data on which measures platform owners and platform service providers take requires a data collection method. The next chapter describes the methods used for collecting data to answer the research question.

3. RESEARCH METHODOLOGY

This chapter describes the research design for the current research. It starts with the general research approach. In addition to the research approach, the methods of data collection are discussed. Furthermore, the method of analysis is explained, after which the chapter ends with an evaluation and justification of the chosen methodology.

3.1 Research approach

The aim of this research is to explore an under-researched subject regarding the approach and measures that platform owners and platform service providers take against trust barriers to increase the trust level that patients have in their technology. To research this subject, the following explorative research question was developed: *"How do platform owners and service providers cope with trust issues from patients related to a multi-stakeholder platform like eMental care in order to increase adoption within Dutch mental healthcare (GGZ)?"*

The chapter starts off by discussing the chosen research methodology, which consists of a combination of desk- and field research to collect qualitative data. The goal is to explore the subject of taken measures and used approach by platform owners and service providers to increase the trust level of patients in the technology. Furthermore, a secondary goal is to discover whether there are sufficient measures taken. To be able to draw a conclusion, it is of high importance to collect sufficient data. Therefore, widely available secondary data was chosen to be collected using desk research. While desk research has a lot of advantages regarding cost efficiency, high availability of data also has disadvantages, such as biases, outdatedness and a focus on a different research goal that the one this research has (Cheng & Phillips, 2014). Furthermore, desk research on its own is not sufficient due to the immaturity of the technology and the gap within the scientific community. To counteract these disadvantages, this research also incorporates field research. In order to utilize the advantages of field research regarding firsthand data, which are experience and less bias due to a better fit with the research goal, interviews were conducted. In addition to the methodology, semi-structured in-depth interviews were used as a data collection

method to collect primary data. The interviews were composed of open questions with a semi- structured form. See *"Appendix 1. Template interview"* for an example of the questions and interview structure. This technique was chosen over the informal and standardized interview techniques, because the aim was to collect in-depth data on a specific subject. Applying an informal interview technique could have resulted in less systematic data which is difficult to analyze. Besides that, informal interviews are harder to steer and can result in off-topic data. In contrast to the informal interviews, the standardized interviews limit flexibility to a high degree, making it difficult to respond to new topics that unfold during the interview (McIntosh & Morse, 2015) and (Rabionet, 2020). In summary, it was decided to take the middle ground and therefore choose semi-structured interviews, because they utilize the indispensable advantages of both techniques for this research.

For the interviews, the primary idea was to interview only platform owners, since they are organizations that have developed the platform, have knowledge and provide the platform to third parties. For example, the platform owners can take measures against trust issues during the development of the platform and are familiar with the functionalities. However, due to the immaturity of the technology, there was only a small group of 10 platform owners that met the selection requirements developed for organizations. See "*Appendix 4. Overview of selection requirements"* for a list of all the requirements. After approaching the platform owners, only three were able to give an interview. Three interviews did not provide enough data to draw a proper conclusion. Since third parties also offer the eMental care platforms and additionally take their own measures to increase the trust level of patients, the subject group was broadened by adding platform service providers to it. Platform service providers are organizations which provide the eMental care platform developed by a platform owner to their patients. These two groups combined resulted in a subject group consisting of platform owners and platform service providers, who were chosen based on predefined criteria visible in *"Appendix 4. Overview of selection requirements"* to ensure a proper fit with this research. In total, 11 interviews lasting between 35 and 75 minutes were conducted. The aim was to conduct interviews with a duration between 45 and 60 minutes however some interviews lasted 15 minutes longer due to informative conversations and some were 10 minutes shorter because of concrete and straightforward answering. To prevent the loss

of data and avoid missing important statements due to malfunctioning devices, all interviews were recorded on two devices in order to have a backup of the recordings. Furthermore, notes were taken during the interviews. The recordings were transcribed and coded using a verbatim transcribing method combined with the six steps thematic analysis approach. In the paragraphs below, the methodological aspects will be discussed in more detail.

3.2 Level of research

This research was conducted on an organizational level whereby data from different platform owners and platform service providers were collected by interviewing participants on management level. Therefore, the unit of observation was on an organizational level and the unit of analysis was the perspective of platform owners and service providers in relation to patients' mistrust of eMental care.

3.3 Methods of data collection

Now that the general approach has been described, the methods of data collection will be discussed in detail, starting with the type of data that was collected and working towards the subject for research and selection criteria.

3.3.1 Qualitative data collection

An exploratory research approach was chosen, since the subject is the perspective/approach of platform owners and service providers in relation to coping and overcoming trust barriers. The goal is to explore this subject by collecting in-depth data on this entity. Besides that, this research aims to develop concepts and a model inductively (bottom-up data driven) on the approach and measures that eMental care platform owners and service providers take. On top of that it aims to decide whether these measures are sufficient. This points to an exploratory research that fits well with qualitative data collection. Moreover, answering the research question with quantitative data (numerical data) is not suitable in this case, due to the exploratory nature of this research in which the aim is to get a deeper understanding of the subject.

3.3.2 Desk research

First, desk research was conducted to collect literature with secondary qualitative data on (i) mistrust of patients and (ii) how managers currently cope with this mistrust. During the desk research, the Leiden University catalog of scientific databases was accessed. Furthermore, ScienceDirect, Google Scholar and third parties' databases were accessed. To find the right scientific papers, a list of keywords/synonyms combined with Boolean operators such as the "AND" and "OR" operators that are used to combine or exclude search keywords were utilized to make the search precise. For an overview of the keywords and Boolean operators, see *"Appendix 2. List of Boolean operators and search keywords"*. To collect the data, scientific studies were approached using the Snowball method which focusses on addressing the bibliography of key research for relevant sources. Using the Snowball method, data was collected by addressing the references of highly cited papers regarding for example adoption in relation to ICT and eMental care. In addition to scientific papers, data from eMental care platform owners and platform service providers was collected and analyzed. A detailed discussion regarding that data is described in the next sub-paragraph titled *Field research*.

3.3.3 Field research

Secondly, field research was performed using interviews to collect primary data on the perspective of the platform owners and platform service providers about trust barrier and how they approach the situation where trust barrier limits adoption. To collect primary data, semi-structured in-depth interviews with platform owners and platform service providers were conducted. In-depth semi-structured interviews were chosen since the population for this research is limited and semi-structured interviews will provide the right amount of structure and flexibility to conduct the interviews properly. In order to increase the number of interviews, the interviews were kept short, between 45 and 60 minutes. To realize this, the number of pre-prepared questions was limited to a maximum of 25 questions, leaving enough time to discuss new topics that unfolded during the interview. See *"Appendix 1. Template interview"* for the pre-prepared interview questions. The interviews were divided into three main parts. Each part was focused on one of the sub-questions that describes the reasons that lead to the trust issues. The parts consisted of questions regarding the following subjects:

- SQ1: How do eMental care platform owners and service providers reduce complexity of the platform to increase trust?
- SQ2: How do eMental care platform owners and service providers increase the confidence level of patients in eMental care to increase trust?
- SQ3: How do eMental care platform owners and service providers increase impartiality awareness regarding the eMental care platform to increase trust?

The interviewees were approached by an invitation email and the interviews were conducted in Dutch using Google Meet or another communication platform, due to the COVID-19 situation. Once all the interviews were conducted the recordings were translated and transcribed in English. The interviews were started with an introduction to the research, the interviewer and general small talk to make the interviewee feel at ease. After the introduction, formalities regarding consent to confidentiality, anonymity, participation and recording of the interview were discussed. When consent was given, the interview was started with broad questions that were supplemented by in-depth questions. At the end of the interview, the interviewees were asked if they had any additional relevant information that they wanted to share. See *"Appendix 1. Template interview"* for an example of the questions and interview structure. The data from the interviews was transcribed and analyzed by coding the data.

To ensure the validity, reliability and useability of the research, the following measures were taken.

Validity: As Professor Lawrence Leung from Queens University said, *"Validity in qualitative research means "appropriateness" of the tools, processes, and data"* (Leung, 2015). This points to whether the research question is in line with the outcomes. In addition to that, it argues that the used methodology and techniques need to be suited for the research type. Only then will it create valid results. During this research, the following measures for validity were taken.

- Methodology:
    - Collect qualitative data instead of quantitative data.

        - This provided the opportunity to explore and develop in-depth knowledge on the subject.
    - In-depth interviews instead of normal interviews or surveys.
        - Suggestive questions were avoided to limit influences from the interviewer.
        - Anonymity was emphasized to limit socially desirable answering (SDR).
        - The subject and goals of the research were introduced to restrict different interpretations.
        - The questions were kept concise and simple and complex questions were elucidated with examples to prevent erroneous answers.
        - Semi-structured interviews were used to make in-depth discussions possible.
        - Interviews were conducted until saturation was visible. This happened after seven interviews. Another four interviews were conducted to be sure. If saturation had not been achieved after the 11 interviews, the plan was to contact and send reminders to the remainder of the selected organizations.
        - Organizations and participants were selected purposively, based on predefined requirements among which requirements regarding interviewees knowledge level, interviewees targeted audience and location of the platform service providers to ensure accessing and collecting data from suitable data sources. A complete list of used requirements is visible in "*Appendix 4. Overview of selection requirements"*.
    - Desk- and field research instead of solely desk or field research.
        - This provided both primary and secondary data.
        - Field research made in-depth data collection possible.
        - Desk research provided a solid scientific foundation.
    - Thematic data analysis instead of grounded theory which is also used for data analysis. Only grounded theory is a more extensive methodology compared to thematic analysis.
        - This offered flexibility and extensive data analysis with an iterative approach.
        - It provided a simplified way of data analysis compared to grounded theory.

- Verbatim transcription was used for deeper understanding of the answers.

Reliability: Compared to quantitative research, ensuring reliability is difficult in qualitative research. With quantitative research, reliability is ensured by making the research replicable. Within qualitative research, it is challenging to present the research in a way in which it could be replicated by another researcher (Leung, 2015). Since qualitative research revolves around epistemological aspects of the researcher, for example beliefs and knowledge, it is challenging to replicate it (Leung, 2015). Therefore, during this research, the following measures were taken to ensure reliability.

- The interviews were conducted face-to-face to limit misinterpretations and derailing.
- Sufficient time was reserved for the interviews to exclude rushed answers and collect logically argued answers.
- The interviews were recorded and transcribed verbatim to make constant comparison possible.
- The data was analyzed iteratively with a focus on consistency during the iterations. In this way, researcher and analysis bias were excluded as much as possible.
- Data triangulation was used by performing in-depth interviews with different subjects with different backgrounds. This resulted in different data sources that were compared during data analysis (Carter et al., 2014).
- Data triangulation was used by collecting data using a combination of desk and field research addressing different data sources (Carter et al., 2014).

Questioning: To limit misinterpretation of the questions, the questions were kept unambiguous. To realize this, the use of technical terms, abbreviations and suggestive questions was excluded. Complex questions which could result in misinterpretations were exemplified.

Confidentiality and anonymity: The collected data was used to contribute to the scientific research community by publication of the research. Confidential information which was provided during the interview was brought to attention by the interviewee or interviewer with the intention to discuss publication of the data. In addition, the interviewee always had the right to not answer a question if they

did not wish to and stop the interview without jeopardy. To ensure anonymity, all personal data was extracted while processing the collected data.

3.4 Population and sample

To collect relevant data a sample within the eMental care platform owners and service providers population was selected using company and interviewee requirements. The process used for the sample selection is described in this section of the research.

In the first instance, purposeful sampling combined with Google search was used. It was decided that the population for this research would consist of eMental care platform owners within Dutch mental healthcare. However, due to the immaturity of the eMental care technology and the COVID-19 crisis, the population of platform owners was limited. Seven of the ten platform owners that met the selection requirement for organizations declined to participate. This meant that the data would not be sufficient without broadening the population. Therefore, purposeful sampling was used again to add another group of organizations that could provide in-depth data. The purposeful sampling pointed out that platform service providers also have in-depth knowledge on the eMental care platforms. As a result, platform service providers were added to the population. This broadened the population to 20 organizations that met the selection requirements for organizations. After contacting the organizations, 11 of them replied. Within the 11 organizations, 11 participants with in-depth knowledge of the subject were chosen to be interviewed. An interview was planned with the participants and the interviews were conducted. This resulted in 11 interviews that lasted between 35-75 minutes, including the introduction. See "*Appendix 3. List of participants"* for an overview of the participants.

As mentioned earlier, organizations and participants were selected using purposely sampling. During the purposely sampling, participant requirements were used, which can be seen in *"Appendix 4. Overview of selection requirements".* Since the aim was to collect in-depth data on the subject, it was crucial to interview the right participants. To select the right participants selection requirements were needed. For a proper fit it was important that participants have experience, in-depth knowledge and a position within a company located in the Netherlands, which provides eMental care services. Based on

these aspects the organizational and participants requirements were developed. See *"Appendix 4. Overview of selection requirements"*. For a list of the requirements.

3.5 Method of analysis

This paragraph describes the method used to analyze the data. In total, 11 participants were interviewed. Once all interviews had been conducted, they were transcribed using the verbatim transcription method. This method focuses on capturing every word that was recorded including filler words, false starts and errors. Verbatim transcription made it possible to capture all verbal cues during the interview, providing valuable data and context on the underlying reasons for an answer (Halcomb & Davidson, 2006) and (Tessier, 2012). This resulted in 11 transcripts of nine to 12 pages containing 5000 to 8000 words in font size Cambria 11. See *"Appendix 5. Transcript sample"* for an example of the interview transcripts. The collected data was analyzed using a textual analysis approach called thematic analysis. The thematic analysis approach is used for data analysis by utilizing six steps regarding familiarization, coding and generating themes from the data. Since the goal was to explore an under-researched topic and get an in-depth understanding of the topic, a thematic analysis method with an inductive approach provided high flexibility, making it fit well with this complex exploratory research. Besides that, the goal was to capture patterns and themes to develop concepts, a conceptual model and a theory using an abstract method. Therefore, it was decided not to use the grounded theory methodology which is extensive, time-consuming and often used within large research projects (Braun et al., 2021). Research also pointed out that researchers often claim to have used the grounded theory methodology while they use only a few steps of the methodology (Braun & Clarke, 2008). This is called the grounded theory lite, which resembles the thematic analysis approach. Only, the grounded theory lite is less complete compared to the thematic analysis approach. The thematic analysis approach was used to analyze the data and identify patterns and concepts to develop themes, a conceptual model and a theory. During the textual analysis, Braun and Clarke's (2008) six-steps approach was used, consisting of the following six steps:

1. **Familiarization:** The recordings were listened to and transcribed, while simultaneously taking notes.

2. **Coding:** This step revolves around generating initial themes. Here, codes/labels were produced for relevant and interesting parts of the data, based on the features of the data. This offered a condensed overview of key points and recurring statements within the data.
3. **Generating themes:** During this step, the generated codes were analyzed and combined based on patterns to generate themes.
4. **Reviewing themes:** During this step, the themes were analyzed and refined iteratively, until working themes for the collected data were created. The focus was on eliminating, combining and developing themes that give an accurate representation of the data.
5. **Defining and naming themes:** During this step, the themes and sub-themes were defined, named and finalized. The focus was on providing suitable names that describe the meanings of the themes to help understand the data.
6. **Writing up:** During this phase, the scientific paper was written and the themes were described in relation to the research question.

The first five steps mentioned above were focused on data analysis, better known as open coding, axial coding and selective coding. The last step (step six) focused on providing structure for the whole paper. Going through the first five steps mentioned above resulted in analyzed data that was used during step six for the results, discussion and recommendation of this paper.

3.6 Evaluation and justification of methodology

The paragraphs above discuss the reasons for choosing this methodology and these techniques. Additionally, this paragraph takes a closer look at the methodology, describing why this methodology was chosen over others. Moreover, this section describes how the approach contributed to new knowledge regarding the research as well as its strengths and weaknesses.

Research points out that quantitative research receives scientific credibility and is often chosen since it collects measurable factual data. However, quantitative methods are not suited for research evolved around complex human behavior (Lakshman, 2000). Besides that, the data collected during this research cannot produce relevant numerical outcomes that are needed to perform a statistical analysis. Therefore,

to explore the subject of eMental care in relation to trust issues and measures against the trust issues, a qualitative research was performed in order to collect in-depth data. As with quantitative data, qualitative data has a disadvantage. When qualitative research is conducted, there is always some subjectivity present because the themes and patterns are developed based on researcher perception. This makes it hard to objectively justify the results (Daniel, 2016). In contrast, it provides the opportunity to collect rich and detailed data on the participants' perspective. In cases such as this, in which an under-researched subject is explored, qualitative data collection is necessary (Sharique, 2019). On top of that, no transcription tool was used to transcribe the audio. Research has pointed out that transcribing the recordings manually results in a better understanding of the data (Braun & Clarke, 2008). This offers the opportunity to get familiar with the data before starting to code and analyze it.

