Martti Saarela

GROWTH MANAGEMENT OF eHEALTH SERVICE START-UPS
MARTTI SAARELA

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Academic dissertation to be presented with the assent of the Doctoral Training Committee of Technology and Natural Sciences of the University of Oulu for public defence in Auditorium L7, Linnanmaa, on 12 June 2020, at 12 noon

UNIVERSITY OF OULU, OULU 2020
Healthcare and the well-being of populations are critical economic considerations. Increased healthcare service demand and the economic challenges faced by healthcare systems have recently intensified the need for effective, scalable, and innovative health services. Integration of digital technology into health services, known as eHealth, is an emerging and fast-growing area, which has been viewed as a key response to increased requirements of healthcare systems and services. Start-ups have organizational agility, promising ideas, the willingness to take risks, and the tendency toward growth that make them pioneers of innovation. EHealth service start-ups create digital solutions to meet the needs, complement traditional services, and even create new markets in the areas of healthcare and well-being.

The theoretical framework of this study is based on the stages of growth approach, particularly from the viewpoint of the start-up stage of a service business. However, research areas related to start-ups in the eHealth context are also integral to this study’s theoretical background. As the start-up stage is the critical period for a new company’s survival and growth, growth management is of central importance. However, the current understanding of growth management in eHealth service start-ups is incomplete. Thus, there is a need for industry-specific understanding of eHealth service start-ups.

The aim of this study was to clarify the growth management of eHealth service start-ups. This multiple-case study used the critical incident technique in data collection, and the data were gathered from Finland, Sweden, and the United States.

The study revealed twelve characteristics of eHealth service business during the start-up stage which contribute to the understanding of growth management in eHealth service start-ups. Slow growth and extreme uncertainty were found to be key characteristics and the results of the other revealed characteristics. Moreover, the findings indicate that the literature on prior stages of growth does not provide research evidence that is precise enough about the growth management of eHealth service start-ups. Thus, the characteristics of eHealth service start-ups determined by this study should be taken into account in growth management.

The results of this study may be used to predict managerial challenges and to help managers to focus their attention on critical issues, which may lead to risk reduction during the start-up stage.

Keywords: digital health, eHealth, growth management, service start-up, stages of growth, start-up
Saarela, Martti, Kasvunhallinta digitaalisia terveyspalveluita tuottavissa eHealth startup-yrityksissä.
Oulun yliopiston tutkijakoulu; Oulun yliopisto, Teknillinen tiedekunta
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Tiivistelmä
Terveydenhuolto ja väestön hyvinvointi ovat taloudellisesti kriittisiä näkökohtia. Lisääntyvä terveydenhuoltopalveluiden kysyntä ja terveydenhuoltojärjestelmien kohtaamat taloudelliset haasteet ovat lisänneet tehokkaiden, skaalautuvien ja innovatiivisten terveyspalvelujen tarvetta. Digiotaalitekniikan integroituminen terveys- ja hyvinvointipalveluihin (eHealth), on nopeasti kasvava alue, jota pidetään vastauksena terveydenhuoltolainoiden ja -palvelujen lisääntymiseen vaati-muksiin. Start up -yrityksillä on ketkeyttä, lupaavia ideoita sekä halukkuutta kasvuun ja riskinottoon, mikä tekee niistä innovaatioiden edelläkävijöitä. Digitaalisia terveyspalveluita tuottavat start up -yritykset (eHealth startup -yritykset) vastaavat terveydenhuollon ja hyvinvointialojen tarpeisiin luomalla uusia digitaalisia ratkaisuja, täydentämällä perinteisiä palveluita ja luomalla sektorille jopa uusia markkinoita.

Tutkimuksen teoreettinen viitekehys perustuu yritysten kasvuvaiheteoriaan, erityisesti palveluyritysten startup -vaiheeseen. Tutkimusalueet, jotka liittyvät eHealth startup -yrityksiin ja niiden toimintaympäristöön, täydentävät tutkimuksen teoreettista taustaa. Koska startup -vaihe on kriittinen ajanjakso yrityksen kehityksen ja kasvun kehitykseen, on kasvunhallinta keskeistä startup -yrityksille. Ymmärrys eHealth startup -yritysten kasvunhallinnasta on olemassa tarve näiden yritysten kasvunhallinnan toimialakohtaiselle tutkimukselle.

Tutkimuksen tavoitteena oli selvittää eHealth startup -yritysten kasvunhallintaa. Tutkimus toteutettiin monitapaustutkimuksena, jonka tiedonkeruussa käytettiin kriittisten tapahtumien tekniikkaa. Haastatteluaineisto eHealth startup -yrityksistä kerättiin Suomesta, Ruotsista ja Yhdysvalloista.


Tutkimuksen tuloksia voidaan hyödyntää johtamisen haasteiden ennakkoinnissa. Tulokset voivat myös auttaa eHealth startup -yritysten kehittämään huomioissaan kriittisiin aihealueisiin, mikä voi johtaa riskien hentymiseen start up -vaiheessa.

Asiakomment: digitaaliset terveyspalvelut, eHealth, kasvunhallinta, palvelu start up, start up -yritys, yritysten kasvuvaiheet
There is no question small businesses experience growing pains. The ability of the small businessman to cope with these pains will determine whether or not he will be successful. (Steinmetz, 1969, p. 36)

EHealth start-up business is such an experiment that all kinds of things must be tried all the time, where the market is just starting to open, and missteps are inevitable. (Case E)

Dedicated to Edla, Roope, and Ronja. To encourage them to aspire to their own dreams with determination and sisu.
Acknowledgements

This dissertation is a milestone in my professional career. In essence, it represents the culmination of the last six years during which I have worked as a researcher at the Microentrepreneurship Centre of Excellence MicroENTRE at the University of Oulu. Along with research work, my job description has included micro-enterprise development projects. Even before starting my career as a researcher, I had worked as a project designer, and extensive cooperation with small businesses was a commonplace experience in the Kerttu Saalasti Institute at University of Oulu. From these project activities, I have gained practical experience in the development, growth, and management of micro-enterprises and start-ups. Indeed, my practical level of understanding of the small business in various industries has been beneficial to the research for and the writing of this dissertation. Moreover, working with both regional development and national level innovation projects has been critical in developing my understanding of business contexts and the role of start-ups. I would like to acknowledge everyone who played a role in this academic accomplishment.

I would especially like to thank my supervisors, Professor Pekka Leviäkangas, Professor Matti Muhos, and Professor Harri Haapasalo, for their guidance through each stage of the research process. I also want to thank Professor Haapasalo for the opportunity to complete postgraduate studies at the Industrial Engineering and Management research unit. My deep appreciation must also be extended to Emeritus Professor Matti Koiranen and Professor Pekka Abrahamsson. They provided valuable comments and feedback as the pre-examiners of this dissertation.

I set my goal for a doctoral degree in 2013, when our research group leaders, Professor Matti Muhos and Development Manager Eija-Riitta Niinikoski, encouraged team members to seize the opportunity to pursue postgraduate studies. I would also like to acknowledge them for all hard work they have put into supporting the research group; their efforts created the conditions which made it possible for team members to conduct research concurrently with development projects. One example is the TEKES-funded project of 2014–2015, which enabled conducting research about eHealth service start-ups, including data collection from different geographical contexts. Professor Matti Muhos deserves my thanks and appreciation for inspiring my interest in business growth and growth management of companies.