To analyze the data, a textual analysis with a thematic approach was conducted. Thematic analysis is a common way of analyzing qualitative data to generate themes (Braun & Clarke, 2008). A pitfall of this type of analysis is that it is a straightforward approach that could make providing adequate examples for the data difficult. Therefore, it is crucial for the researcher to develop the themes and patterns self-consciously to make the results convincing. A pitfall here is that researchers tend to accept themes that are not sufficiently substantiated. This results in a mismatch between analytical claims and data that does not support this claim (Braun & Clarke, 2008). In contrast, thematic analysis offers an extensive six steps approach that results in iterative data analysis when executed properly. Hereby, researchers can limit the impact of the pitfalls mentioned above. In addition, thematic analysis provides a high level of flexibility compared to other analysis methods such as conversation analysis and interpretive phenomenological analysis (Braun & Clarke, 2008). These other approaches are all built on a framework in which there is only one format for the analysis, making them less flexible (Braun & Clarke, 2008). Another approach that was considered was the grounded theory methodology. Since in-depth qualitative data was collected, flexibility was desirable. Both thematic analysis and the grounded theory offer flexibility (Chun Tie et al., 2019). In this case, grounded theory is a methodology that is too complex and excessive (Chun Tie et al., 2019), while thematic analysis is a less complex method, which fits better with this research (Braun & Clarke, 2008).

4. RESULTS

As explained in the previous chapters, data was collected through interviews and analyzed using the thematic analysis method. In this chapter, the results are described. During the data analysis, open codes, axial codes and selective codes were developed to generate themes. Since the focus was on trust barriers this chapter will start with, "*theme F"* which is generated to answers Sub-question 1, 2 and 3 regarding measures in relation to complexity, impartiality and self-confidence. The other themes pointed out influence factors that could impact adoption negatively and must be also monitored closely. These influence factors are also translated in themes and described below:

- Theme F: measures against trust barriers on eMental care adoption.
- Theme A: the impact of external entities on eMental care adoption.
- Theme B: practitioner impact on eMental care adoption.
- Theme C: patient impact on eMental care adoption.
- Theme D: technology impact on eMental care adoption.
- Theme E: platform owner impact on eMental care adoption.

For a visualized representation of themes, see "*Figure 5. Themes impact circle on eMental care adoption".*

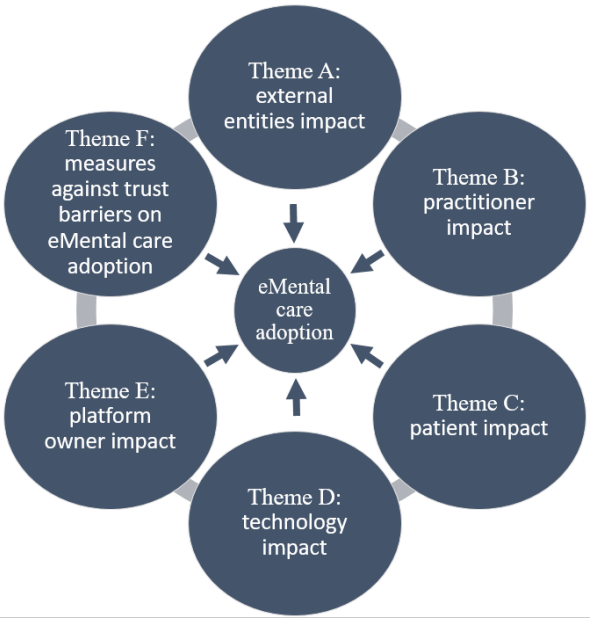

Figure 5. Themes impact circle on eMental care adoption

The generated themes combined describe the approach on how eMental care platform owners and service providers cope with current barriers of trust and which other so called influence factors impact adoption of eMental care. The results around the themes are described below starting with theme F regarding current measures taken against the trust barrier. For a complete visual representation of codes and themes, see *"Appendix 6. Code book eMental care adoption".*

4.1 Measures against trust barriers on eMental care adoption

The first theme that was generated from the data was focused on the measures that platform owners and platform service providers take against trust barriers of adoption. This resulted in the first theme, *"Theme F"* regarding measures taken against trust barriers on eMental care adoption. When asked about which measures are taken, the interviewees mentioned five types of measures.

4.1.1 Non-functional measures

Firstly, the interviewees mentioned non-functional measures against complexity. Here, the interviewees mainly noted measures in which the communication between the practitioners and the patients are central. Some examples of what the interviewees noted are: *"We advise the practitioners to show the patients in person how they can use the service to get the most out of the situation."* In addition to that, interviewees mentioned: *"If you Google or search on the internet there are millions of books available on how you can help yourself without guidance of a practitioner. The problem is that people get stuck when they need to do an assignment. This is also the same with eHealth. Reading is not a problem but when the clients must complete an assignment where you need to look at what is going wrong and what must change to improve the situation, this is a problem and that is where we offer guidance."* and *"Well, we also have a helpdesk that can provide services regarding technological questions from patients."* In summary, the interviewees listed the following non-functional measures:

- Extra guidance for patients in need of control.
- In-person guidance and explanation.
- Introduction to treatment before and during the treatment.
- Extra guidance for low-educated patients.

- Step-by-step guidance to reduce complexity.
- Categorization of patient groups based on education and age to provide customized treatment.
- Helpdesk available 24/7 for questions.

4.1.2 Functional measures

Secondly, next to the non-functional measures, interviewees mentioned functional measures that are taken to reduce complexity. Some examples that interviewees noted are: *"We have a select group of video practitioners that provide us with the videos and some of them also talk on an easy level and some talk on a more advanced level."* Interviewees tend to believe that making video guides in different speaking levels will reduce complexity. The interviewees also mentioned: *"We try to make using eMental care easy by using videos and patients can also get extra information on a treatment by pushing on the button for extra information. Next to that, patients can also magnify the text if they find it too small. We also try to keep it short and to the point."* Other interviewees mentioned: *"Both our software and explanations are structured with steps that the client needs to follow. Starting with an explanation and then the assignments and another explanation and then another assignment."* In summary, the interviewees listed the following functional measures:

- A maximum B1 level (independent user) of writing in Dutch.
- Video explanation by practitioners instead of autonomous animations.
- Digital call function to contact practitioners for questions.
- English modules for students.
- Easy alternative kids' program.
- Magnifying glass and extra information button.
- E-learnings (electronical learning procedures that guide the patients online and educate the patients on usage of the eMental care platform).
- Chronological video guidance.
- Practice accounts.

- Module customization options (for example customizing a module by eliminating or adding extra treatment techniques specified on the mental issues of a patient).
- Forum for frequently asked questions (FAQ).

4.1.3 Measure to increase self-confidence

Thirdly, interviewees mentioned measures taken to increase the patients' self-confidence level. An example of an interviewee statement is: *"What we do when elderly people use the platform is that we ask the practitioners to sit with them and go through the software together for the first time to see how they react."* Interviewees believe that this can make patients more self-confident. Additionally, interviewees mentioned that they give the patients control over the treatment. The following statement was made by an interviewee: *"No, the whole program is available directly when they subscribe. We do that because we want the patient to have the freedom to decide themselves on how they want to follow the treatments."* Interviewees believe that by giving the patients control over their treatment, they get more motivated and spend more time on the platform. This results in more user experience and higher self-confidence. On top of that, interviewees mentioned that they provide the treatment blended to make the patient aware of the practitioner's control on their treatment. This awareness is created due to the fact that blended treatments consist out of online treatments combined with face-to-face meeting with the practitioners. The interviewees stated this as follows: *"The patients always have a face-to-face meeting with the practitioner every two weeks controlling the negative outcomes".* Interviewees believe that a double check by a practitioner will increase patients' confidence, since they know that the practitioner will intervene in case something goes wrong. Another measure mentioned by interviewees to increase self-confidence is preparation of patients. One interviewee noted the following: *"We do tell the clients that in case of a crisis they need to pick up the phone and call the practitioner. Don't send us a message using the eMental care platform or email. Pick up the phone and call the crisis phone number that we have provided."* Interviewees believe that preparing the patient extensively will result in them being confident in using the platform. A full overview of measures that are taken is listed below:

- Extra guidance and patient preparation to increase self-confidence.
- Creating awareness of control and risk to increase self-confidence.

- Give patients control over their treatment to increase their confidence.
- Offering blended treatments to increase awareness of control.
- Limit false diagnoses by providing blended treatments instead of fully online treatments to limit demotivation and loss of self-confidence. With blended treatments the practitioners keep control over the diagnoses and treatment while with fully online the patients are in control of their diagnoses and treatment. Consequently, the risk of false diagnoses and demotivation is bigger with fully online treatments since it is based on patient input and capabilities while blended is based on knowledge and experience of practitioners.

4.1.4 Measures to increase impartiality

Fourthly, interviewees noted measures to increase the platform's impartiality. When asked about the impartiality measures, one interviewee made the following statement: "*They can also reject data sharing and still use the treatment and then their data will not be used for scientific research."* Interviewees believe that offering the patient full control over their data will increase impartiality, since they get help even if they do not want to share their data. In addition, interviewees mentioned that they keep the treatments personal by providing personal attention to patients. The interviewees noted this as follows: *"We are a company that is not commercially set we take the time for patients and give personal attention."* and *"In cases that you cannot help the patient it is also important to search with them for solutions don't say just we can't help you but tell them what their options are. give them alternatives to help them with referrals where you know they can help the patient."* Additionally, one interviewee mentioned: *"practitioners also contact their patients outside office hours to create a more personal feeling."* Furthermore, they also let the patient decide whether they want to use eMental care instead of encouraging them to use it. This way, the interviewees want to increase impartiality. This was stated as follows by the interviewees: *"We are a company that is not commercially set, we take the time for patients and give personal attention."* and *"Our goal is not to prove that it works, that is something the patients can decide for themselves."* Lastly, interviewees mentioned the financial funding of the treatment by the insurance companies, practitioners' offices, and municipalities as a measure to increase impartiality. This was stated as follows: *"The practitioners subscribe to our platform and the patients*

do not see the financial part in the blended treatments, they just see it as additional help within their treatment." and *"There are costs for the practitioners and the health insurance companies but not for patients since 5 to 7 years ago the decision was made to incorporate the eMental care cost within the insurance package."* Regarding this subject, one interviewee made the following particularly noteworthy statement: *"This is also noticeable in the poor neighborhoods. We see that the obligatory deductible excess is also too high resulting in people avoiding healthcare completely"* This interviewee emphasized that even when the treatment is covered by the insurance company, there is still an obligatory deductible excess bill of € 385, - which patients must pay. A complete list of measures to increase impartiality mentioned by interviewees is included below:

- Human interaction instead of autonomous feedback (personal attention for patients).
- The patient is fully in control of their data.
- Funding from the government, municipalities and insurance companies.
- Usage is fully optional, there is no obligation.
- The patient decides for themselves about the quality of eMental care treatment.

4.1.5 Measures to increase confidence in the technology

Fifthly, interviewees mentioned measures that are focused on increasing the patients' confidence in the technology. When asked about these measures, one interviewee responded as follows: *"Yes, patients do get informed on the effectiveness of the technology and techniques. For this, we use scientific research and experiences of other patients".* Interviewees noted that informing patients about the effectiveness and the positive experiences of other patients will increase their confidence in the technology. Additionally, interviewees mentioned that communicating the benefits of the technology and how it can help patients on short and long term helps to increase confidence in the technology. This was stated as follows by an interviewee: *"Well, I think that the start is really important. We try to convince them to see the problem they have and how the eMental care can help. Next to that we use motivation techniques, to make them realize what eMental care can do for them in the short and long term."* In addition to these measures, the interviewees mentioned that they inform the patients about similarities between eMental care and normal treatment to express how minimal the change is. As a last measure,

interviewees highlighted the importance of motivation during the treatment to create a realistic image of the treatment for the patient, hence limiting treatment failure and increasing confidence in the technology. Interviewees noted this as follows: *"We tell the clients that it is almost interchangeable with the regular treatment process."* and *"Next to that we also tell the patients during the intake that motivation is really important during this treatment, making sure that the patients don't take it too lightly."* A complete list of measures mentioned by the interviewees is included below:

- Create awareness of patient problems and which eMental care treatments are possible.
- Highlight the proof of results based on scientific research and patients' experiences.
- Deliver the eMental care blended instead of fully autonomous since this will make patients aware that there is also a practitioner that keeps an eye on the progresses and intervenes when the platform malfunctions. This increases the confidence of patients in the technology since they know that the technology is also controlled by the practitioner.
- Create data security awareness and transparency on data collection.
- Open and honest communication with patients.
- Terms and conditions to inform patients on privacy and security.
- Restrictions by practitioner to control the treatment.
- No standardization of treatments.

In summary, the data points out that eMental care platform owners and service providers take functional and non-functional measures to reduce complexity while simultaneously taking measures to increase impartiality, self-confidence and confidence in the technology. Interviewees tend to believe that a combination of these measures will impact eMental care adoption positively. For a visual representation of the results regarding measures against trust barriers, see *"Figure 6. Visual representation of theme F part 1"* and *"Figure 7. Visual representation of theme F part 2".* These figures provide a clear overview of the concepts and the number of interviewees that contributed to generate that concept and theme.