I would like to acknowledge MicroENTRE’s Research Director Dr. Anna-Mari Simunaniemi and my MicroENTRE colleagues for their contributions, advice, and
the constructive environment they provided. The research group has been instrumental in defining the path of my research. Moreover, my sincere gratitude goes to all the co-authors of our original articles. I am extremely thankful for their valuable contributions.

The Kerttu Saalasti Foundation, the Tauno Tönning Foundation, the Riitta and Jorma J. Takanen Foundation, the Niilo Helander Foundation, and the University of Oulu Technology and Natural Sciences doctoral program provided financial support during my doctoral studies. I would like to express my gratitude to these foundations and the doctoral program. Particularly, I would like to thank all the eHealth start-ups and individuals who have taken part in this study by contributing their valuable time and providing relevant and significant access.

Finally, I would like to acknowledge the support of my family, without whom this dissertation would not have been possible. I especially thank my parents, Hannu and Marketta, who have always supported me with love and understanding, and my dearest Katja – our daily lives with small children have provided the necessary counterbalance to this demanding and rewarding academic work. To my lovely children Edla, Roope, and Ronja—I am so proud of you all.

Oulu, Finland, 20 May 2020

Martti Saarela
## List of abbreviations and definitions

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>CIT</td>
<td>Critical incident technique</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief executive officer</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communication technology</td>
</tr>
<tr>
<td>INV</td>
<td>International new venture</td>
</tr>
<tr>
<td>IT</td>
<td>Information technology</td>
</tr>
<tr>
<td>OECD</td>
<td>The Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>UniOGS</td>
<td>University of Oulu Graduate School</td>
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**Born global**

This is a newly founded firm that immediately starts seeking international business performance.

**Critical incident**

This is one that the person (involved in the activity) recalls as unusually positive or negative with respect to attaining the goals of the activity.

**eHealth**

The implementation of ICT in the health sector (also called electronic health, digital health, health 2.0).

**Growth**

Growth is a change process occurring over time. The increase in a firm’s size is measured from one period to another.

**Growth management**

Growth management is integrally involved in the stages of growth theory. The stages of the growth approach focus on how managerial challenges occur and how they can be managed during a firm’s growth across typical developmental stages.
Health
In this paper, health (health sector) is interpreted as a broad term including, for example, healthcare, well-being, and wellness.

Management priorities
Growth management categories where managers allocate and focus their attention and activities. Management priorities are considered in the stages of the growth approach as the most central categories to manage during the growth of small businesses.

Service
In a service company, the company’s business model is or is expected to be, in key respects, based on service provision. In this study, service is defined as that which covers both end services and support services in the health sector.

Start-up
A start-up company is young/new (under 10 years), active, independent, innovative, and intent on growth. Start-up companies in this study are positioned in the start-up stage.

Start-up stage
This is the initial stage of business development. Its interpretation in this study is that all start-up companies are positioned at the start-up stage, but all companies in the start-up stage are not necessarily start-up companies. This study’s case companies are start-up companies and positioned at the start-up stage.
List of original publications

This thesis is based on the following publications, which are referred throughout the text by their Roman numerals:


Articles I, II, and III have been published in international scientific journals, and Article IV is a book chapter. All four articles have undergone a double-blind review process. The author of this dissertation was the primary author in Articles I, II, and IV and co-author in Article III. In Articles I, II, and IV, the author had the main responsibility of defining the research problems, reviewing the relevant literature, collecting and analyzing data, formulating the research questions, drawing conclusions, and writing the manuscript. The co-authors provided valuable input and comments for all the papers. In Article III, author of this dissertation reviewed the relevant literature, analyzed the data, and wrote the manuscript in collaboration with the first author.
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1 Introduction

1.1 Background and research environment

Healthcare and the well-being of populations are critical economic considerations and some of the most pressing challenges confronting nations today (Agarwal, Gao, DesRoches, & Jha, 2010; European Commission, 2017a). Healthcare systems face sustainability and quality challenges caused by an increasing demand for healthcare services due to demographic changes, aging populations, and the increasing prevalence of chronic diseases and obesity (Agarwal et al., 2010; European Commission, 2017a; Pinto & Baracsi, 2012; Van Limburg et al., 2011). This growing demand has led to a dramatic increase in health-related spending which represents a rising percentage of the gross domestic product (GDP) in developed countries (Meier, Fitzgerald, & Smith, 2013; The Organisation for Economic Co-operation and Development [OECD], 2017). Increased spending is not a problem if the benefits exceed the costs; however, there is robust evidence of inefficiencies and inequities in healthcare systems (OECD, 2017). Moreover, healthcare systems have faced challenges in the implementation and dissemination of new health initiatives, despite the general perception that healthcare organizations are among the most knowledge-rich and research-based organizations (Barnett, Vasileiou, Djemil, Brooks, & Young, 2011; Berwick, 2003). Increased healthcare service demands and economic challenges facing an already overloaded healthcare system have recently intensified the need for effective, scalable, sustainable, and innovative health services (Barnett et al., 2011; Pinto & Baracsi, 2012; Rocha et al., 2013).

Digitalization and information and communication technologies (ICTs) have been viewed as key responses to increased requirements of cost-effectiveness and the need to accelerate efficiencies and quality improvement in healthcare systems and services (Agarwal et al., 2010; European Commission, 2012; Pinto & Baracsi, 2012). Digital technologies enable the development of innovations, products, and services providing possibilities to restructure healthcare delivery (European Commission, 2017a; Meier et al., 2013). The integration of technology into health services, known as eHealth (electronic health), is an emerging and fast-growing area in the health industry (Campbell, 2014; Ouhibi, Fernández-Alemán, Carrillo-de-Gea, Toval, & Idri, 2017; Srivastava, Pant, Abraham, & Agrawal, 2015), which aims to improve peoples’ health and well-being (Kyriazakos, 2017). EHealth (also
called e-Health, digital health, and health 2.0) refers to the use of ICTs to support health services (World Health Organization [WHO], 2016) and the use of digital tools and services for health (European Commission, 2012). EHealth offers new opportunities to prevent, assess, inform, promote, and treat health behaviors across large segments of the population (Borrelli & Ritterband, 2015; Meier et al., 2013) and allows, for instance, people to monitor their health and well-being online or through devices such as smartphones (European Commission, 2012). Moreover, it helps to improve access to healthcare and sharing health information among health professionals, patients, and researchers in order to enhance the quality and effectiveness of healthcare services (European Commission, 2017b; Van Limburg et al., 2011). It has the potential to reach underserved and rural populations, engage practitioners and patients, and integrate health services and information (Harrison & Lee, 2006; Meier et al., 2013). However, while technology plays a major role in the development of all sectors in our economies (Srivastava et al., 2015), and healthcare is the largest global service industry, healthcare practices have been relatively slow in adopting new possibilities afforded by technologies and digital businesses (Hanman & Celia, 2013; Kerwin & Madison, 2002; Parente, 2000; Wickramasinghe, Fadlalla, Geisler, & Schaffer, 2005).

The market potential of eHealth is strong (European Commission, 2015), and it offers unique opportunities to build new businesses that could have a positive social impact by improving healthcare sustainability (Chowdhury, 2012; Maheu, Whitten, & Allen, 2001). EHealth start-ups create digital solutions to meet the needs, fill gaps, and even create new markets in health and well-being (Elton & O’Riordan, 2016). Moreover, they develop services and digital applications, such as smartphone apps and wearable devices, which empower consumers to play a bigger role in managing their own health and wellness (Aue, Biesdorf, & Henke, 2015; Campbell, 2014). Start-ups typically have organizational agility, promising ideas, the willingness to take risks, and the tendency toward growth (Weiblen & Chesbrough, 2015), which makes them pioneers in innovations (Rosenbusch, Brinckmann, & Bausch, 2011).

Although there has been strong growth in eHealth, particularly in mobile health (mHealth), start-ups in recent years (Morland et al., 2017), eHealth businesses face significant obstacles (Kyriazakos, 2017; Oderanti & Li, 2018), and therefore, most eHealth solutions and projects tend to fail or remain in a pilot state (Kao & Liebovitz, 2017; Kijl, Nieuwenhuis, Huis in’t Veld, Hermens, & Vollenbroek-Hutten, 2010; Kyriazakos, 2017; Mas & Hsueh, 2017; Mestres, 2017; Shepherd, Douglas, & Shanley, 2000; Urueña, Hidalgo, & Arenas, 2016; Van Limburg et al., 2011).
Also, one significant barrier of eHealth business growth is a lack of sustainable profit/business models (Mettler & Eurich, 2012; Oderanti & Li, 2018).

For decades, business growth has been a core topic of entrepreneurship research (Delmar, 2006; McKelvie & Wiklund, 2010; Shane & Venkataraman, 2000) and this research is particularly relevant to eHealth business growth. The primary reason for this is the contribution of growing companies to economic development and job creation (Smallbone & Wyer, 2006). Business growth has been studied from multiple perspectives, and there are many research approaches and conceptual frameworks which have attempted to clarify business growth (Dobbs & Hamilton, 2007). While most of the growth research has not acknowledged the qualitative aspects in the growth (McKelvie & Wiklund, 2010; Shepherd & Wiklund, 2009), growth management is of central importance for start-up companies aiming at growth (Volkman, Tokarski, & Grünhagen, 2010, p. 243), and it is critical to study how a company manages its growth process (Gupta, Guha & Krishnaswami, 2013). However, the knowledge about the process of firm growth is still limited and scattered (Davidsson & Wiklund, 2006; Headd & Kirchhoff, 2009; Leitch, Hill, & Neergaard, 2010; Shim, Eastlick, & Lotz, 2000). A greater understanding of firms’ growth processes is needed to contribute to management and to develop better and more relevant policies to promote growth (Wright & Stigliani, 2013).

The extensive literature concerning the stages of growth, one of the dominant approaches to business growth (McKelvie & Wiklund, 2010; Phelps, Adams, & Bessant, 2007), provided the starting point for this study’s theoretical foundation. The stages of growth approach focuses on how managerial challenges appear and can be managed during a firm’s growth across typical growth stages (Davidsson & Wiklund, 2006; McKelvie & Wiklund, 2010). These models attempt to explain the dynamic nature of business growth (Adomako & Mole, 2018) and address a firm’s managerial processes (Davidsson, Achtenhagen, & Naldi, 2010; Davidsson & Wiklund, 2006). Moreover, due to accelerating technology development and continuous changes in business environments resulting in new types of challenges to growth management, the stages of growth approach is relevant in a new way in today’s research (Amir & Auzair, 2017).

The start-up stage is the critical period for a new company’s survival because most companies do not grow beyond the first stage, and if they grow, decisions made during the early stages of growth have a definitive influence on a company’s success (Bennett, 2016; Brush, Manolova, & Edelman, 2008; Furlan, & Grandinetti, 2014; Greiner & Malernee, 2005). Understanding the business in the start-up stage
is an important issue for both academics and practitioners (Haltiwanger, Jarmin, & Miranda 2013; Kaulio, 2003; Unterkalmsteiner et al., 2016; Witmeur & Fayolle, 2011).

According to reviews in the literature (Levie & Lichtenstein, 2010; Muhos, Kess, Phusavat, & Sanpanich, 2010; Phelps et al., 2007), numerous stages of growth models have been introduced over the past decades. As these reviews have shown, there is a plentitude of generic (or universal) models and frameworks that describe the stages of firm growth; however, a contextual understanding remains understudied. Jawahar and McLaughlin (2001, p. 412) emphasized that the complexity of companies and the complexity of growth phenomena result in universal theories and models being unable to provide a complete representation of business growth. Hence, it may be better to produce context-dependent theories that work for at least certain types of firms (Zupic & Giudici, 2018). Therefore, there is a need for context-specific knowledge, such as industry-specific understandings of business. In addition, further research is needed to increase the understanding of new business growth in the start-up stage (Kaulio, 2003; Witmeur & Fayolle, 2011). Moreover, the stages of growth research (e.g. Levie & Lichtenstein, 2010; Muhos et al., 2010; Phelps et al., 2007) have provided little or no evidence regarding international aspects of start-up growth management.

From the theoretical perspective, the primary motivation for this dissertation comes from the need for a context-specific understanding about growth management of eHealth service start-up businesses instead of a universal growth management description provided by universal and general stages of growth models.

This study focused on eHealth service start-ups, since there is an urgent need for innovations in health practices and deliveries, and start-ups can be potential promoters of new service innovations in the large healthcare and well-being markets. However, the business aspects of eHealth innovations have been poorly researched (Chen, Cheng, & Mehta, 2013; Jiang, Wang, Peng, & Zhu, 2015; Lin et al., 2010; Oderanti & Li, 2018). The early development of eHealth service start-ups has not been broadly studied and little is known about the practices and the commercial interests involved in the development, production, and marketing of eHealth solutions (Lupton, 2014). One of the main challenges has been the difficulty in understanding the business logic behind eHealth services in complex environments (Mettler & Eurich, 2012). In order to better understand the business models used in eHealth services, there is a need for research on the different stages of a service’s life cycle (Kijl et al., 2010; Van Meeuwen, Van Walt Meijer, &
Simonse, 2015). To unlock the potential of eHealth businesses, the conditions of sustainable business for start-ups should be recognized and provided by health sector decision makers (Aue, Biesdorf, & Henke, 2015). This requires empirical-based research about eHealth service start-ups, to which this study contributes.

The motivation from the practical perspective comes from the need to improve existing knowledge about fast-changing eHealth service start-up businesses. This information is important for supporting new and creative health service business and the service innovations that are needed in the health sector.