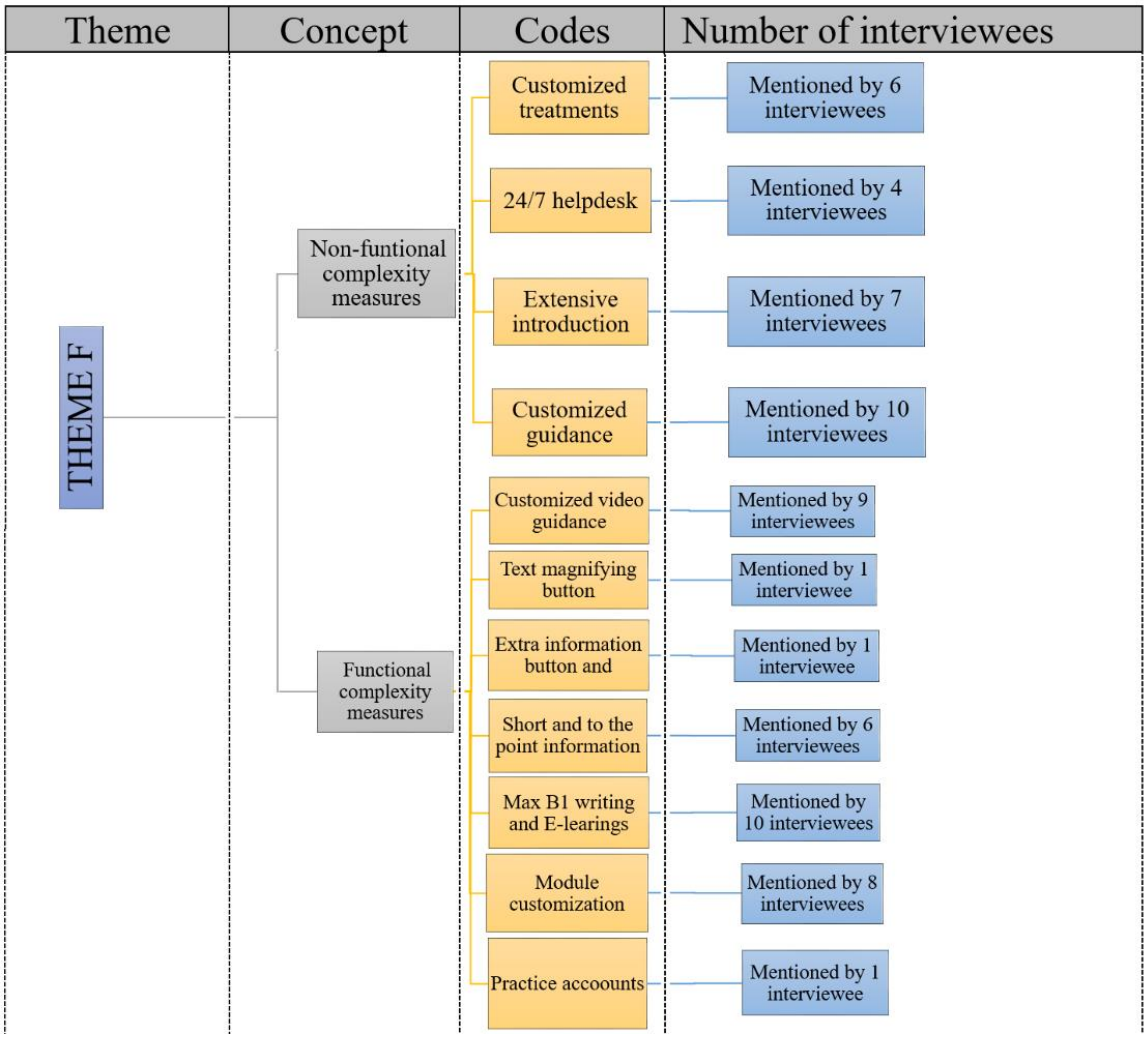

Figure 6. Visual representation of theme F part 1

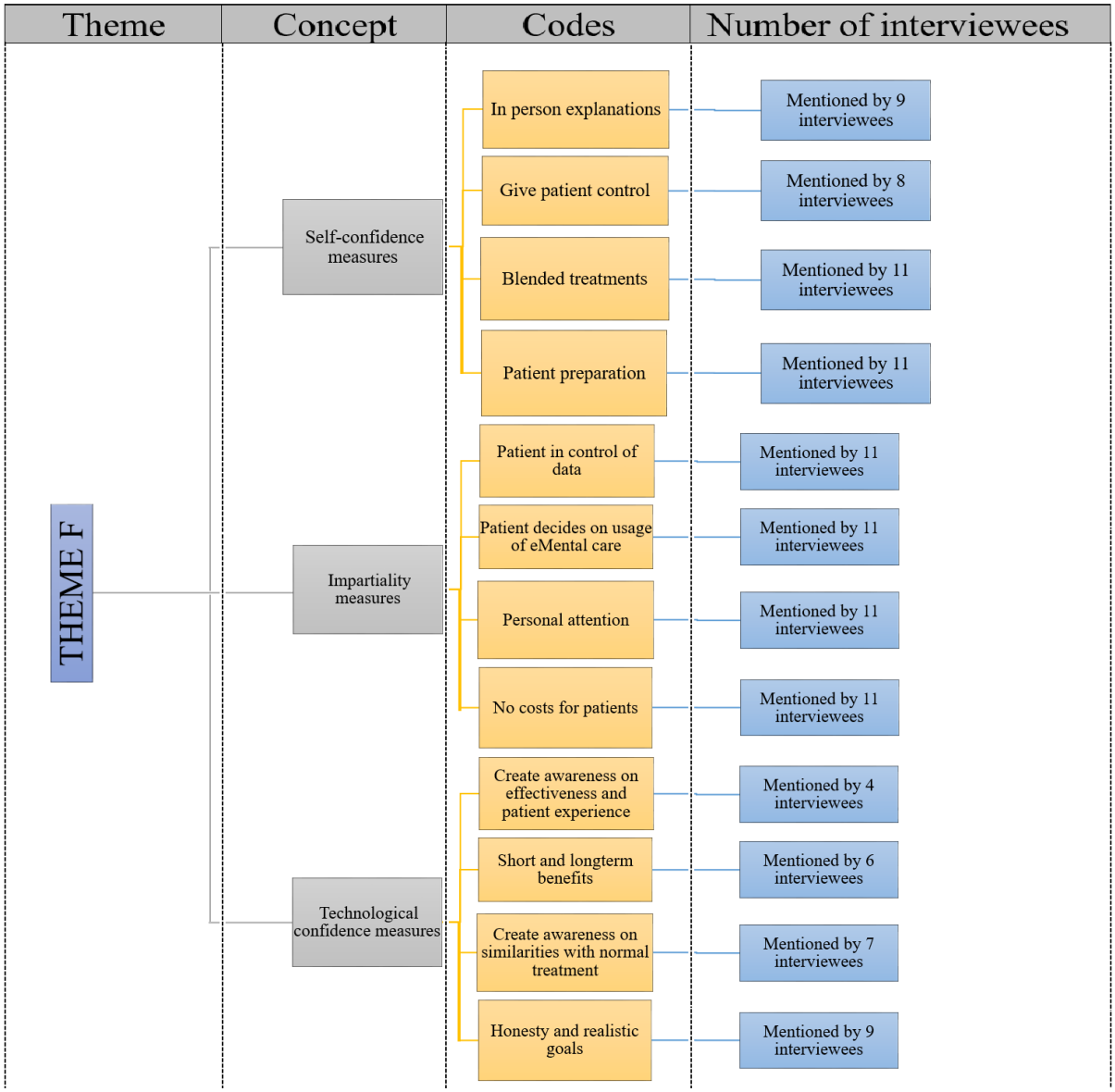

Figure 7. Visual representation of theme F part 2

4.2 The impact of external entities on eMental care adoption

On top of the measures against trust barriers interviewees also mentioned other influence factors which influence adoption of eMental. This resulted in the second theme, *"Theme A"* regarding the impact of external entities such as COVID-19 crisis, certifications and environmental limitations on eMental care adoption. These entities were mentioned as factors that constantly change and influence adoption levels. For the open and selective codes to generate *"Theme A"*, see *"Appendix 6. Code book eMental care adoption"*.

4.2.1 COVID-19

The desk research on the subject described that trust issues result in barriers for adoption. However, since the entire world is struggling with the COVID-19 crisis, the field research resulted in the external entity COVID-19 that functions as an influence factor that impact the adoption of eMental care. In this case COVID-19 is mentioned because it is currently taking place. However, this could also be a different crisis taking place. When asked about eMental care adoption in relation to the COVID-19, there is a clear pattern visible. The interviewees tend to believe that COVID-19 has resulted in a temporary increase of adoption, only due to the government's social distancing approach. Interviewees noted that, as a result of social distancing, practitioners and patients could not meet in person and had to use digital platforms to communicate. As a consequence, the adoption of digital communication has skyrocketed, including eMental care platforms, which offers digital communication options as a service. However, while the adoption of the eMental care platforms has increased due to the pandemic, the usage of these platforms remains low. One interviewee noted: *"Now we do see digital calls also as eHealth and we have seen an exponential growth in that area of eHealth. But if there has been an extreme growth in our first definition of eHealth regarding the eMental care modules then I have to say no there has not been a noticeable growth in that area."* While respondents also mentioned a positive but slow trend in acceptance of eMental care before COVID-19, they noted aversion from patients and practitioners. On that subject, the data described that COVID-19 has resulted in less aversion from patients, since there were only two options. Patients could decide to use eMental care or they could stop their treatment and wait until the social distancing regulations and impact of COVID-19 blew over. Additionally, interviewees noted that COVID-19 has had a negative impact on the complexity issue regarding eMental care. The following was noted by an interviewee: *"We see that motivating and helping people this way is harder than sitting next to them and explaining how the system works."* This shows that the social distancing aspects of COVID-19 have resulted in complexity issues.

4.2.2 Certifications

Another external entity was mentioned by interviewees as the influence factor the government. When respondents were asked about the adoption of eMental care, they emphasized the importance of

governmental certifications which impact adoption on a high level. A large part of the respondents mentioned that the patients and practitioners base their decision regarding adoption on the certifications that a platform has. The certifications that were mentioned were all part of the General Data Protection Regulations (GDPR) which consists out of rules relating to the processing and free movement of personal data. The goal of this regulation is to protect the fundamental rights of individuals regarding their personal data (Consulting, 2021). The interviewees mentioned certifications from the International Standardization Organizations (ISO 27001) focused on data security and mitigation of data breaches risk. Additionally, they also mentioned the administrator of the earlier mentioned certifications for the Dutch market named NEderlandse Norm (NEN). One of the interviewees described the impact as follows: *"I do think that the security part regarding ISO certifications is a really important aspect based on which practitioners and clients select an eMental care platform."*

4.2.3 Environmental limitations

On top of the two external factors, interviewees mentioned a third external influence factor which impacts the adoption of eMental care. The data show that interviewees believe that adoption of eMental care is slowed down by financial limitations and time limitations. In the case of eMental care, there are mental care practices which do not have the funds to incorporate eMental care into their treatment. In addition to that, the practitioners have limited time and motivation to delve into the technology in order to understand it properly. This results in less referrals from practitioners to use an eMental care treatment. Furthermore, the data pointed out that the eMental care technology is limited regarding the services because it is not possible to take away the impersonal aspects fully, since it is a treatment offered digitally. One interviewee emphasized this multiple times by stating the following: *"But the practitioners can't be available 24/7 due to the current structure therefore we can't exclude the impersonal aspects fully."*

In summary, it is clear from the responses that, next to the trust barriers, external entities are described as influence factors which have a big impact on the adoption of eMental care. The impact of COVID-19 has been extreme, but only temporarily triggered the usage of digital communication options, which did not include eMental care treatment usage. COVID-19 only decreased the aversion of patients and

practitioners because it limited the options for treatment while simultaneously strengthening the complexity issues. Once the general treatment methods were possible again, practitioners and patients went back to the normal treatment methods without hesitation. Adoption is on a high level impacted by the governmental certifications, environmental limitations regarding financial and time resources, as well as the practitioner's knowledge and motivation. For a visual representation of the results regarding the impact of external entities, see *"Figure 8. Visual representation of theme A".* This figure provides a clear overview of the concepts and the number of interviewees that contributed to generate that concept and theme.

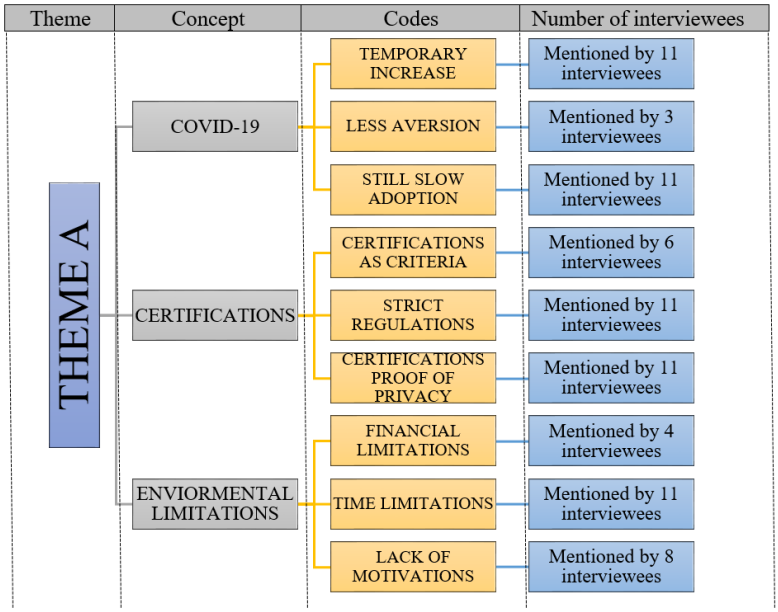

Figure 8. Visual representation of theme A

4.3 Practitioner impact on eMental care adoption

While this research focused on the perspective of platform owners and service providers regarding patients' trust issues, the data also pointed out that practitioners have a big impact on the adoption of eMental care. This resulted in the third theme, *"Theme B"* regarding practitioners' impact on eMental care adoption. Multiple interviewees emphasized that practitioners have a lot of influence on the adoption of eMental care and must also be integrated as an influence factor. Therefore, they described that practitioner participation, attitude and skill level regarding eMental care are crucial. See *"Appendix 6. Code book eMental care adoption"* for a complete overview of codes and concepts.

4.3.1 Practitioner participation level

Regarding the participation level, the interviewees mentioned that high practitioner participation level results in high patient activity level. Interviewees mentioned the following*: "Activity level of the practitioner also results in better adoption."* and *"When the practitioners are actively giving the patients feedback and tracking the treatment, we see that the patients are more motivated and think, I need to do something on the platform so I can discuss it while I have my face-to-face appointments."* Furthermore, the data pointed out that the patient level of motivation to use eMental care is highly influenced by practitioners. Interviewees agreed on this, with one interviewee stating the following: *"It is mostly influenced by the practitioner's activities. They are the main key to motivation."*

4.3.2 Practitioner skill level

Besides the practitioner participation level, the platform owners and service providers agreed on the impact of practitioner skill level. The data pointed out that practitioners must have the right skills to treat patients properly using eMental care, as well as skills to explain the platform to patients. Interviewees mentioned that, in some cases, practitioners lack the skills to treat patients properly through eMental care. The data showed a recurring pattern regarding eMental care adoption and practitioner knowledge on innovation, IT, privacy regulations and motivational techniques. In many cases, the interviewees mentioned that the practitioners lack the skills mentioned above. This was noted as followed by the interviewees: *"Second reason is practitioners and healthcare providers are educated to help patients and not to innovate with new ideas resulting in a decrease after the lockdown."* and *"This is really important because I still see some practitioners that can't even work with the technology. In some cases when they are using the same setup with no changes at all, they still manage to get stuck*." Another response that was particularly noteworthy was the following note made by an interviewee: *"I have also noticed that practitioners sometimes have a hard time with the privacy law. It is not clear for them what they can and what they can't do to conform to that law."* This clearly shows that some practitioners lack the confidence to use eMental care, making a referral for a patient even more difficult.

4.3.3 Practitioner attitude

In addition to the skill and participation level of the practitioners, the interviewees pointed out that the practitioners' attitude towards eMental care is of high importance and still causes issues. Interviewees mentioned that practitioners are conservative and do not want to change their way of treatment. This was described as follows: "*They only use it because they must, but they prefer their own way of treatment because eMental care treatments are different than their way."* Furthermore, interviewees noted that practitioners still have some concerns around automation and being replaced by a machine. One interviewee noted the following: *"The business model problem is more an issue with the practitioners. They sometimes say that they think eMental care is made to replace them."* On top of that, the practitioners' attitude towards eMental care is negative because they mistrust the technology. Interviewees mentioned the following reasons: *"The practitioners also think you can't play with patients' minds like that, it has to be proven and safe"* and *"No, I haven't experienced it, but I did see a lot of complaints from the practitioners who were not happy with the technology. The practitioners find it too confusing and hard to grasp*." The last note that interviewees made regarding practitioners' attitude was that practitioners tend to give up quickly on eMental care when they experience a threshold. One interviewee mentioned this as follows: "*A practitioner told me, If the client does not complete assignments, then it's their decision and if they do not use it at all that is fine to so be it. In these cases, it might be better to not offer eMental care at all. If that is the mentality, then the practitioner might need to think about what they are doing."*

4.3.4 Measures to adjust how practitioner impact on adoption

To counter the negative impact of practitioners on eMental care adoption, the data pointed out measures taken by the eMental care platform owners and platform service providers. Data pointed out that platform service providers focus on discovering what the reasons are for the practitioners' negative attitude, as well as how they can change that attitude. Besides that, service providers and platform owners emphasize that eMental care is used in addition to the normal treatment, and not instead of the normal treatment. While many interviewees pointed out that practitioners lack the knowledge and skills

to provide eMental care treatments, one interviewee stressed that there are educational programs offered to practitioners before they start providing eMental care.

In short, the data clearly shows that practitioners have a notable influence on eMental care adoption. Practitioners are perceived as influence factor that must be monitored closely to maintain and accelerate adoption. Interviewees noted that there are substantial issues regarding practitioners' skill level, participation level and attitude. To counter these measures, interviewees noted that they focus on communication with practitioners and in some cases offer educational programs for practitioners. For a visual representation of the results regarding practitioner impact, see *"Figure 9. Visual representation of theme B"*. This figure provides a clear overview of the concepts and the number of interviewees that contributed to generate that concept and theme.