1.2 Research problem, aim, and scope

The main research problem addressed in this study deals with growth management of eHealth service start-ups. Piloting a company through the growth process represents a great managerial challenge (Hanks, Watson, Jansen, & Chandler, 1994). Growth management concerns itself with how entrepreneurial owner-managers manage a firm’s growth (Merz, Weber, & Laetz, 1994), and it typically focuses on problem areas of young growing enterprises (Volkmann et al., 2010). The subject of growth management of eHealth service start-ups will be mainly discussed in this dissertation from the perspective of the stages of growth approach. The stages of growth approach focuses on how managerial challenges occur and how they can be managed during a firm’s growth process (Davidsson et al., 2010; Davidsson & Wiklund, 2006). Thus, this approach encompasses growth management and is concerned with exploring the characteristics of firms in different stages of business development (Merz et al., 1994). Revealing the characteristics of eHealth service start-up business, this study provides new empirical knowledge and understanding about growth management of eHealth service start-ups.

The research problem of this dissertation can be formulated as follows: The current understanding of growth management in eHealth service start-up business is incomplete. Industry-specific research is needed in order to reveal the characteristics of eHealth service start-up business and thereby improve understanding of growth management in eHealth service start-up business.

The aim of this dissertation is to clarify growth management of eHealth service start-ups. This dissertation provides new knowledge and empirical understanding about the growth management of eHealth service start-ups. To enable this, this dissertation focuses on revealing the key characteristics of the early development of eHealth service business. Moreover, the international aspects of eHealth service
start-up business are revealed. The topic is investigated based on the experiences of managers of eHealth service businesses at the critical start-up stage. The results of this study may be used effectively in new eHealth service businesses to predict managerial challenges during the early stages of growth.

The research problem has been divided into four separate research questions (RQs). This study addresses the RQs using a qualitative approach through empirical research. Through multiple-case studies, the answers to the RQs built complementary knowledge and understanding from four different viewpoints to address the research problem stated above.

The dissertation approaches the eHealth start-ups growth management by describing managerial experiences related to the stages of growth theory and providing characteristics of eHealth service start-up business. Moreover, the dissertation introduces management priorities, critical incidents, and international aspects of growth management in eHealth service start-up business. In addition to deductive analysis, the managerial experiences of eHealth service start-ups are provided through inductive analysis.

Four RQs that support the research problem were answered by original studies covering different viewpoints. These viewpoints, each of which corresponded to an individual original article and were related to growth management of eHealth service start-up business, were condensed into four RQs, as presented in Table 1.

**Table 1. RQs and article overviews.**

<table>
<thead>
<tr>
<th>RQ#</th>
<th>Research question</th>
<th>Title of the original article</th>
<th>Publication forum</th>
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<tbody>
<tr>
<td>RQ1</td>
<td>How do managerial experiences in eHealth service start-ups relate to the recent empirical-based and service business-focused stages of growth literature?</td>
<td>Growth management of eHealth service start-ups</td>
<td>Journal of Advances in Management Research</td>
</tr>
<tr>
<td>RQ2</td>
<td>What are the critical incidents related to the early development of eHealth service start-ups?</td>
<td>Critical Incidents of growth in Nordic eHealth service start-ups</td>
<td>Management</td>
</tr>
<tr>
<td>RQ3</td>
<td>What are the management priorities in eHealth service start-ups in Southern California?</td>
<td>Management priorities of digital health service start-ups in California</td>
<td>International Entrepreneurship and Management Journal</td>
</tr>
</tbody>
</table>
Each RQ and the related articles were integral parts of this study. All the RQs in Table 1 contributed to the research problem from different viewpoints related to growth management in eHealth service business in the start-up stage.

RQ1 was answered in Article I, and RQ2, RQ3, and RQ4 were respectively answered by the Articles II, III, and IV. Article I presented experiences of Finnish eHealth service start-ups managers related to stages of growth literature. The deductive analysis approach was conducted using a general service business framework derived from the stages of growth literature. Article II inductively analyzed Finnish and Swedish (considered in this study as the Nordic context) critical incidents related to the early development of eHealth service start-ups. Management priorities in eHealth service start-ups in Southern California were introduced in Article III. Article III explored the deductive approach utilizing management priority categories based on stages of growth literature. Finally, Article IV investigated the management priorities in international eHealth service start-ups. Article IV also applied the deductive approach utilizing management priority categories based on stages of growth literature.

The four original studies complemented each other and provided contributions to the overall research problem for the present compilation of this dissertation. As Bryman and Bell (2007, p. 412) have posited, triangulation entails using more than one method or source of data. This study used triangulation utilizing data collection from different geographical market contexts. Moreover, this study conducted both deductive and inductive approaches in analyzing data. Geographical and data triangulations were carried out to obtain a more comprehensive overview of the topic. Figure 1 illustrates this study’s structure and research articles.
Fig. 1. Structure of this dissertation and research articles.

The focus of this study was on the growth management of eHealth service start-ups. The perspective toward growth management was based on the stages of growth theory and particularly viewpoint of the start-up stage of service business. As the study’s focus was on start-up business, the other growth stages involved in the stages of growth theory were not included in the scope of this study. Moreover, this study focused specifically on service businesses. Services are defined as including both end services and support services in the field of eHealth. Furthermore, in service business, a firm’s business model is, in key respects, based on the service provision. The selected industry context of this study was health, including areas such as healthcare, well-being, and wellness. Thus, health was interpreted broadly in this study.

1.3 Research approach, data, and methodology

1.3.1 Philosophies and approach

Research provides an essential method for developing knowledge (Lancaster, 2005), and research philosophy relates to knowledge development and the nature
of that knowledge (Saunders, Lewis, & Thornhill, 2009). As business research is concerned with the social world in which we live, it is situated in the context of social science (Bryman & Bell, 2007). Researchers approach their subject via their assumptions about the nature of the social world and the way in which it may be investigated (Burrell & Morgan, 2005, p. 1). The nature of social research can be defined in terms of three dimensions: ontology, epistemology, and methodology (Terre Blanche & Durrheim, 1999). These are also referred to by Morgan (2007) as the trilogy of concepts from the philosophy of knowledge. In addition, Burrell and Morgan (2005) argued that it is convenient to conceptualize social science in terms of a set of assumptions to related human nature.

Traditional research philosophies of epistemology and ontology, which date back to ancient Greek times, are two major ways of thinking about research philosophy and should be taken into consideration when a business researcher conducts his research (Bryman & Bell, 2007; Lancaster, 2005; Saunders et al., 2009). According to Saunders et al. (2009), business and management researchers should be aware of the philosophical commitments related to a selected research strategy because adopted research philosophy contains assumptions about the way in which the researcher views the world. They also noted that these assumptions underpin research strategy and the chosen methods.

Ontology refers to a branch of philosophy that specifies the form and nature of reality that is to be studied and what can be known about it (Alexander, Thomas, Cronin, Fielding, & Moran-Ellis, 2008; Terre Blanche & Durrheim, 1999). Ontological assumptions concern the realities a researcher encounters in his research (Burrell & Morgan, 2005). In the business research context, ontology is concerned with the nature of social phenomena such as entities: whether social entities should be considered objective entities that have a reality external to social actors (objectivism), or whether they should be considered social constructions built from the perceptions and actions of social actors (subjectivism) (Bryman & Bell, 2007; Saunders et al., 2009). According to Eriksson and Kovalainen (2008), the objectivist view assumes that the social world has an existence that is independent of people and their actions. The subjectivist view, on the other hand, assumes that social actors produce social reality through their perceptions and actions (Eriksson & Kovalainen, 2008; Saunders et al., 2009).