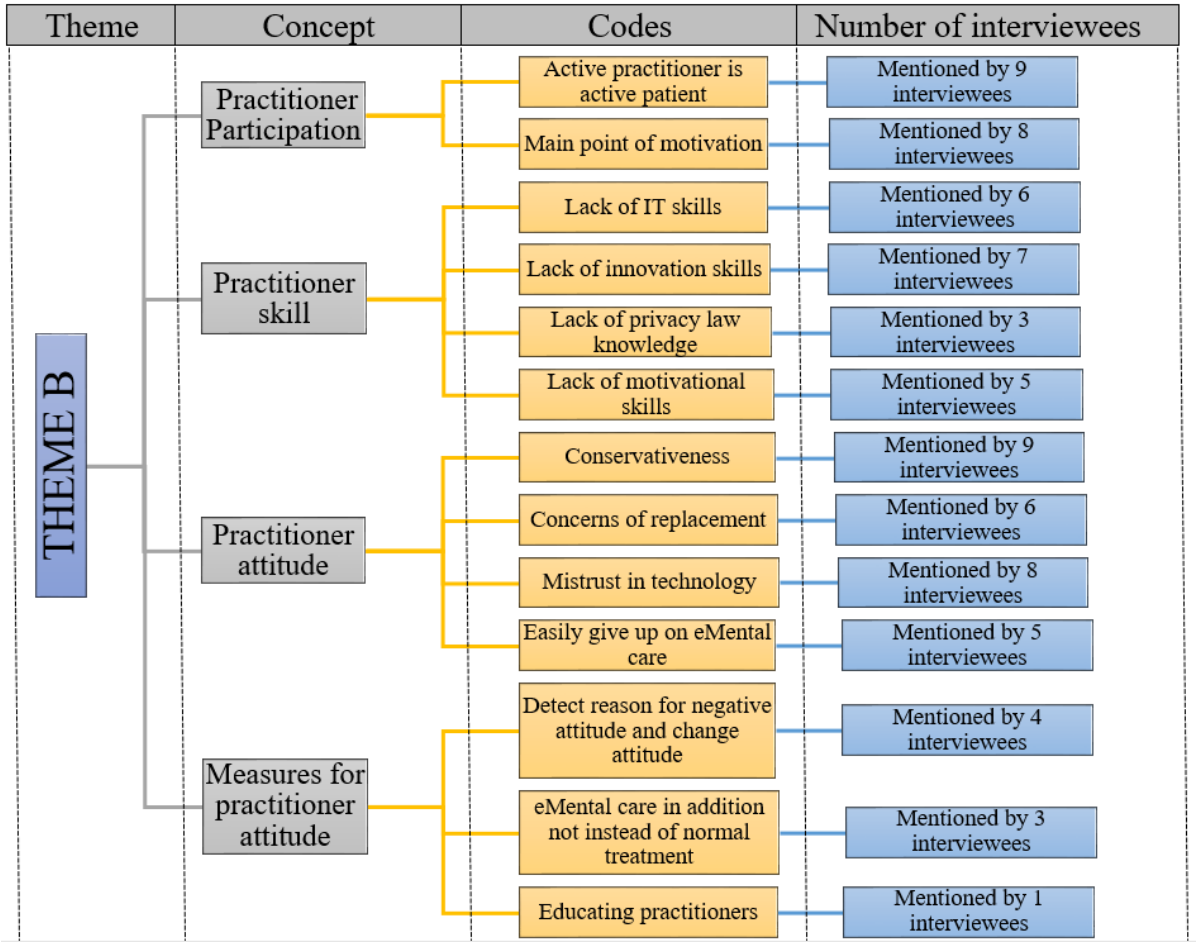

Figure 9. Visual representation of theme B

4.4 Patient impact on eMental care technology

As with the practitioners, the data pointed out that patients also impact adoption of eMental care as an influence factor. The trust barrier researched during this research is part of this influence factor. This resulted in the fourth theme, *"Theme C"* regarding patient impact on eMental care adoption. On this subject, the interviewees highlighted the impact of patient preference for technology, patient skill level, patient error and patient attitude. See *"Appendix 6. Code book eMental care adoption"* for a complete overview of codes and concepts.

4.4.1 Patient preference for technology

Regarding patient preference for technology, the interviewees pointed out that some patients do not prefer fully autonomous treatments by stating the following: *"We have also seen that not all the patients want to work fully autonomously. Especially elderly people have trouble with digital technology."* Another interviewee disagreed with this by stating: *"I do not agree with that, what we have seen is that the elderly have more time to sit with a tablet and research everything to understand it."* On average, the interviewees agreed that either elderly have a hard time with the technology, or they are too old to use it properly. Furthermore, interviewees stressed that patients do not prefer the technology, because they come to a mental healthcare facility to speak with another human, not to get login information for a digital treatment. On top of that, one interviewee noted that: *"People also have the idea that when you need help you need to speak with a human in a room and not a computer."*

4.4.2 Patient skill level

In addition to the technological preferences, the data revealed limitations of patient skills that result in patient errors. Interviewees noted that they do not focus on elderly of 85 years of age or older, as eMental care is not the right treatment for them. To argue this, one interviewee said the following: *"Because when they are 85 and you first need to teach them how technology works and then give them treatments."* Interviewees believe that, in such cases, teaching elderly to grasp the technology could take more time than the treatment itself. Regarding other patient groups, the interviewees noted that patients must meet basic requirements including IT knowledge, access to a PC or tablet, as well as having at least a basic

proficiency of Dutch before usage of eMental care. This was mentioned as follows: *"With keeping in mind that the clients have at least basic computer skills. We have also set a requirement that the user needs to have a tablet or a PC because a smartphone is not that convenient for this case. We also expect a degree of independence from the clients to get the most out of the process."* and *"But at the end you do need a basic level of education and Dutch to follow the treatments."*

4.4.3 Patient errors

In extension to the requirements, the interviewees mentioned patient errors which impact adoption negatively. Interviewees believe that wrong usage, lack of knowledge and input from patients result in less motivation, unrealistic expectations and bad experiences. They expressed this by stating the following: *"The treatments can help if the patients use it consistently. This is a threshold that affects the treatments a lot. eMental care can only help and function well if there is input from two sides."* and *"We have also noticed that some clients were happy that this functionality existed but there were also clients that used it without thinking about it. They took it naturally like it is nothing special. This resulted in some negative experiences regarding the treatment because the clients had the idea that video calling will work perfectly."* On top of that, interviewees mentioned that patients tend to criticize the quality of eMental care based on their own environmental or physical limitations. They stated the following on this subject: *"In those cases when the client did not have enough knowledge of technology or they had an old phone with Wi-Fi problems they could not follow the treatment as they should. These clients were also negative about the treatment while the treatment was good but they could not use it properly."*

4.4.4 Patient attitude

The last point regarding this theme is the patients' attitude towards the eMental care technology. The interviewees noted that, overall, patients are positive about eMental care. They stated the following: *"From experience we can say that we have a good program which leaves 9 out of 10 patients very satisfied."* However, they emphasized the importance of a proactive attitude from the patients to give feedback and the necessity of human aspects for patients' positive experience. Interviewees believe that eMental care will never be equal to interaction and relation with a human, while patients have the concerns that eMental care could replace their normal treatment. This was expressed as followed: *"The*

only negative thing I hear is that clients are afraid that the eMental care will replace the normal treatment." This clearly reveals that patients have concerns regarding automation changes which practitioners are not planning on implementing. This misinterpretation combined with patients' bad experience have led to a negative attitude from patients towards eMental care technology.

In summary, interviewees noted that in addition to the trust barrier the influence factor regarding patient impact also has other aspects causing adoption issues. Interviewees mentioned that patients do not prefer fully autonomous treatments, since they believe that treatment should be given by a human in a practitioner's office. On top of that, patients tend to unconsciously imprint their own limitations to criticize the technology. Furthermore, patients mistrust the technology due to bad experiences and they are afraid that the technology will replace their normal treatment, resulting in a negative attitude towards the adoption of eMental care. For a visual representation of the results regarding patient impact, see *"Figure 10. Visual representation of theme C"*. This figure offers a clear overview of the concepts and the number of interviewees that contributed to generate that concept and theme.

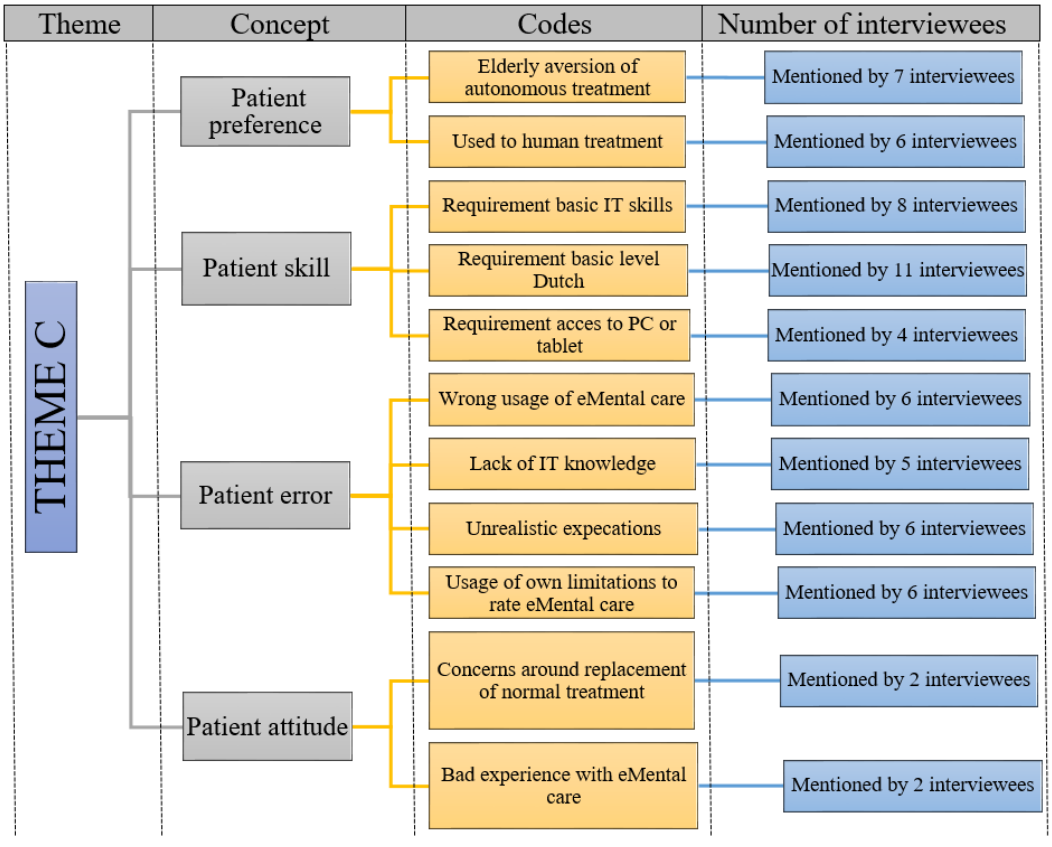

Figure 10. Visual representation of theme C

4.5 Technology impact on eMental care adoption

When asked about eMental care technology, interviewees tend to believe that the technology has its limitations and advantages that function as influence factors for adoption. This resulted in the fifth theme, "*Theme D"* regarding technology impact on eMental care adoption. See *"Appendix 6. Code book eMental care adoption"* for a complete overview of codes and concepts.

4.5.1 Technological limitations

For limitations, the interviewees mentioned that eMental care is immature. They stressed that the technology is only suited for simple cases, since it could be hard to control when used as self-treatment at home. In a complex mental issue case, keeping control is crucial, since the negative impact of failure is high. Therefore, the technology is not suitable to treat patients with complex mental issues. On top of that, a majority of the interviewees mentioned that while there are some cultural aspects regarding multi-cultural pictures and different languages integrated, these features are still limited. For example, interviewees noted the following: *"My experience is that we still have a long road ahead of us regarding different languages."* The interviewees noted that most of the modules are only available in Dutch. In some cases, there are modules available in other languages, however, the main platform is still in Dutch. This makes it hard for non-Dutch-speaking patients to navigate to the module with the preferred language. Besides that, the interviewees mentioned that the technology is based on complex treatment standards revolved around methods and techniques meant for practitioners. These also need simplification to make it understandable for patients in order to create more trust and affinity. *Interviewees noted this as follows: "But I have to say that the modules are a bit to complex sometimes. I can imagine that people with a lower IQ have a hard time understanding the modules."* And *"I also fully agree with you regarding the complexity of the technology. People prefer to learn something step by step and with eHealth it is sometimes overwhelming and complex."* Furthermore, there is little information available for patients on what the possibilities of online treatments are. From the practitioner's perspective, interviewees also mentioned limitations regarding loss of valuable signs. The interviewees stated the following: *"The reason for this is that as a practitioner, you see less when it is not a personal meeting. You miss out on valuable body language signs and facial expressions to*

conclude on the state of a patient and that is something that can cause trust issues." The last note interviewees made on this subject was the lack of process descriptions and agreements. Interviewees tend to believe that the eMental care process is not always maintained well by the practitioner. To argue that they noted the following: *"In that process there is not enough communication regarding expectations and agreements. I have also had some clients that told me: I complete my module and send messages to the practitioner, but I never get a reply."*

4.5.2 Technological advantages

In contrast to the limitations, the interviewees mentioned flexibility, data reliability and efficiency as advantages. When asked about the eMental care technology, one interviewee noted the following: *"Next to that there are long waiting lists for treatments, which no one likes. Therefore, we tell them why not work on your problems while you are waiting."* This way, the interviewees emphasized that there is no waiting list for eMental care treatment, and patients can follow treatment when and where they want. In addition to that, the interviewees mentioned that the platform provides patients with trustworthy and evidence-based information. They argued this by stating the following: *"We ask them why not use eMental care where you find yourself in a trustworthy environment with scientific substantiated treatments."* The last advantage interviewees noted was the efficiency of the eMental care platform. The interviewees described the platform as a triage followed by a treatment with no fixed appointment moment every two weeks and direct feedback provided daily.

In short, it is clearly noted that eMental care technology has limitations revolved around complexity, cultural limitations, lack of agreements and loss of valuable signs. In contrast to the limitations, there are advantages revolved around flexibility, reliability and efficiency. The advantages and limitations of the technology also function as influence factors which must be monitored closely in relation to adoption levels. For a visual representation of the results regarding technological impact, see *"Figure 11. Visual representation of theme D"*. This figure offers a clear overview of the concepts and the number of interviewees that contributed to generate that concept and theme.

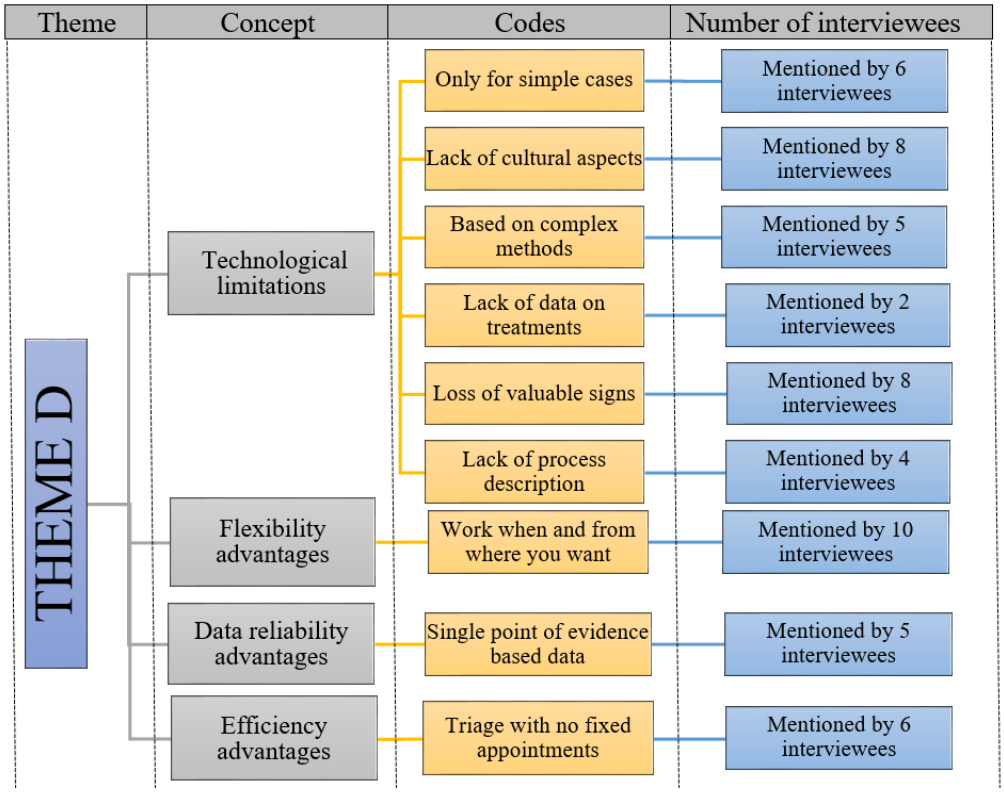

Figure 11. Visual representation of theme D

4.6 Impact of platform owner on eMental care adoption

The data pointed out that the platform owners also see themselves as an influence factor which could negatively impact the adoption of eMental care. This resulted in the sixth theme, *"Theme E"* regarding impact of platform owners on eMental care adoption. Interviewees mainly noted that the platform owners have a predefined perspective of patients and that the developer and user goals are not always in line with each other. This can result in miscommunication and confusion within the user group. Interviewees stated this as follows: *"I always have the general Dutch citizen in mind who is educated, and that is wrong. You must think about the bigger picture and different origins, different languages, cultural aspects and expectations."* and *"I have had a client who became more insecure due to the usage of eHealth because he did not understand it. The client mentioned that he did not like the program because it took him way too long to understand the assignment while it should have been an easy assignment. This resulted in him becoming more insecure and ultimately rejecting the usage of the application. When I looked at the application to see where it went wrong, I noticed that it was the goal of the developer to make the assignment a bit of a struggle to improve concentration."*.

5. DISCUSSION

In order to answer the main research question, the results were analyzed to find relevant data based on which a conceptual model combined with a theory can be developed and a conclusion can be drawn. In this chapter, the results are interpreted, after which the implications, limitations and theory will be discussed. The chapter starts with the key findings.

5.1 Key findings

This study is among the first research that has focused on the subject of *"How do platform owners and service providers cope with trust issues from patients related to a multi-stakeholder platform like eMental care in order to increase adoption within Dutch mental healthcare (GGZ)?"* The results indicate that eMental care platform owners and service providers take five types of measures to cope with the trust barriers regarding eMental care adoption. These five types of measures are taken to counter the issues regarding complexity, impartiality and self-confidence, highlighted by existing literature from Berkowsky et al. (2015) and Heyden et al. (2017).

To counter the complexity issues, eMental care platform owners and service providers take functional measures consisting of technological tools and modifications. In addition, non-functional measures which focus on psychological, sociological and human aspects are taken. For example, one of the functional measures is an extra information button that is added to the platform. An example of a non-functional measure is the patients receiving extra guidance from the practitioner in order to reduce complexity. Furthermore, the results indicate that there are measures taken regarding patient preparation for treatment and creating awareness on the fact that the treatment is controlled by practitioners. This way, the patients' self-confidence is increased by preparing them and ensuring that someone is double checking their activities. To increase the confidence in the technology, the patients are informed about the reliability of the platform by using scientific research and data on positive patient experience. In addition to that, impartiality is increased by providing the platforms almost free of charge. The only

expense for the patients is the obligatory deductible expenses that the patients must pay regardless of eMental care usage.

With a combination of these five types of measures, eMental care platform owners and service providers aim to solve the complexity, impartiality and self-confidence issues to cope with the trust issues regarding eMental care adoption. It is expected that mitigating the trust issues will result in higher adoption by patients which is of high importance since eMental care is based on a multi-stakeholder platform which can only function when all the stakeholders participate. However, the results indicate that other entities besides trust barriers also have an impact on eMental care adoption. Adoption is a dynamic continuous process which is continuously impacted by changes and not a static fixed process. These new entities that also impact adoption were not mentioned by existing literature. Platform owners and service providers mentioned them as influence factors that revolve around impact of external entities such as COVID-19, the government and environmental limitations. Besides these influence factors, the practitioners, the patient, the platform owner and the technology impacts adoption as influence factors. Regarding these influence factors, the results of this research describe issues but does not describe any additional measures, while they do impact adoption negatively in some cases. Therefore, the process of accelerating adoption is described as continuous repetitive process where firstly research must be conducted to collect data on potential new barriers. Secondly the data must be analyzed to detect the barriers and issues. Thirdly measures must be taken against those barriers and issues to make adaptation possible. Fourthly the measures must be implemented properly to overcome the barriers and issues.

5.2 Interpretation of results

The desk research based on existing literature pointed out that patients gave three main reasons for their mistrust in the technology. These reasons are in line with the complexity factors of the external situational variability layer and the self-confidence factor of the internal situational variability factor which are part of the trust variability model described by Hoff & Bashir (2015). First, patients mentioned that a complex eMental care platform increased their mistrust in the platform, since they are not able to use it properly. Therefore, they have doubts about the results of the platform (Berkowsky et al., 2015).

Second, the patients mentioned that they had doubts about their own skills to use the platform properly, hence resulting in less adoption (Heyden et al., 2017). Lastly, patients mentioned that their mistrust was increased if the platform had a commercial appearance (Sillence & Blythe, 2019). This resulted in patient mistrust because patients felt that the main goal of the platform was to create revenue instead of treating patients. As expected, these three issues were also noticed by platform owners and service providers. In order cope with the trust barrier, it is crucial for the platform owners and service providers to take measures against these issues. This was also the case, since the data from the interviews show that platform owners and service providers take five types of measures, which are in line with the factors revolved around situational and learned variability described by Hoff & Bashir (2015). As discussed in the literature review, the dispositional variability is fixed and cannot be changed. Moreover, the data shows that there are no measures taken regarding the dispositional variability. However, the internal and external situational variability is not fixed and can be changed. This is visible when looking at the measures that are taken to change the internal and external factors of situational variability to increase the patients' trust in eMental care. Some examples of measures to change the internal and external factors of situational variability are functional measures such as magnifying glass and extra information button to decrease system complexity which is a factor of external variability. On top of that non-functional measures such as extra guidance and extensive introductions are taken to reduce the task difficulty which is also a factor of external variability. As for internal factors of situational variability, platform owners and service providers take measures such as creating awareness on proof that the eMental care treatments work using scientific research. With this measure the confidence factor of internal variability is targeted. Furthermore. platform owners and service providers take honesty and opens as a measure to increase self-confidence of patients in order to ensure that patients use the platform with confidence. With this measure they aim to be honest and open on which risks eMental care entails and how these risks are mitigated to target the self-confidence factor of internal variability. In addition, learned variability is also changeable and measures which focus on changing the initial and dynamic learned variability by positively influencing the factors within this layer were noticed. Examples of measures for the learned variability are measures that focus on creating awareness for potential patients by reflecting positive experiences of existing patients with eMental care. This measure focuses on

experience before usage of eMental care targeting the initial learned variability. Additionally, functional and non-functional measures such as chronological video guidance, the FAQ and 24/7 helpdesk are used to target the dynamic learned variability which focusses on experiences during usage of the eMental care platform. Other measures platform owners and service providers have taken to influence these factors and layers of the trust model is described below.

It appears that both functional and non-functional measures are taken to reduce the complexity of the platform. These measures are largely taken to reduce complexity, however guiding patients more extensively does not make the platform less complex. These measures mainly focus on preparing the patients to use the platform better. Consequently, this results in extra work for practitioners while the goal is to provide a platform that patients can use on their own to become more independent. This means that these measures could increase the adoption of eMental care while simultaneously increasing pressure on practitioners who already have limited time to get familiar with eMental care technology. In addition, there are functional measures taken which make it possible to customize the treatment based on the patient's age and education, with a maximum of B1 writing level. This level is perceived by all interviewees as a basic and easy level of writing, while it is on an intermediate level. For them to offer the platform on a basic level, they must lower the level to A1 or A2, which is a basic Dutch level (Groningen University, 2020). Another functional measure mentioned was the use of prerecorded video guides which are used to guide patients in combination with e-learnings and practice accounts. In contrast to the non-functional measures, these measures reduce the complexity of the platform while simultaneously reducing pressure on the practitioners.

Patients' insecurity, especially that of elders, has also resulted in less trust (Heyden et al., 2017). Increasing self-confidence can be quite complex, since it could result from someone's personality. To cope with these issues, eMental care platform owners and platform service providers mentioned measures regarding extra guidance to prepare patients for the treatment. Since this issue is mainly caused by elderly that already have a hard time grasping the technology (Milos Nymberg et al., 2019), there is no alternative to face-to-face guidance to prepare them and increase their confidence. In cases in which video guidance is sufficient for patient preparation, it is preferred over face-to-face guidance to reduce

time pressure on practitioners. Offering the treatment blended is also mentioned as a measure to increase confidence while creating awareness of control. While blended care still occupies the practitioners for some time, it also offers independent treatment at home, which saves time. Therefore, the usage of blended care has the upper hand over the fully autonomous treatments for some patient groups. In cases in which mental issues are not complex and patients are open to fully autonomous treatment, autonomous treatment is introduced. Using this manner, platform owners and service providers increase patients' self-confidence by properly preparing them and offering them the option for blended and autonomous treatment, therefore increasing trust in eMental care.

Existing research has also pointed out that low impartiality results in trust issues and less adoption (Sillence & Blythe, 2019). To counter this issue, patients' confidence in the technology is increased by notifying the patient on the scientific evidence upon which the eMental care treatments are based. In addition to that, the platform's valuable benefits are mentioned in combination with the positive experiences of other patients, while honesty and transparency are emphasized. All eMental care platform owners and service providers mentioned that they recommend that the patient use eMental care, however, they leave it completely up to the patient to make the decision, in order to earn their trust. On top of that, the eMental care treatments are offered free of charge to patients, thereby eliminating the impartiality issues to a large extent. Only for the less wealthy part of the population, the deductible excess could still be a reason to not adopt. Using this approach, platform owners and service providers increase trust and therefore adoption of eMental care.

The adoption of eMental care is described as a continuous process which must be executed repetitively in order to maintain and increase adoption levels. Therefore, the results added data on new entities described as influence factors that could impact eMental care adoption. In addition to the earlier stated issues generated from existing literature, the research pointed out that external entities, practitioners, patients, the technology and platform owners impact adoption. External entities such as COVID-19, governmental certifications and environmental limitations were mentioned. Environmental limitations, such as time shortage of practitioners and financial constraints, are described as issues for eMental care and appear to have an impact on adoption level. The results imply that while the financial constraints

sometimes prevent eMental care services from being offered, the time constraints of practitioners result in less knowledge about eMental care. Therefore, the practitioners cannot spare time to delve into the technology to understand it and since this results in aversion, they are not open to providing it as a service to their patients. Consequently, they do not inform their patients on the possibilities and patients do not even know that eMental care is a possibility.

Moreover, the results indicated that COVID-19 has given eMental care a temporary boost. However, the adoption declined rapidly back to normal levels after regulations were loosened. Furthermore, the results indicate that the practitioners' attitudes towards eMental care are still causing problems. Most practitioners are conservative and think that eMental care has been developed to replace them. On top of that, practitioners do not trust the technology and prefer their own way of treatment. This, in combination with the lack of practitioner skill level regarding innovation and technology adoption, might have potentially been the reason for the rapid decline of eMental care adoption after the rapid increase due to COVID-19. Platform owners and service providers try to increase the practitioners' trust in eMental care by communicating with them and occasionally offering courses on eMental care, however, this is not sufficient. Since eMental care platforms are based on a multi-stakeholder model, the practitioners are not the only reason for the decline. Patients play a role as well, with the results indicating that patients do not prefer the technology, since they have the idea that when you need mental healthcare you must go to a practitioner's office and speak with a practitioner. Additionally, the lack of technological skills from patients results in patient errors that are used to criticize the eMental care platform. The last group that might have contributed to the rapid decline of adoption after COVID-19 regulations is the platform owners. The results indicate that, in some cases, the developers and users of the platform are not in agreement, resulting in confusing situations. In these cases, the platform is used by a patient for a different goal than what it was developed for. On top of that, there are technological limitations that platform owners cannot mitigate. For example, the technology results in data loss regarding body language and mimic of the patients, or it is not enhanced enough to treat complex mental issue cases. In these cases, the human aspect of a practitioner will always be of high importance, therefore preventing the ability to use fully autonomous eMental care treatments. It appears that the

technological limitations that cannot be mitigated sometimes decrease adoption, as well as bad requirement engineering. Bad requirement engineering decreases adoption since it results in conflicting goals between users and providers because the platform is misinterpreted by one of the two parties. These issues could have also been a reason for the rapid decline after the COVID-19 boost, since bad alignment could result in negative user experience. Besides that, these issues could slow down future adoption levels of eMental care, without COVID-19 in the picture.

Furthermore, the results seem to imply that governmental certifications impact eMental care adoption. Patients and practitioners seem to base their decision of which platform to use on the certifications that the platform has. However, the results also highlighted that patient and practitioner skill levels lack knowledge on these certifications. Interviewees pointed out that, in some cases, practitioners indicate that the terms and conditions including the security and privacy regulations are too complex. This results in insecure practitioners who must treat their patients using a platform of which they do not understand the privacy and security regulations. Logically, this results in less referrals from practitioners, since they are afraid of making mistakes, and since we live in an era where data has become extremely important due to technological developments, the impact of a mistake is even bigger.

It appears that the additional issues mentioned above are not mitigated by extra measures, while they impact adoption extensively. The measures taken against complexity, impartiality and patient confidence do contribute to some extent, however, they are insufficient to mitigate the additional issues.

The expectations regarding this research are confirmed to a noteworthy extent considering that platform owners and service providers confirmed the same issues and offered measures. However, during the research, other influence factors, such as COVID-19 and some other external entities, were found to impact adoption as well. The expectation was that COVID-19 would have increased eMental care adoption permanently since there were no alternative treatments possible and eMental care has many benefits to offer. This was not the case, since the other issues caused by the influence factors regarding patients, practitioners, platform owners and the technology have had a significantly negative impact on adoption. An alternative explanation for these findings could be that the focus was on platform owners

and service providers, to collect data from their perspective. While they work with practitioners on a daily basis, it is possible that their perspective is not fully in line with the practitioners' perspective. Focusing mainly on practitioners could have resulted in different results regarding the rapid decline of adoption once the COVID-19 regulations were loosened.

5.3 Implications of the research

Due to the slow adoption of eMental care (Bradford & Rickwood, 2014), it was decided to research this subject. The goal of this research was to obtain in-depth knowledge on the measures taken by eMental care platform owners and service providers to investigate how they cope with trust issues to accelerate adoption. Since the research was focused on a fairly under-researched subject, there was no existing theory available. During the literature review, it was discovered that there had been some research done on trust barriers within eMental care, which resulted in the three main issues regarding complexity, patient self-confidence and impartiality (Berkowsky et al., 2015) and (Sillence & Blythe, 2019). While these issues were causing delays in the adoption process, there had not been any research done on which measures are being taken to mitigate these issues. Similar to existing evidence, the results of this research pointed out that complexity, confidence and impartiality issues indeed cause problems in adoption of eMental care. In addition, the results build on existing evidence by clearly displaying the measures that eMental care platform owners and service providers are taking to mitigate the issues and break the trust barriers. The five types of measures taken by platform owners and service providers, regarding functional, non-functional, self-confidence, confidence in technology and impartiality measures, make it possible to decide whether the measures are sufficient. On this subject, the results imply that there is room for improvement since the adoption of eMental care temporarily increased due to COVID-19 and rapidly decreased once the regulations were loosened. This points out that the technology, platform owners and service providers were not able to maintain the adoption increase. On that subject, this research also provided new insights regarding additional issues that slow down adoption. The results highlighted that, on top of the existing issues, eMental adoption is impacted by external entities described as influence factors for adoption. These influence factors revolve around practitioners, patients, the technology and platform owners which impact adoption due to the dynamic nature of

adoption. Surprisingly, regarding the practitioners, existing literature pointed out that half of 771 practitioners that were interviewed mentioned to use or have the intention to use eMental care (van der Vaart et al., 2016), while this research emphasized that practitioners are conservative and do not want to change their way of treatment. This could be since current literature has drawn its conclusion based on the input and perspective of the practitioners themselves, while this research approached the subject from the perspective of platform owners and service providers. This points out that there are some differences in perspective regarding the adoption by practitioners. Additionally, the results did not indicate any measures taken against these newly emerged issues, creating opportunities for improvement. To increase adoption of eMental care and to be able to maintain the increase, it is of high importance for the platform owners and service providers to research and take measures against these additional issues caused by the influence factors. In this manner eMental care adoption can be increased which leads to higher participation by patients resulting in a functioning multi-stakeholder platform.