In this research, however, the ontological position was that of pragmatism. In pragmatism, the researcher can choose viewpoints from both approaches (objectivism and subjectivism), but the most important determinant is the suitability of views for the RQs (Saunders et al., 2009). Pragmatists do not take up
a position between objectivism and subjectivism on what makes good research (Sekaran & Bougie, 2016). Pragmatists are more interested in practical outcomes than philosophical positions, and their focus is on the research problem, which they attempt to address, and RQs (Saunders, Lewis, & Thornhill, 2019). Moreover, pragmatists recognize that there are different ways of interpreting the world and conducting research and that no single point of view can give the entire picture (Saunders et al., 2019). They agree that research is contextually situated without being committed to any one philosophical position; instead, they believe that all necessary methods and approaches should be used to understand a given research problem (Creswell, 2003).

Epistemology concerns the grounds of knowledge – how one can improve understanding about the world and communicate this as knowledge to others (Burrell & Morgan, 2005). According to Saunders et al. (2009), it constitutes what is acceptable knowledge in a discipline of study. It specifies the nature of the relationship between the researcher and what can be known (Terre Blanche & Durrheim, 1999). Epistemological debate is between two extremes, positivism and interpretivism, and can be viewed along that axis (Bryman & Bell, 2007; Saunders et al., 2009). According to Bryman and Bell (2007) positivism is a position that advocates the application of the methods of the natural sciences to the study of social reality. In positivism, only the phenomena and knowledge that can be assured through senses can be considered knowledge. If the researcher reflects the philosophy of positivism, then he is probably adopting the philosophical stance of the natural scientist (Saunders et al., 2009).

Contrary to positivism, interpretivism (anti-positivistic) rejects the utility of observing from the outside in order to find laws or underlying regularities in the social world and seeks to understand phenomena from the inside perspective also utilizing individuals’ lived experiences (Burrell & Morgan, 2005; Saunders et al., 2019). Interpretivism shares the view that the subject matter of social sciences, people and their organizations, is fundamentally different from that of the natural sciences (Bryman & Bell, 2007; Saunders et al., 2009). As there are differences between people and the objects of the natural sciences, the studies of the social world require a different logic, and natural science methods cannot apply to social science (Bryman & Bell, 2007). According to Saunders et al. (2019), interpretivism highlights that human beings are different from physical phenomena because they create meanings, and interpretivists investigate these meanings aiming to create new understandings of organizational realities.
The epistemological position of this study was located closer to interpretivism than positivism, as the main aim of this study was to clarify and interpret company-wide, non-standardized organizational practices that cannot be assured through the senses as required by the natural science epistemology of positivism. Moreover, this study aimed to examine phenomena from the inside perspective utilizing personal experiences.

According to Burrell and Morgan (2005), any assumptions about human nature must consider the relationship between human beings and their situation or environment. The discussion about human nature takes place between two extremes: voluntarism and determinism. The voluntarist aspect assumes that a person is completely autonomous and free-willed (Burrell & Morgan, 2005). The deterministic extreme assumes that a person and his actions are completely predetermined by the external circumstances – people are products of their environments. Concerning the present study, the view of human nature was positioned between these extremes. The investigated subject of the study (start-ups) was assumed to involve independent actors and their decision makers (owner-managers of start-ups) as creative individuals with free will. On the other hand, external circumstances may have influence on owner-managers and companies, as they operate in markets.

Methodology refers to how researchers go about practically studying whatever they believe can be known (Terre Blanche, & Durrheim, 1999, p. 6). Methodological issues are often distinguished between quantitative and qualitative research (Bryman & Bell, 2007). Whereas quantitative research often deals with explanations, testing hypotheses, or statistical analyses, qualitative research is concerned with interpretation and understanding (Eriksson & Kovalainen, 2008). Qualitative research can provide thick, detailed descriptions of actual actions in real-life contexts (Gephart Jr., 2004). Qualitative research usually emphasizes meanings expressed through words rather than meanings derived from numbers in the collection and analysis of data (Bryman & Bell, 2007; Saunders et al., 2009). According to Saunders et al. (2009), qualitative analysis is conducted using conceptualizations. Moreover, while quantitative data collection results in numerical and standardized data, qualitative data collection results in non-standardized data requiring classification. One advantage of qualitative research is that it can provide insights that are difficult to produce with quantitative research (Gephart Jr., 2004).

In this study, the manner of investigation was qualitative as the aim was to clarify and improve the understanding about growth management of eHealth
service start-ups. Nevertheless, it might be feasible to investigate the topic applying the quantitative approach or a combination of both methods. However, obtaining quantitative, comprehensive data for statistical analysis would have been economically unfeasible, which justified the use of the qualitative method as a manner of investigation in this study. Moreover, a qualitative research approach provides more in-depth knowledge about the topic. It is also pointed out by researchers such as Shawn (1999) that young businesses as research “subjects” are at too early of a stage in their development to benefit from research that uses quantitative methods. Moreover, according to Shawn (1999, p. 60), small business researchers should adopt an approach that allows them to get close to participants, go inside to their internal logic, and interpret their subjective understanding of reality.

According to Saunders et al. (2009), there are two main approaches to theory development: deduction and induction. The starting point in the deductive approach is the theory from which hypotheses are drawn and tested through empirical observation (Gummesson, 2000; Lancaster, 2005). According to Saunders et al. (2009), in the deductive approach, the researcher develops a theory and hypothesis and then designs a strategy to test the hypothesis, and a clear theoretical position is developed prior to the collection of data. In deductive research, the researcher, based on what is already known in the domain and the theoretical considerations in relation to that domain, deduces a hypothesis which is then laid open to analysis using empirical data (Bryman & Bell, 2007; Lancaster, 2005). Eriksson and Kovalainen (2008) stressed that deduction rests on the idea that theory is the first source of knowledge.

In the inductive research approach, data are collected, and a theory is developed as a result of the data analysis (Saunders et al., 2009). Instead of testing a preformed hypothesis, inductive research attempts to develop a new theory from data (Alexander et al., 2008). Inductive research aims to generate theories based on observations from the empirical world (Lancaster, 2005). Gummesson (2000) noted that the inductive approach starts with real-world data and then progresses to output categories, concepts, patterns, and models, and finally, theories are developed. The inductive approach is based on the logic of proceeding from empirical research to theoretical results, that is, building theory (Eriksson & Kovalainen, 2008). The present study used both inductive and deductive research approaches. The deductive approach was conducted in Articles I, III, and IV, and the inductive approach was used in Article II. Figure 2 illustrates this study’s research position.
related to epistemological, ontological, methodological, and approaches. Furthermore, study’s approach to theory development is illustrated.

![Diagram of philosophical positions and approach of this research.](image)

**1.3.2 Research strategy**

According to Saunders et al. (2009), the next step after selecting the research philosophies and research approaches is the selection of a suitable research strategy. Case study research is one approach that can bring us to an understanding of a complex issue and can add strength to what is already known through previous research (Dooley, 2002). Case study can help sharpen existing theory by pointing to gaps and beginning to fill them (Siggelkow, 2007). Orum, Feagin, and Sjoberg (1991) argued that case study is an ideal strategy when a holistic, in-depth investigation is needed. Moreover, they noted that it is a suitable research strategy for theoretical generalization, which may involve suggesting new interpretations and concepts or re-examining earlier concepts and interpretations. However, Davidsson and Wiklund (2006) emphasized that, even though case studies are valuable for developing hypotheses and for suggesting interpretations, they will never suffice for making generalizations about relationships among variables.

A case study provides the characteristics, or configurations of a particular unit of analysis such as an individual, a community or an organization (Sjoberg, Williams, Vaughan, & Sjoberg, 1991). According to Yin (1989), the case study method utilizes an empirical research strategy that examines a modern-day phenomenon in its real context when the interface between the phenomenon and the context is not clear. As entrepreneurship research is context-specific and should
be focused on entrepreneurs’ behaviors and real-world problems (Neergaard & Ulhoi, 2007), qualitative methods can be used when the goal is to make entrepreneurs’ stories visible and to understand businesses in their natural context. Qualitative case study methodology provides tools for researchers to study complex phenomena within real life contexts (Baxter & Jack, 2008) aiming to capture people as they experience their natural, everyday circumstances (Orum et al., 1991). A case study can be understood as the intensive study of a single case where the purpose is to shed light on a large class of cases (Gerring, 2006, p. 20). Case study research may incorporate several cases when it is a multiple-case study (Baxter & Jack, 2008; Gerring, 2006; Yin, 1989). In multiple-case study research, also called collective case research, the single case is of interest because it belongs to a particular collection of cases where the individual cases share a common characteristic (Stake, 2006).

1.3.3 Research choices and time horizon

In this research, a multiple-case study strategy was applied (Yin, 1989). Multiple-case studies, which have become increasingly common in business and management research (Bryman & Bell, 2007), are considered robust and helpful in both generating explanations and testing them (Herriot & Firestone, 1983). Eisenhardt (1991) and Eisenhardt and Graebner (2007) have pointed out that the multiple-case study is a useful tool to create theory because it permits replication and extension among individual cases. Different cases can emphasize complementary aspects of a studied phenomenon, and by piecing the individual patterns together, the researcher can draw a more complete theoretical picture (Eisenhardt, 1991). Compared with a single-case design, a multiple-case study design has a distinct advantage, as evidence is considered more compelling, and therefore, it is regarded as more robust (Yin, 1989) and reliable (Baxter & Jack, 2008).

According to Stake (2006), the benefits of a multiple-case study will be limited if the number of cases is fewer than four, or more than ten. However, Stake (2006) noted that, multiple-case studies may have even more than 15 cases for good reason. Eisenhardt (1989) has argued that good number of cases for a multiple-case study is four to ten. Gerring (2006) noted that, at a certain point, it will no longer be possible to investigate several cases intensively. Ideally, when theoretical saturation is reached, researchers should stop adding cases (Eisenhardt, 1989). Consistent with Eisenhardt’s (1989) recommendation of four to ten cases for research, eight
cases were selected for deductive analysis in Article I, five cases in Article III, and five cases in Article IV. Deductive analyses have been conducted in respect to the stages of growth literature, which included a synthesis of recent empirical-based service business-focused stages of growth models. This synthesis, introduced by Muhos, Simunaniemi, Saarela, Foit Jr. and Rasochova (2017), provided a reference framework for the deductive approach of this study. Utilizing a reference framework derived from the stages of growth theory and matching it with multiple-case studies was a relevant way of investigating (see e.g., Witmeur & Fayolle, 2011) eHealth service start-ups in order to study their growth management.

Business growth is a process that needs to be studied over time (Davidsson & Wiklund, 2006). Thus, to investigate the experiences of owner-managers when business is starting up, data were gathered via semi-structured interviews designed to explore perceived experiences retrospectively (Bryman & Bell, 2007). In that sense, this study was longitudinal as companies’ histories were investigated (Davidsson & Wiklund, 2006, p. 39).

**1.3.4 Techniques, procedures and data collection**

In this study, the data were gathered and analyzed using the critical incident technique (CIT) (Chell, 2014; Edvardsson & Roos, 2001; Fisher & Oulton, 1999; Flanagan, 1954). CIT facilitates the investigation of the significant occurrences (e.g., events, milestones, incidents, co-incidents, accidents, processes, and issues) identified by the interviewee, the way they are managed, and the perceived outcomes (Chell & Pittaway, 1998). According to Fisher and Oulton (1999), a critical incident is an extreme behavior that is either outstandingly effective or outstandingly ineffective with respect to attaining the general aims of an activity.

Figure 3 illustrates, based on Fisher and Oulton’s (1999) definition, the CIT. In this method, the interviewee describes both positive and negative incidents during the company’s growth process. For this study, a critical incident was defined as follows: unlike business as usual, a critical incident is one that the owner-manager recalls and considers as unusually positive or negative in relation to business goals. Interviewees were asked to identify and describe critical incidents, as well as the consequences of those critical incidents for their business.
The CIT has been used in a number of entrepreneurial and business studies and has gained acceptance as a qualitative method in entrepreneurship research (Giroux, 2009; Perren & Ram, 2004). CIT is a flexible method which may be used to identify those critical issues that lead to successful or unsuccessful performance in different phases of business growth (see Kaulio, 2003; Muhos, 2011; Stam, 2007). CIT enables, for instance, to prioritize critical incidents of initial business process according to their frequency and understood the context of the business (Kaulio, 2003). The one primary result of studies using the CIT is that groups and categories emerge through the classification procedure (Bitner, Booms, & Tetreault, 1990). While single cases are unique, the types of incidents, contexts, strategies, and outcomes may, in general terms, be applicable to other businesses. Moreover, an extant conceptual framework, or a suggested set of preconceived categories for which evidence may be sought in the data, can be tested and extended using the CIT method (Chell, 2014).

For the original articles, and therefore for this dissertation, data were collected from 19 eHealth service start-ups from Finland, Sweden, and Southern California (USA). Following Yin’s (1989) guidelines and the principles of case study research (Eisenhardt, 1989), the case companies were not randomly selected but purposefully chosen. The basic premise of case selection was that the interviewed start-ups considered that they were doing their business during the start-up stage in the field of eHealth and that they desired growth. The case start-ups were also selected based on being relatively typical (typical or representative cases) (Bryman & Bell, 2007; Seawright & Gerring, 2008) of many innovative eHealth service start-ups situated in the broad eHealth field, and being accessible by the time of data collection. Thus, these case start-ups were chosen predicated on their being exposed to the characteristics within eHealth industry.
In this study, well-being services were also included under the umbrella of eHealth. Moreover, wellness and fitness are important dimensions of health that represent large and lucrative markets that include the majority of health start-ups (Chowdhury, 2012; Deluca & Enmark, 2000; Harrison & Lee, 2006; Hird, Ghosh, & Kitano, 2016).