5.4 Limitations of the research

Due to the immaturity of the subject and the explorative nature of the research, there was limited existing literature available on the subject. Consequently, there was no existing literature to compare the results with to increase reliability. Additionally, the focus was on the Dutch mental healthcare, while during the literature review, the only available literature on eMental care was conducted abroad. Since there are cultural, regulation and mentality differences between countries, the results of these studies could be biased and not in line with the Dutch mental healthcare situation. Furthermore, while this research's sample of 11 interviewees was sufficient to generalize the results over our population due to its small size, this research also has potential limitations on that subject. Due to the COVID-19 crisis, only three platform owners and eight platform service providers were able to be interviewed for the data collection. Since the collected data was from a sample group that was not equally divided between platform owners and platform service providers, this resulted in more input from platform service providers compared to platform owners. This sample bias reduces the generalizability of the data regarding the platform owners. Furthermore, the interviews had to be conducted using a digital platform, due to the social distancing regulations. In some cases, this could have resulted in data loss regarding interviewees' body

language and facial expressions. Lastly, the results pointed out new insights regarding influence factors described as impact of practitioners and patients on the eMental care technology. The results highlighted the lack of time and skills regarding eMental care combined with the attitude and preferences issues of patients and practitioners. While the data is valid for concluding on the influence factors it is not valid for the issues that emerged from the influence factors, because the data describing those issues were collected using a secondary data source consisting of platform owners and service providers. Therefore, the results on newly emerged issues cannot be generalized to the practitioner and patient populations. To generalize the data, future research focused mainly on practitioners and patients is recommended.

Regardless of the limitations, the results of this research are still valid to answer the main research question. The aim was to identify which measures eMental care platform owners and service providers take to break the trust barrier and map out their perspective on how to approach adoption issues. Therefore, in-depth interviews were conducted and data was collected iteratively until data saturations were reached. The results provided in-depth knowledge on measures taken against eMental care trust barriers and how platform owners and service providers approach adoption issues. In addition, measures taken to increase validity and reliability were looked at to ensure reliability and validity. Eventually, this provided sufficient results on which the conclusion can be based.

5.5 Theory and conceptual model

The sub-paragraphs above give a clear overview of the results and interpretation of the results. In this chapter the results and interpretations are used to develop a conceptual model and a theory to describe and visualize the perspective/approach of platform owners and service providers regarding trust barriers, measures to counter those barriers and how to increase adoption of eMental care.

The results showcase that eMental care platform owners and service providers take a collection of measures to counter the existing barriers of trust and the issues it entails. However, the adoption process for multi-stakeholder platforms in general and that of eMental care is a continuous process that has be executed in a circular pattern. This points out that taking measures once and expecting to increase adoption is not realistic since the data also described five influence factors regarding external entities,

patients, practitioners, technology and platform owner which are constantly changing and cause issues for adoption. In order to accelerate and increase adoption, platform owners and service providers must battle newly emerging issues continuously. Therefore, the following theory named *"The four phases of adoption theory"* is developed to describe the perspective/approach of eMental care platform owners and services providers on how they cope with barriers of adoption. The theory describes that: The perspective/approach of eMental care platform owners and service providers describe a constant battle with barriers which can be dealt with by iteratively executing four main steps regarding:

- **Step (1) conduct research:** regarding the five influence factors (environmental, patient, practitioner, technology and platform owners' impact) to collect data on emerging barriers and issues.
- **Step (2) detect:** barriers and issues by analyzing the data to make mitigation possible.
- **Step (3) adapt:** by developing measures using brainstorm session, desk- field research and taking mitigation measures.
- **Step (4) overcome:** to increase and accelerate adoption level by exceeding the number of issues with measures.

In addition, the four steps mentioned above must be executed repetitively by eMental care platform owners and service providers in order to maintain, increase and accelerate adoption. During the first step research must be conducted using field research preferably combined with in-depth stakeholder interviews to collect in-depth data on potential newly emerging issues, as a result to a change within one of the five influence factors. During the second step the data must be analyzed to detect and obtain in-depth understanding of issues to make mitigation possible. During step three and four adaptation has to be realized by taking measures in order to overcome the issues. See *"Figure 12. The four phases of adoption conceptual model"* for a visualized representation of the theory. For a complete overview of the data used to develop the theory and conceptual model see *"Appendix 7. Data structure model eMental care adoption"*.

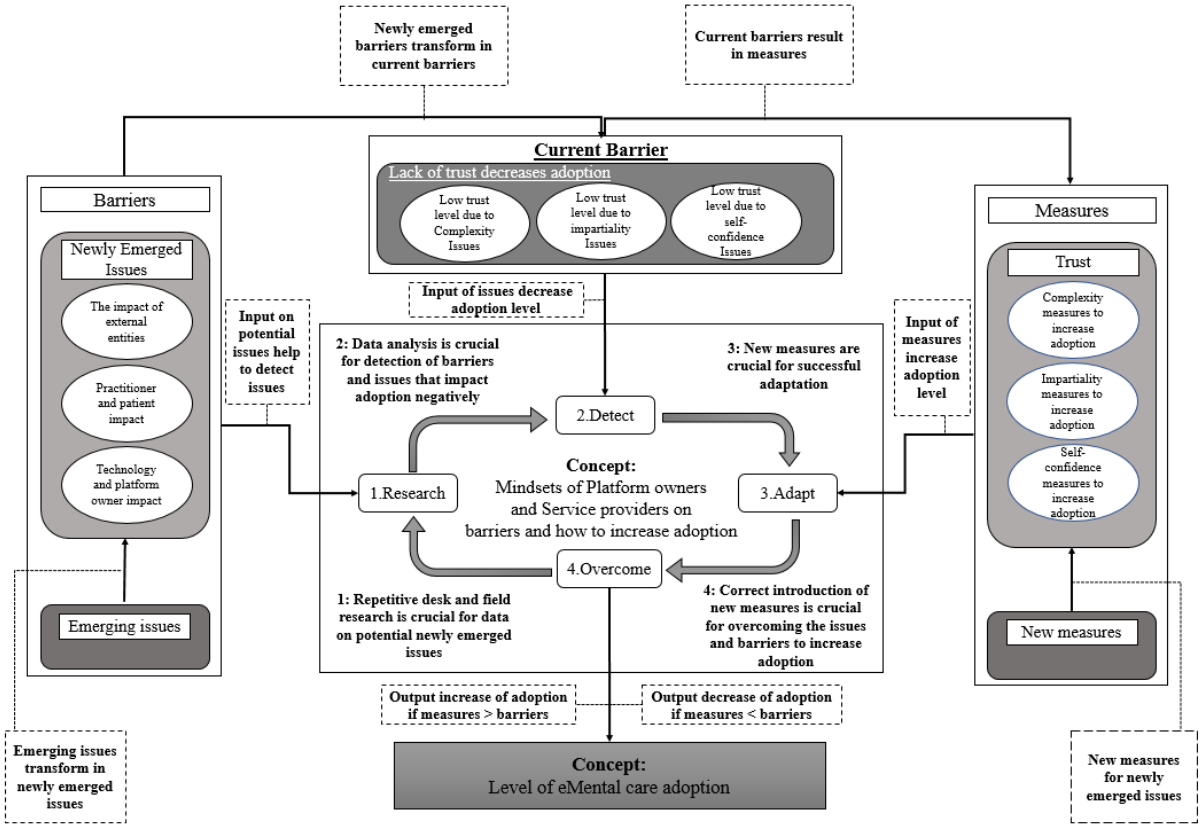

Figure 12. The four phases of adoption conceptual model

Figure 12 above gives a clear overview of how eMental care platform owners and service providers cope with trust barriers and newly emerged issues. Theory is that eMental care platform owners and service providers believe that adoption is impacted continuously by different issues which are caused by changes that trigger at least one of the five influence factors that function as input for step 1 *"Conduct research"*. These influence factors are visualized in the left beam of the model above called *"Barriers"*. Therefore, it is important to cope with adoption issues by continuously repeating the four main steps visualized in centered square of the model to maintain, accelerate and increase adoption. By executing step 2 *"Detect"*, the high impact issues are detected, visible in the beam called *"Current barriers"*. Subsequently step 3 and 4 regarding *"Adapt"* and *"Overcome"* are executed to develop and introduced measures visualized in the right beam called *"Measures"*, to iteratively and incrementally increase adoption. This model is applied on adoption of eMental care however, it is also applicable on adoption of multi-stakeholder platforms general. When applied on adoption of different multi-stakeholder platforms the parameters excluding the four main steps need to be adjusted to create a proper fit.

5.6 Scientific recommendations and future research

As mentioned above, there are some limitations to the research that create opportunities for future research. In addition to the existing issues regarding eMental care adoption, this research pointed out the impact of patients and practitioners combined with external entities and technological limitations. Since the additional issues regarding patients and practitioners have been brought to light by platform owners and service providers during this research, the data is not fully generalizable. Therefore, it is recommended to conduct future qualitative research on: **(1)** Dutch practitioners and patients' impact on eMental care adoption regarding their concerns, attitude, preference, skill level and participation level. It is recommended to investigate the practitioners and patients separately using in-depth interviews instead of surveys, since current literature contains a survey research which concludes that eMental care is highly accepted by practitioners (van der Vaart et al., 2016). This is in contrast with the results of this research. Conducting in depth-interviews could provide more in-depth knowledge compared to surveys and help to obtain a better understanding of the issues and situations. **(2)** Dutch platform owners' impact on eMental care adoption regarding alignment of goals and requirement engineering. To research this subject, it is recommended to combine in-depth interviews with physical observations to collect theoretical and practical knowledge on the process of goal alignment and the way in which requirements engineering is executed. **(3)** Technological impact on eMental care adoption regarding the limitations of the technology and how the limitations could be decreased. It is recommended to conduct this research by interviewing practitioners and platform service providers to map out the limitations and interview platform owners and IT experts on possibilities to decrease the limitations.

By conducting the studies mentioned above, data can be collected to complete the first step of *"Figure 12. The four phases of adoption conceptual model"*. Upon this data, valid and reliable conclusions can be drawn regarding measures to increase and accelerate eMental care adoption. Since the results of this research have indicated that practitioners are the main contact point for patients and that they are crucial in motivating patients, it is recommended to pay special attention to practitioners. **(4)** Future research could examine the practitioners more in-depth to develop theories on how adoption could be increased through practitioner adjustment. To act upon this, it is recommended to study practitioners in relation to

the trust variability models developed by Hoff & Bashir (2015) to create a clear view of which trust factors result in these issues. For a visual representation of the key findings, interpretations and recommendations, see *"Figure 13. Visual representation of key findings, interpretations, and recommendations"*.

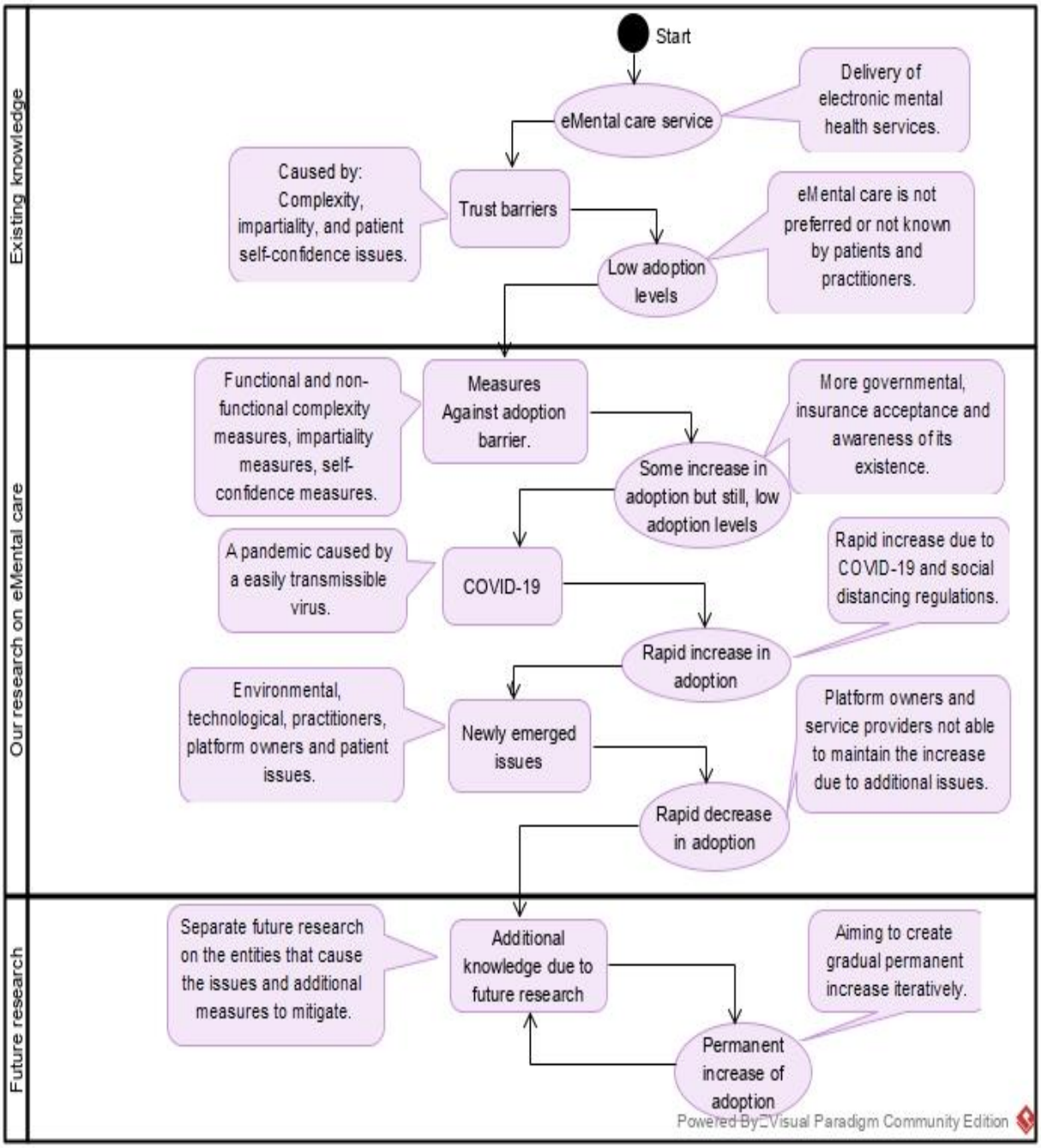

Figure 13. Visual representation of key findings, interpretations, and recommendations

6 CONCLUSION

The aim of this research was to develop a theory by identifying which measures eMental care platform owners and service providers take to cope with the trust barrier, as well as investigating their perspective/ approach one how to increase adoption. On top of that it also aimed to detect if there are opportunities for improvement to increase the adoption. Based on the qualitative analysis of eMental care platform owners and service providers perspectives, it can be concluded that functional/non-functional complexity measures combined with impartiality, confidence in technology and self-confidence measures are taken to cope with the trust barrier. The results indicate that these measures are insufficient since the adoption of eMental care is dynamic and rapidly increased due to COVID-19 regulations and rapidly decreased once the regulations were loosened.

The rapid decrease described above is the result of an adoption process which has a dynamic nature. The theory is that adoption has a continuous dynamic nature causing it to fluctuate. The level of adoption is impacted repetitively by newly emerging issues caused by changes that impact at least one of the five influencing factors regarding patients, practitioners, platform owners, the technology and the external entities. Logically, countering this phenomenon requires a continuous repetitive approach which is described by four main steps: (1) research, (2) detect, (3) adapt and (4) overcome to maintain, accelerate and increase adoption. To conclude on this subject *"The four phases of adoption theory"* and *"The four phases of adoption conceptual model"* were both discussed with a selection of the interviewees after they were developed. As expected, some interviewees recognized fragments of the model while others recognized the bigger picture. However, all interviewees agreed that synthesizing the data from all the interviews has resulted in a complete structured model that contains the most important aspects regarding their approach to increase adoption.

The methods and techniques of this research were focused on offering in-depth knowledge on the perspective of eMental care platform owners and service providers in relation to mitigation measures against trust barrier. Additionally, this approach also provided new insights regarding five influence factors that must be monitored and researched continuously. The results can be generalized to the

research population and used to answer the research question; however, it is not possible to generalize the data to the newly emerged issues regarding the five influence factors, since they concern practitioners and patients. The results highlighted that new issues regarding external entities, practitioners, patients, platform owners and technological limitations impact adoption as well. Since the existing issues regarding complexity, impartiality and self-confidence are mitigated, it can be concluded that the additional issues detected during this research are the culprits. It is suggested that the additional issues have caused the rapid decline after the COVID-19 regulations were loosened. This raises a new question regarding measures that could be taken against the newly emerged issues.