In this study, a service business was defined as a business whose business model is based mostly on the services. In addition, services are defined to cover both end services and support services in the field of eHealth. Interpretation of the meaning of service business in this study was rather broad.

This study was not intended to evaluate the competence of management within these selected start-ups. Moreover, it did not ascribe significance to the success or failure of the businesses during their start-up stage or later. The main characteristics of the case companies analyzed in this study are summarized in Table 2.

Table 2. The main characteristics of nineteen case companies from Case A to Case S (Articles I–IV).

<table>
<thead>
<tr>
<th>Case</th>
<th>Country</th>
<th>Founded (year)</th>
<th>Staff</th>
<th>Service description</th>
<th>Turnover</th>
<th>Assets</th>
<th>Length of the interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Finland</td>
<td>2013</td>
<td>1.5</td>
<td>Mobile application-related well-being</td>
<td>2000€</td>
<td>60000€</td>
<td>65 min</td>
</tr>
<tr>
<td>B</td>
<td>Finland</td>
<td>2014</td>
<td>3.5</td>
<td>Health data processing</td>
<td>n/a</td>
<td>n/a</td>
<td>27 min</td>
</tr>
<tr>
<td>C</td>
<td>Finland</td>
<td>2014</td>
<td>3.5</td>
<td>Online well-being services for workplaces</td>
<td>20000€</td>
<td>n/a</td>
<td>50 min</td>
</tr>
<tr>
<td>D</td>
<td>Finland</td>
<td>2008</td>
<td>4</td>
<td>Product-related MedTech service</td>
<td>10000€</td>
<td>n/a</td>
<td>55 min</td>
</tr>
<tr>
<td>E</td>
<td>Finland</td>
<td>2010</td>
<td>5</td>
<td>Product-related MedTech online service</td>
<td>40000€</td>
<td>350000€</td>
<td>43 min</td>
</tr>
<tr>
<td>F</td>
<td>Finland</td>
<td>2012</td>
<td>4</td>
<td>Software-based well-being services</td>
<td>20000€</td>
<td>120000€</td>
<td>55 min</td>
</tr>
<tr>
<td>G</td>
<td>Finland</td>
<td>2014</td>
<td>2</td>
<td>Cloud-based self-care user interface</td>
<td>1000€</td>
<td>40000€</td>
<td>35 min</td>
</tr>
<tr>
<td>H</td>
<td>Finland</td>
<td>2012</td>
<td>6</td>
<td>Online services to measure and improve employee well-being</td>
<td>20,000€</td>
<td>380000€</td>
<td>53 min</td>
</tr>
<tr>
<td>I</td>
<td>Sweden</td>
<td>2014</td>
<td>5</td>
<td>Management and systems consultant for health sector</td>
<td>3200000kr</td>
<td>18000000kr</td>
<td>27 min</td>
</tr>
<tr>
<td>J</td>
<td>Sweden</td>
<td>2015</td>
<td>4</td>
<td>Cloud platform service</td>
<td>5300000kr</td>
<td>22000000kr</td>
<td>54 min</td>
</tr>
<tr>
<td>K</td>
<td>Sweden</td>
<td>2011</td>
<td>4</td>
<td>Accessories for mobiles</td>
<td>10000000kr</td>
<td>45000000kr</td>
<td>35 min</td>
</tr>
<tr>
<td>L</td>
<td>Sweden</td>
<td>2014</td>
<td>7</td>
<td>A cloud-based platform for healthcare</td>
<td>64000000kr</td>
<td>24000000kr</td>
<td>40 min</td>
</tr>
<tr>
<td>M</td>
<td>Sweden</td>
<td>2015</td>
<td>2</td>
<td>Online healthcare service</td>
<td>25000000kr</td>
<td>40000000kr</td>
<td>26 min</td>
</tr>
<tr>
<td>Case</td>
<td>Country</td>
<td>Founded (year)</td>
<td>Staff</td>
<td>Service description</td>
<td>Turnover</td>
<td>Assets</td>
<td>Length of the interview</td>
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<tr>
<td>------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>N</td>
<td>Sweden</td>
<td>2011</td>
<td>6</td>
<td>Online market platform for health services</td>
<td>2000000kr</td>
<td>900000kr</td>
<td>22 min</td>
</tr>
<tr>
<td>O</td>
<td>US</td>
<td>2014</td>
<td>10</td>
<td>Online real-time service for disabled people</td>
<td>0</td>
<td>25000$</td>
<td>137 min</td>
</tr>
<tr>
<td>P</td>
<td>US</td>
<td>2014</td>
<td>2</td>
<td>On-demand service for life science infrastructure</td>
<td>4000$</td>
<td>22000$</td>
<td>138 min</td>
</tr>
<tr>
<td>Q</td>
<td>US</td>
<td>2013</td>
<td>3</td>
<td>Digital product–service platform for guided self-care of a chronic skin condition</td>
<td>0</td>
<td>600000$</td>
<td>130 min</td>
</tr>
<tr>
<td>R</td>
<td>US</td>
<td>2012</td>
<td>5</td>
<td>Mobile telemedicine application and digital service platform</td>
<td>6000$</td>
<td>n/a</td>
<td>90 min</td>
</tr>
<tr>
<td>S</td>
<td>US</td>
<td>2011</td>
<td>4</td>
<td>Online solution for matching patients and doctors with medical trial opportunities</td>
<td>0</td>
<td>n/a</td>
<td>84 min</td>
</tr>
</tbody>
</table>

In the original articles, the data were gathered from case companies in Finland, Sweden, and Southern California in the US. Distribution of case companies among the original articles is presented in Figure 4.

![Fig. 4. Distribution of nineteen cases (Case A–Case S) in the original articles.](image)

Managers of case companies were interviewed using a semi-structured interview framework from November 2014 to October 2015. The median length of the interviews was 53 minutes. In the study, the interviewees were owner-managers, that is, persons who were responsible for making decisions that affect, for example,
the location, form, strategy, and business model of a firm, as well as being the ones who decided about the use of resources that the firm applied (Hébert & Link, 1989).

This dissertation consists of four original publications. Table 3 presents a summary of data collection methods used in the original research articles.

<table>
<thead>
<tr>
<th>Article</th>
<th>Data collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Interviews of eight Finnish eHealth service start-up managers</td>
</tr>
<tr>
<td>II</td>
<td>Interviews of eight Finnish and six Swedish eHealth service start-up managers</td>
</tr>
<tr>
<td>III</td>
<td>Interviews of five US (Southern California) eHealth service start-up managers</td>
</tr>
<tr>
<td>IV</td>
<td>Interviews of two Finnish, one Swedish, and two US (Southern California) eHealth service start-up managers</td>
</tr>
</tbody>
</table>

The research articles utilized the semi-structured interview framework. The interview began with the manager’s open-ended business growth story. Next, the manager described the positive and negative incidents that had occurred during the start-up stage. Finally, interviewees described positive and negative incidents related to the management priority categories based on the empirical literature synthesis by Muhos et al. (2017). The interview format was designed to begin the interviews from a broader perspective (the business growth story) and then move to a more detailed one (referring to the preconceived management priority categories), making it possible to examine the individual managers’ experiences from different perspectives. In addition to directly expressed critical incidents by the owner-managers, critical incidents emerging from the data (for instance, in open-ended business growth stories recalled by the owner-managers) were identified through interpretation by the researcher in order to also capture latent content evidence (Cho & Lee, 2014).