To gain a better understanding of the implications of the newly emerged issues and which measures could be introduced, future research could address the newly emerged issues by approaching patients, practitioners and platform owners separately. Using this method, researchers could collect in-depth data on the newly emerged issues and use the results from this research combined with additional measures to increase adoption of eMental care. With this course of action, future research can build upon this research and contribute to the scientific community.

As we mentioned in the introduction and literature review, access to mental healthcare is not self-evident for some parts of the Dutch population. Consequently, this results in low quality mental healthcare or delayed mental healthcare. In some extreme cases, it results in a lack of mental healthcare. eMental care has many advantages that could help to reduce these situations. Realizing this is crucial and only possible by accelerating the slow adoption of eMental care. This research has provided in-depth knowledge on measures that are being taken against the trust barriers of eMental care and mapped out the perspective of platform owners and service providers on their approach to increase adoption. By doing so, this research has filled a knowledge gap by developing *"The four phases of adoption theory"* and *"The four phases of adoption conceptual model"* which describe the four main steps that must be executed to increase adoption including the influence factors. Consequently, this created the opportunity for improvements that could lead to an increase of eMental care adoption.

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APPENDICIS

Appendix 1: Template interview

GENERAL DATA	
Title:	**Interview eMental care platform owner/service provider**
Interviewer:	**Matin Mayar**
Date:	
Time:	**start: () end: ()**
Interviewee:	
Current position:	
Education:	
Years at current position:	
Total work experience:	
Contact information:	

INTRODUCTION

Introduction to the study: eHealth has been developing fast resulting into a collection of benefits within different industries. The use of eHealth is also introduced within the mental health care but the adoption by patients has been slow due to some adoption barriers. Research has shown that the trust is the barrier that has the most negative impact on the adoption of eMental care by patients. This has resulted in loss of valuable benefits evolved around eMental care technologies. This study will focus on the trust barriers and research what the reasons behind the mistrust is. The collected data on reasons behind mistrust of patients will then be used to conduct interviews and find out how platform owners cope with this barrier. The data form the interviews will be analysed to derive the measures that platform owners take to break through the trust barriers. These measures will be compared against measures described by literature to see if improvements are possible and necessary, with the purpose to contribute to the research evolved around increasing eMental care adoption.

Introduction to the University: This research will be conducted as a final thesis assignment for the master ICT in Business and the Public Sector provided by the university of Leiden.

Introduction to researcher: Matin Mayar a 29-year-old master student at the university of Leiden, with experience in research and practical aspects of IT. I am interested in emerging technologies and how they can be used to innovate in a future with high efficiency information accessibility and better healthcare.

Confidentiality: The data collected will be used to contribute to the scientific research community by publication of the rapport. Confidential information that is provided during the interview should be brought to attention by interviewee with the intention to discuss publication of the data. In addition, the

interviewee has always the right not to answer a question if they do not wish to and stop the interview without jeopardy.

Anonymity: if the interviewee prefers to stay anonymous, then the personal data will be unspecified while processing the collected data.

Does the interviewee agree to participate? **Yes/No**

Does the interviewee give consent to recording the interview for coding purposes afterwards? **Yes/No**

QUESTIONS PART 1: GENERAL QUESTIONING ON THE ADOPTION OF E-MENTAL CARE PLATFORMS.

1.1) Interviewer: do you find the eMental care platform adoption by patients before COVID-19 to be slow?

Interviewee:

1.2) Interviewer: If yes, what do you think is the reason for the slow adoption, can you give examples of adoption barriers that result in slow adoption?

Interviewee:

1.3) Interviewer: do you find the eMental care platform adoption by patients still slow with the start of COVID-19?

Interviewee:

1.4) Interviewer: If yes, what do you think is the reason for the slow adoption, can you give examples of adoption barriers that result in slow adoption?

Interviewee:

QUESTIONS PART 2: COMPLEXITY AND TRUST

2.1) Interviewer: there are various groups of patients with the need for mental care, some of these patients have had a low education and others are highly educated, how do you deal with the different educational levels/affinity with technology of patient to make sure they can follow the eMental care treatment?

Interviewee:

2.2) Interviewer: how is made sure that the technological knowledge demand is not too high for patients (especially elderly people) making the use of the technology possible?

Interviewee:

2.3) Interviewer: the Netherlands is a multicultural society, how is made sure that people with a non-Dutch background can follow treatment (is it available in different languages)?

Interviewee:

2.4) Interviewer: how is the patient introduced and guided through the eMental treatment?

Interviewee:

QUESTIONS PART 3: CONFIDENCE LEVEL AND TRUST?

3.1) Interviewer: research has shown that people do not like changes because it forces them to step out of their comfort zone. What actions are taken specifically to convince patients to let go of the skepticism and accept the change to eMental care?

Interviewee:

3.2) Interviewer: have you experienced situations where the use of eMental care technology has result in negative outcomes stagnating the mental health of the patient instead of increasing it?

Interviewee:

3.3) Interviewer: if yes, what was the reason and how are the patients made aware of these risks?

Interviewee:

3.4) Interviewer: if not, are patients informed that the technology and the techniques used are effective in helping the patient? Can you give examples of how they are informed?

Interviewee:

3.5) Interviewer: how is the treatment process controlled to prevent negative outcomes (no control on the therapy when it is followed at home)?

Interviewee:

3.6) Interviewer: how is the patient made aware that the process is controlled to prevent negative outcomes?

Interviewee:

3.7) Interviewer: how transparent are the platforms regarding data collection purpose (is the patient informed about what type of data is collected and how the data is used to help the patient) can you explain?

Interviewee:

3.8) Interviewer: how is the patient convinced that the treatment would help without the customized feedback (maybe for patients it looks like trial and error)?

Interviewee:

QUESTIONS PART 4: IMPARTIALITY AND TRUST?

The eMental care systems are business models that need to create revenue. This could result in trust issues because patients might think that the systems are more focused on creating revenue than helping them with their healthcare.

4.1) Interviewer: how is financial process to create profits controlled to make sure that the platform is perceived impartial by the patients instead of an impersonal treatment focused mainly on revenue creation?

Interviewee:

4.2) Interviewer: can you give examples of measures that are taken to control the process and make it less impersonal?

Interviewee:

4.3) Interviewer: patient do not prefer that their data is used for commercial purposes. How is the patient data collected and secured regarding patient privacy?

Interviewee:

4.4) Interviewer: how is the patient informed about the security of their personal data in respect to their privacy?

Interviewee:

QUESTIONS PART 5: CLOSING

5.1) Interviewer: is there any additional information that is not discussed during the interview that you would like to add because of its importance (for example are there measures not mentioned that …… takes)?

Interviewee:

5.2) Interviewer: can you share/refer to any website address, booklet, report, article, whitepaper, presentation slides, and so forth that may help us understand better the topics we talked about in this interview?

Interviewee:

5.3) Interviewer: if possible, can you please introduce me to your colleagues/collaborators/advisors (to have the same type of interview with them)? Someone who has been involved or informed about this case. Please let me know about any potential interviewees.

Interviewee:

5.4) Interviewer: then I would like to thank you for participating. The next step now is to code and analyze the data from the interviews and draw conclusions. These conclusions will be compared to what the literature describes to see if improvements for adoption are possible. If there are improvements possible then these improvements will be added to the research as recommendations and shared with the participating organizations.

Interviewee:

5.5) Interviewer: if there are any questions or remarks, feel free to contact me by using the following email: **a.m.mayar@umail.leidenuniv.nl/ Matin1991@hotmail.com.**

Interviewee:

Follow-up required: **YES/NO**

If YES: Date ( ), Time ( )

Appendix 2: List of Boolean operators and search keywords

Boolean operators			
AND	OR	- (minus to exclude)	"" (double quotation for exact match)
List of search keywords			
eHealth	Healthcare technology	Medical technology	ICT
Electronic mental healthcare	Electronic healthcare	eMental care	Information communication technology
Platforms	eHealth AND eMental care	eHealth in mental healthcare	Mental healthcare AND technology
Multi-sided platforms	eMental care in practice	Adoption of eHealth OR eMental care	ICT adoption in healthcare OR mental healthcare
ICT in mental care	"Barriers of adoption" AND "eMental care"	"Trust issues" AND "eMental care"	Barriers of adoption in eHealth
Impartiality AND eMental care	Complexity	Change AND adoption	Culture
Aversion	COVID19	CORONA -beer	Elderly
Difficulty	Platform owners	Platform providers	Advertising and eHealth
Educational level	Literacy	Technological affinity	Privacy
Data collection	Data security	Government regulations	Dutch Practitioner population

Appendix 3: List of participants

Interviewee	Organization	Job position	Duration
Int: 1	Platform owner	Developer/Researcher	49 min
Int: 2	Platform service provider	Team lead eHealth	35 min
Int: 3	Platform service provider	Psychologist/eHealth adoption lead	75 min
Int: 4	Platform service provider	Advisor eHealth	35 min
Int: 5	Platform service provider	Manager eHealth	60 min
Int: 6	Platform service provider	Senior researcher eHealth	60 min
Int: 7	Platform owner	Project Lead eHealth	65 min
Int: 8	Platform service provider	Project Lead eHealth	55 min
Int: 9	Platform service provider	Project Lead eMental care	55 min
Int: 10	Platform owner	IT Manager	45 min
Int: 11	Platform service provider	Project Lead eMental care	60 min

Appendix 4: Overview of selection requirements

Selection requirements	
Organizational requirements	Participants requirements
Must be a platform owner or platform service provider located in the Netherlands.	Must have in-depth knowledge on the subject of eMental care.
Must have developed the platform or provide it as a service to third parties.	Must have practical experience with the platform.
Must offer a sophisticated platform and not a Google Play Store application.	Must have at least one year of experience with the eMental care platform.
Must offer a platform with eMental care modules and treatments.	Must work for an organization located in the Netherlands.
Must offer the platform directly or in co-operation with another organization to a patient group consisting of patients between the ages of 10 to 90 years.	Must work for an organization that treats patients within the Netherlands.
Must offer the platform directly or in co-operation with another organization to a patient group consisting of patients with different ethnicities.	Must have a position involving eMental care as a main task.
Must offer the platform directly or in co-operation with another organization to a patient group consisting of male and female patients.	Must have knowledge on the psychological aspects of mental health care.

Appendix 5: Transcript sample

This appendix consists out of three interview transcript samples that together give an overview of a complete interview. The first sample presents the introduction and general questions. The second sample in focused on complexity, self-confidence, and impartiality. The third and last sample consists out of final questions and closing.

Sample 1 interview 1: Introduction and general questioning

GENERAL DATA

Title:	**Interview eMental care (company name)**
Interviewer:	**Matin Mayar**
Date:	
Time:	**start: () end: ()**
Interviewee:	**-**
Current position:	**-**
Education:	**-**
Years at current position:	**-**
Total work experience:	**-**
Contact information:	**-**

INTRODUCTION

Introduction to the study: eHealth has been developing fast resulting into a collection of benefits within different industries. The use of eHealth is also introduced within the mental health care but the adoption by patients has been slow due to some adoption barriers. Research has shown that the trust is the barrier that has the most negative impact on the adoption of eMental care by patients. This has resulted in loss of valuable benefits evolved around eMental care technologies. This study will focus on the trust barriers and research what the reasons behind the mistrust is. The collected data on reasons behind mistrust of patients will then be used to conduct interviews and find out how platform owners cope with this barrier. The data form the interviews will be analyzed to derive the measures that platform owners take to break through the trust barriers. These measures will be compared against measures described by literature to see if improvements are possible and necessary, with the purpose to contribute to the research evolved around increasing eMental care adoption.

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Confidentiality: the data collected will be used to contribute to the scientific research community by publication of the rapport. Confidential information that is provided during the interview should be brought to attention by interviewee with the intention to discuss publication of the data. In addition, the interviewee has always the right not to answer a question if they do not wish to and stop the interview without jeopardy.

Anonymity: if the interviewee prefers to stay anonymous, then the personal data will be unspecified while processing the collected data.

Does the interviewee agree to participate? **Yes/~~No~~**

Does the interviewee give consent to recording the interview for coding purposes afterwards? **Yes/~~No~~**

Interviewee: ok should I now introduce myself?

Interviewer: yes please**.**

Interviewee: ok I am confidential work now for confidential at confidential and I started as confidential focusing on the internal aspects of the program working together with the patients as well as the professional. We communicate a lot with these two groups to make a program that aligns well with the needs. I have done this confidential and the I switched to the confidential. I now research confidential. So now I am looking at the different aspects of eHealth to get a hold on how we can steer the treatments and technology. That is where we are working on. Originally, I am confidential so before this I have worked confidential and then I started working with confidential. Through that route I ended up at confidential.

Interviewer: ok how long have you worked as a confidential?

Interviewee: now almost for confidential years.

QUESTIONS PART 1: GENERAL QUESTIONING ON THE ADOPTION OF E-MENTAL CARE PLATFORMS.

Interviewer: do you find the eMental care platform adoption by patients before COVID-19 to be slow?

Interviewee: hmmm yes of course we have seen a big shift specially from march till June. That was a busy period and then it started declining. In the summer it is always slower and now it is inclining again. We have seen that due to the new measures taken by the government our business is growing rapidly. We see that in the number of customers that we have now. But before corona we also had a positive trend in that, but corona has given it a boost.

Interviewer: so, if I understand it correctly before corona it was also going well, but was it slow?

Interviewee: yes, but I have to say we did not have that experience of it being really slow. Eeehm, I do think that the part of security regarding ISO certifications is REALLY IMPORTANT. That is a really important aspects based on what practitioners and clients select an eMental care platform. But we also see that people give eHealth more space to grow. Most mental care practices also have eHealth high on their priority list and want to implement it. They already had that idea, but corona has given it a big push.

Interviewer: ok clear.

Sample 2 interview 2, 3 and 4: Complexity, self-confidence and impartiality

QUESTIONS PART 2: COMPLEXITY AND TRUST (INTERVIEW 2)

Interviewer: there are various groups of patients with the need for mental care, some of these patients have had a low education and others are highly educated, how do you deal with the different educational levels/affinity with technology of patient to make sure they can follow the eMental care treatment?

Interviewee: hmm that is a good question that is something where we have a hard time implementing. We have now started a pilot for basic mental care. This pilot focusses on clients with basic mental issues that are not complex. With keeping in mind that the clients have at least basic computer skills. We have also set a requirement that the user need to have a tablet or a PC because a smartphone is not that convenient for this case. You can read text on a smartphone but for really contacting a practitioner you need a bigger screen. We also expect a degree of independence from the clients to get the most out of the process. We do select beforehand to find the clients that fit the profile. Those clients get the eMental care treatment and the others not. If I get the idea that someone does not fit that profile, I will stop the eMental care treatment. For example, yesterday I had an intake well I should have had an intake, but the lady client could not get her PC to start. While you just need to click on a link to start the module and unfortunately with a patient on that level, starting an eMental care treatment is asking for problems. On the other hand, practitioner's knowledge is also really important because, I still see some practitioners that can't even work with the technology. In some cases when they are using the same setup with no changes at all. They still manage to get stuck while it is easy because if you know how your email works than this should not be a problem. But you still see people get stuck. It has nothing to do with the hardware or software. I see it also at home when I press enter on my laptop something totally different happens than when my wife presses on enter. How that is possible I have no idea.

Interviewer: I see, I get your point how is it possible that we do the same and they get a different result.

Interviewee: well, hmmmm yes, the complexity is a very big issue you need to select people that you think can use it properly. For example, if I start a client on a module, I also start monitoring the client's behavior on the platform. If the client has not used the platform for two weeks than it is maybe not the right way to treat that client. Therefore, we try to analyses and conclude on who is able to use the technology properly and who is not. Without prejudgments. I have to say that the conclusion points out to a younger group of people that can use the technology properly. Also, a group that is higher educated. This is not always the case because we also have elderly that use is properly but in general, we see that the most suited group are high educated and younger.

Interviewer: yes, I think that that shows that the young generation now uses it properly and these young people get older and when they are old, they are able to use the technology properly because the grow up with the technology.

Interviewee: yes, and what we also see is that the elderly that can use it properly they have some experience with automation or are interested in it. They have picked it up somewhere along the line. You see that people under the 50 years have no trouble using it. Next to that you also have a group under the 50 age that are digital illiterates they cannot use it properly. But we do expect that with the time these problems will disappear because a PC becomes a big daily part of life.

QUESTIONS PART 3: CONFIDENCE LEVEL AND TRUST (INTERVIEW 3)

Interviewer: research has shown that people do not like changes because it forces them to step out of their comfort zone. What actions are taken specifically to convince patients to let go of the skepticism and accept the change to eMental care?

Interviewee: well sometimes the general healthcare practitioners refer the clients directly to us for an online treatment. Some of them are motivated and sometimes we also take patients of the waiting lists and tell them that we can help them with the online treatment. Then we give them the option to try the online treatment and see if they like it. If not, then there is no problem they can proceed with their normal treatment. Meaning that we do also accept the fact that patients sometimes say that it is not working for them.

Interviewer: ok, clear.

Interviewer: have you experienced situations where the use of eMental care technology has result in negative outcomes stagnating the mental health of the patient instead of increasing it?

Interviewee: well, hmm yes negative as in that the online treatments do not work for some patients because they have to be proactive. Next to that some patients need more than we can offer, and in those cases, we see that confidential online is not enough. In those cases, we tell them that they need a more complex treatment and that they must apply for a different treatment. In some cases, the patients are also not proactive enough to use the technology and, in those cases, we also end the online treatment.

QUESTIONS PART 4: IMPARTIALITY AND TRUST (INTERVIEW 4)

The eMental care systems are business models that need to create revenue. This could result in trust issues because patients might think that the systems are more focused on creating revenue than helping them with their healthcare.

Interviewer: how is financial process to create profits controlled to make sure that the platform is perceived impartial by the patients instead of an impersonal treatment focused mainly on revenue creation?

Interviewee: oeh that is a hard question, because. We at confidential are not focused on profits but confidential is focused on profits. They are quite a commercial business. We pay confidential a fixed amount every month, but the clients are not aware of that. The client has the choice. They can use confidential and that won't result in extra costs for them, but they can also decide not to use it. With the blended care the experiences are that patients are happy to use it because they can work on their health from home and it is basically free.

Interviewer: ok clear, I know that with the blended care the costs of treatment are covered by the insurance company but is that also the case with the fully online treatments?

Interviewee: yes, in those cases the same insurance policies are used. We do register the time that a practitioner spends on a client but then it is called a bit different with a code in the EPD. But the client does not notice any of that.

Interviewer: can you give examples of measures that are taken to control the process and make it less impersonal?

Interviewee: yes, with the fully online treatments, the clients are linked with a practitioner and that is the same during the whole treatments. Meaning that you won't get a different practitioner every 2 days. Next to that there are also some practitioners that send a message to their patients at night. They look at the progress and contact the patient to ask how they are doing. This also makes it more personal. I think that, that makes the treatment more personal because they can expect a message at any moment of the day instead of once every 2 weeks during a face-to-face meeting.

Sample 3. Final questioning and closing

QUESTIONS PART 5: CLOSING (INTERVIEW 5)

Interviewer: is there any additional information that is not discussed during the interview that you would like to add because of its importance (for example are there measures not mentioned that confidential takes)?

Interviewee: regarding what could lead to failure of eMental care than I think we have discussed it all.

Interviewer: can you share/refer to any website address, booklet, report, article, whitepaper, presentation slides, and so forth that may help us understand better the topics we talked about in this interview?

Interviewee: you could also look at the website of confidential and focus on their treatment that people can follow to help themselves. They offer treatments for people with cannabis, alcohol, and smoking addiction. That will give you insights on how those programs are offered. Some are blended and some are not blended, they also offer programs for close ones of the patients to inform the close ones how they should react and cope with the problem. How they can help and support the patient. You can also look at confidential they also have a yearly eHealth monitor. You could also look at confidential but that is not specifically focused on eHealth.

Interviewee: Ok thank you for the additional information.

Interviewer: then I would like to thank you for participating. The next step now is to code and analyze the data from the interviews and draw conclusions. These conclusions will be compared to what the literature describes to see if improvements for adoption are possible. If there are improvements possible then these improvements will be added to the research as recommendations and shared with the participating organizations.

Interviewee: ok great. Looking forward to it.

Interviewer: if there are any questions or remarks, feel free to contact me by using the following email: **a.m.mayar@umail.leidenuniv.nl/ Matin1991@hotmail.com.**

Interviewee: ok that is good if you have any questions you can contact me.
Follow-up required: ~~**YES**~~**/NO**

If YES: Date (-), Time (-)

Appendix 6: Code book eMental care adoption

THEME A		
Open codes	**Axial codes**	**Selective code**
1.1 Adoption fluctuates due to COVID-19	1. Impact COVID-19 on eMental care adoption	A. The impact of external entities on eMental care adoption
1.2 COVID-19 increased adoption temporarily		
1.3 COVID-19 Negative impact on motivation		
1.4 Demand increased due to digital communication		
1.5 Temporally peak of demand		
1.6 Increased digital communication not eMental care		
1.7 Growth in digital calling not eMental care		
1.8 Trust still the barrier post COVID-19		
1.9 COVID-19 resulted in less aversion		
1.10 COVID-19 higher acceptance, but usage is slow		
2.1 Security certification criteria for adoption	2. Certifications impact on eMental care adoption	
2.2 Proof of privacy measures		
2.3 Strict regulations regarding privacy		
2.4 Strict regulations for data security		
2.5 Comply with GDPR to increase trust		
2.6 Well educated practitioners to increase trust		
14.1 Service is delivered based on demand.	14. Environmental limitations	
14.2 Financial limitations for adoption		
14.3 Time shortage of practitioners		
14.4 Hard to say eMental care is the main solution		
14.5 Cannot take impersonal aspects away fully.		
14.6 Lack of motivation to roll out eMental care		
14.7 Clients get a standardized terms and conditions		
14.8 Unmotivated to create eMental care awareness		
14.9 Practitioners have limited time for platform usage		
3.1 More acceptance and higher priority for eHealth	3. Positive trend for eMental care adoption	
3.2 More acceptance for eMental care		

THEME B		
Open codes	**Axial codes**	**Selective code**
4.1 Practitioner conservativeness has negative impacts on adoption level	4. Practitioner attitude	B. Practitioner impact on eMental care adoption
4.2 Practitioners negative on eMental care		
4.3 Practitioners rather do it their own way		
4.4 Mistrust in method		
4.5 Practitioner prefer normal treatments		
4.6 Recommend it not force it		
4.7 Practitioner aversion		
4.8 Monitoring to test the fit		
4.9 Practitioner afraid of being replaced		
4.10 Aversion from environment		
4.11 Practitioner acceptance crucial for adoption		
4.12 Patient is responsible for eMental care usage		
4.13 eMental care is not well known by patients.		
4.14 Practitioner give up on eMentel care fast		
4.15 Practitioner do not use eMental care voluntarily		
4.16 Practitioner predefined form of good treatment		
4.17 Practitioner find eMental care insufficient		
4.18 Practitioner not satisfied with the technology		
4.19 Practitioners change averse		
5.1 Active practitioner better adoption by patients	5. Practitioner participation level	
5.2 Practitioners main source of motivation		
5.3 High practitioner acceptance active patient		
5.4 Patient decides if they want to know more		
6.1 Practitioners lack innovation skills	6. Practitioner skill level	
6.2 Language barrier hard to break		
6.3 Motivational barrier results in delay		
6.4 Practitioner makes diagnose and gives treatment		
6.5 Practitioner also lack IT skills		
6.6 Practitioner no IT knowledge		
6.7 Practitioner lack explanation skills		
6.8 Privacy laws are too complex for practitioners		
6.9 Lack of practitioner and patient confidence		
7.1 Make practitioners attitude positive toward eHealth	7. Measure for practitioner attitude on eMental care adoption	
7.2 In addition, not instead of normal treatment		
7.3 Practitioner bridge between eMental care/client		
7.4 Practitioners main point of information		
7.5 Every situation is unique practitioners input crucial		
8.1 Practitioner really important	8. Practitioner influence on eMental care adoption	
8.2 Practitioner ultimately responsible		
8.3 Practitioner has most impact and insights		
8.4 Trust in practitioners is crucial		
8.5 Practitioner decides on eMental care usage		

THEME C		
Open codes	**Axial codes**	**Selective code**
9.1 Elderly aversion for fully autonomous treatments	9. Patient preference for technology	C. Patient impact on eMental care technology
9.2 Patients trust the wrong parties		
9.3 Patients want to speak with a human		
9.4 Fully digital treatment is neglected by patients		
9.5 Elderly people invest more time.		
9.6 Used to human treatments		
9.7 Positive experience of patients		
9.8 No negative outcomes just bad fit with client		
18.1 Must have basic level Dutch is.	18. Patient skill level	
18.2 Focus is not on elderly above 85		
18.3 Patients must meet basic requirements		
18.4 Patients independency is important		
18.5 No fit no eMental care		
18.6 Basic IT knowledge is enough		
18.7 Better fit with young and educated people		
18.8 Age is not a problem in the future		
17.1 Wrong usage result in bad experience	17. Patient error	
17.2 Blended and self-treatments have different adoption criteria.		
17.3 Input from both sides crucial		
17.4 Patient knowledge error		
17.5 Patients use their own limitations to rate the quality of eMental care		
22.1 High positive experiences	22. Patient attitude towards eMental care adoption	
22.2 information available patient input crucial		
22.3 Feedback from client is crucial		
22.4 Human qualities are crucial		
22.5 Fear of replacement as barrier for adoption		
22.6 Clients trust practitioners		
22.7 Bad image due to experience		
22.8 Concerns around security of data from vulnerable group.		
22.9 Patients rate eMental care as high as normal treatment		

THEME D		
Open codes	**Axial codes**	**Selective codes**
12.1 Self-treatment hard to control	12. Technological limitations	D. Technology impact on eMental care adoption
12.2 No extra measures for elderly		
12.3 Little cultural integration		
12.4 Impossible to make perfect for everyone		
12.5 eMental care available but low quality		
12.6 Practitioners miss valuable information		
12.7 Only for simple cases		
12.8 Patients feel like they are not taken seriously		
12.9 Modules are to complex		
12.10 Language barriers are challenging		
12.11 Different languages not available		
12.12 Lack of Information on treatment possibilities		
12.13 More suited for basic mental issues		
12.14 Failure impact bigger for complex case patients		
12.15 Autonomous treatment algorithms		
12.16 Technology is to complex needs simplification		
12.17 Limited and brief explanation		
12.18 Lack of agreements done a little on the loose		
12.19 Lack of facial expressions and body languages		
12.20 Based on a complex method		
12.21 Find eMental care a hassle instead of efficient		
19.1 No waiting lists	19. Flexibility advantages	
19.2 Work where and when you want		
19.3 Flexible to use		
20.1 Trustworthy data source	20. Data reliability advantages	
20.2 Evidence based treatments		
20.3 Blended care the solution		
21.1 Platform also functions as triage	21. Efficiency advantage	
21.2 eMental care an efficient treatment method		
21.3 Direct feedback instead of every two weeks		
21.4 No fixed appointment moments		
21.5 Online feedback notifications		
21.6 No waiting list		

THEME E		
Open codes	**Axial codes**	**Selective codes**
23.1 Predefined perspective on patient group	23. Platform owner error	E. Impact platform owner on eMental care adoption
23.2 Developer and user goals are not inline		
23.3 Bad communication has resulted in confusion		

THEME F		
Open codes	**Axial codes**	**Selective codes**
11.1 Patients in need of control helped by practitioner	11. Non-functional measures for complexity	F. Measures against trust barriers on eMental care adoption
11.2 In person explanation		
11.3 Helpdesk against complexity		
11.4 Introduction during treatment		
11.5 Practitioner guidance is crucial for treatment		
11.6 Practitioner is main contact point for motivation		
11.7 Guidance during treatment is crucial		
11.8 Extra guidance from practitioner		
11.9 Practitioner crucial against complexity		
11.10 More guidance for low educated people		
11.11 Step by step guidance to reduce complexity		
11.12 Categorization of different patients' groups		
10.1 Gamification to reduce complexity and keep patients engaged	10. Functional measures for complexity	
10.2 Low level writing better than complex writing		
10.3 Video explanation to reduce complexity		
10.4 Call function to reduce complexity		
10.5 English for students		
10.6 Video guidance by practitioner instead of autonomous guidance by robot		
10.7 B1 basic level Dutch		
10.8 Multiple languages to reduce complexity		
10.9 Less complexity due to videos and recording		
10.10 Alternative easy program kids' program		
10.11 Complexity functions (magnifying glass)		
10.12 e-Learnings for complexity		
10.13 Different languages to treat foreigners		
10.14 Digital intake for introduction		
10.15 Structure to reduce complexity		
10.16 Practice accounts to reduce complexity		
10.17 Explanation based on age IQ and education		
10.18 Customization to reduce complexity		
10.19 Different languages to reduce complexity		
10.20 Communication function to reduce complexity		
10.21 Platform simplification to reduce complexity		
10.22 Patient feedback to reduce complexity		
10.23 Patients help each other to decrease complexity and make it more personal (FAQ)		

10.24 Customization to reduce complexity		
13.1 Extra guidance for elderly	13. Measures to increase self-confidence	
13.2 Practitioners make patients aware of risk		
13.3 Goals result in higher motivation		
13.4 Give patients control over their treatment		
13.5 Interaction to create awareness of control for patient by practitioner		
13.6 Give them control to motivate		
13.7 Trust the technology it is a small change		
13.8 Face-to-face meeting to keep control		
13.9 Control due to questionnaires and screenings		
13.10 Practitioner communication and feedback to create awareness of control		
13.11 Create awareness due to face-to-face meetings		
13.12 Making agreements to keep patients involved		
13.13 Limit negative experiences with eMental care		
13.14 honesty on no treatment and bad		
13.15 Monitor activity to keep control		
13.16 Constant communication to create awareness		
13.17 Keep patients up to data.		
13.18 Preparation for crisis to increase trust		
13.19 Practitioner is contact point for crisis.		
13.20 Limit false diagnoses to reduce demotivation		
13.21 Irregular informal messaging to make personal		
15.1 Human provides feedback	15. Measures to increase impartiality	
15.2 Data collection is not required for platform use		
15.3 Data used for future research		
15.4 No visible cost for patients		
15.5 Keep treatment personal.		
15.6 Practitioners background not business		
15.7 Video psychologist experienced as less impersonal		
15.8 Patients in control of their data		
15.9 Government financing more often		
15.10 No obligation but an option		
15.11 No data insight		
15.12 Patients decide on quality		
15.13 No costs for patients		
15.14 Costs are covered by insurance and practitioners		
15.15 Obligatory deductible excess also too high for some		
15.16 Communication against impersonality		
15.17 Patients have full control on their data		
15.18 Covered by insurance		
15.19 Not abandon but refer.		
15.20 Health insurance or municipality covers costs		

16.1 eMental care the solution to their problems	16. Measures to increase confidence in technology	
16.2 eMental care long-term solution		
16.3 Proof of results		
16.4 Scientific research and experience as proof for work		
16.5 eMental care in addition not instead of treatment		
16.6 Face-to-face meeting to adjust treatment.		
16.7 Platform creates awareness of data security		
16.8 Honest and open to client		
16.9 Almost the same as regular treatments		
16.10 Blended treatment to keep control		
16.11 Not an obligation but an option		
16.12 Terms and conditions to inform the patients.		
16.13 Feedback moment for client and partitioner		
16.14 Blended care to reduce mistrust		
16.15 Client is given more control to increase trust		
16.16 Blended care with practitioner most beneficial		
16.17 Blended to keep control		
16.18 Easy with a lot of benefits		
16.19 Ask about religion to increase trust		
16.20 Realistic preparations		
16.21 Honesty to increase trust		
16.22 Science based methods to increase trust		
16.23 Restriction by practitioners to keep control		
16.24 Communication to show the patients that process is controlled		
16.25 Permissions and transparency on data collection.		
16.26 Double check to increase trust		
16.27 Transparency, respect, empathic.		
16.28 No false promises.		
16.29 Secure way of messaging to ensure privacy and trust		
16.30 Must be beneficial for client		
16.31 Client must have control over treatment		
16.32 Consider cultural aspects in pictures		
16.33 No standardization to increase trust		
16.34 Extensive research to increase trust		
16.35 Practitioners use restrictions to keep control		
16.36 Good communication functions are crucial		
16.37 No guarantee that it will work		
16.38 Security on information distribution		

Appendix 7: Data structure model eMental care adoption