These in-depth interviews were audio-recorded, transcribed, and coded. The CIT is a classification technique employing content analysis of stories and/or critical incidents as data (Bitner et al., 1990). Flanagan (1954) emphasized that critical incidents represent only raw data. Thus, after the critical incidents have been collected, content analysis takes place (Gremler, 2004). All critical incidents (negative and positive) were identified on a case-by-case basis. According to Gremler (2004, p. 66), the aim of CIT content analysis is a classification which provides insights regarding the frequency and patterns of factors that affect the phenomenon of interest. Citing Stauss (1993), Gremler (2004, p. 66) noted that the
categories of classification can either be deduced from theoretical models or formed on the basis of inductive interpretation. In this study, the data were analyzed qualitatively using the deductive approach (Chell, 2004, 2014; Crabtree & Miller, 1999) in Articles I, III, and IV, and inductively in Article II.

In Article I, all critical incidents (negative and positive) were firstly identified on a case-by-case basis. Each identified critical incident was then deductively classified as being either a parallel or contradictory (or partly contradictory) experience related to the preconceived assumptions based on an empirical service business growth literature. Moreover, those critical incidents that could not be placed in the general service business growth literature’s assumptions were considered to represent characteristics of the eHealth service business in the investigated Finnish context. This implementation followed the approach provided, for example, by Chell (2004). Researcher pointed out that an extant theoretical framework provides a set of preconceived strategies – a coding frame – for which evidence may be sought in the data. Such a framework may not only be tested, but also extended using CIT methodology (Chell, 2004, p. 50). In accordance with Article I, critical incidents (negative and positive) were first identified on a case-by-case basis in Articles III and IV. Then, cross-cross case analysis, which used management priority categories derived from empirical service business growth literature as a classification reference, was conducted.

Article II utilized the inductive approach. Once the data were collected and critical incidents were identified on a case-by-case basis, critical incidents were classified inductively into categories. Following Bitner et al. (1990), the researcher conducted an analytic induction process consisting of repeated, careful readings and sorting of the incidents into categories according to similarities in the reported experiences. As the researcher examined many critical incidents, similarities among incidents begin to become apparent. Next, the exact nature of the class similarity was defined, which formed the basis for labelling each category with its own theme name. In coding analysis, two researchers read, sorted, and reread the critical incidents until consensus was achieved on classification and labeling of theme names.

According to Bitner et al. (1990), criticism of CIT content analysis typically centers on issues of the reliability and validity of the categories. These problems may arise as a result of the ambiguity of word meanings, category labels, and coding rules. To minimize these problems and provide intracoder reliability, which refers to the ability of the coder to consistently and repeatedly classify the incidents into specific categories (Gremler, 2004), the undersigned was involved in the
coding of all 19 cases in the original articles. As use of content analysis programs may reduce reliability problems (Bittner et al., 1990), coding was carried out using the NVivo 10 qualitative data analysis tool. Moreover, to improve coding reliability and to confirm the findings, each transcript was coded, and content analysis was carried out by at least two researchers.

1.3.5 Geographical contexts of the study

In each geographical context, companies operate in unique social economic conditions where the characteristics of businesses are different (Gupta et al., 2013). To obtain a more comprehensive picture about topic of this dissertation, three geographical contexts were selected for this study. Finland, Sweden, and the US (Southern California) were selected as the locations of the case companies, representing diverse geographical contexts. It was justified to take a closer look at eHealth service start-ups in these contexts due to following important aspects.

Finland is known for its high level of technology, and it is one of the leading countries in digital performance. The ranking of the Digital Economy and Society Index evaluation indicated that the top three performing European Union (EU) countries are Sweden, Denmark, and Finland (European Commission, 2016a). Finland is also considered among the most innovative countries in the world (Dutta, Lanvin, & Wunsch-Vincent, 2016). According to the World Economic Forum’s Global Information Technology Report 2016 (Baller, Dutta, & Lanvin, 2016), Finland represents one of the leading countries in the world in relation to generating economic impact from investments in ICT. In fact, Finland is generally considered one of the frontrunners in eHealth in the EU (Currie & Seddon, 2014). It has distinguished itself in the use of digital technologies for online public services, and it has one of the highest shares of eGovernment users and users of eHealth services in the EU (European Commission, 2016b). Finland has made significant inroads into eHealth with its eHealth roadmap in 2007, and prior to that, in 1996, Finland developed a strategy for using information technology (IT) in the field of health and social welfare (Currie & Seddon, 2014). Furthermore, Finland offers one of the top environments in the EU in terms of market conditions for mHealth companies (Research 2 Guidance, 2015). However, one reported challenge related to eHealth in Finland has been implementing norms, standards, and interoperability of ICT as healthcare providers are decentralized (WHO, 2006).

Sweden is considered one of the most innovative countries in the world (ranked second) (Dutta et al, 2016). According to the Europe 2020 Competitiveness report,
Sweden has advanced considerably in enabling the latest digital technologies to enhance productivity and innovation. It is ranked in the top five in Europe in competitiveness (World Economic Forum, 2014). Sweden has a strong culture of entrepreneurship, and its entrepreneurship indicator is ranked the best and its digital agenda is ranked the second best in Europe. Moreover, financing is more readily available in Sweden than in many other parts of Europe (World Economic Forum, 2014). The survival rate (after three years) of start-ups is over 70%, which is very high compared with other countries (in Finland, it is over 60% which is average among countries) (Calvino, Criscuolo, & Menon, 2015). According to Calvino et al., the high survival rate can be interpreted as an indicator of a supportive environment for start-ups, for instance, regarding access to finance. It has also been reported that financing is more readily available in Sweden than in many other parts of Europe (World Economic Forum, 2014).

According to report of the OECD (2013), the Swedish healthcare system is considered as a model for other countries. Traditionally, the Swedish healthcare system has mainly been provided by the public sector and financed through taxation. Recently, Sweden has expanded the role of non-traditional service providers, such as private sector providers or community organizations, in order to increase patient choice and encourage quality-based competition. This has resulted in the opening of markets and new business opportunities in the healthcare industry (OECD, 2013). In comparison with EU countries, Sweden scores high in the adoption and diffusion of eHealth technologies (Currie & Seddon, 2014). Furthermore, it offers one of the top market conditions for mHealth companies. Based on the evaluation of five elements – eHealth adoption, level of digitization, market potential, ease of starting business, and regulations – Sweden has an excellent business environment to start mHealth businesses (Research 2 Guidance, 2015).

In the US, healthcare spending is highest among the OECD countries, at 17.2% (average in the OECD is 9%) of the GDP, and an average of $10,000 is spent annually on healthcare per person (OECD, 2017). The US is the global leader in research and development (R&D) funding and has a large domestic market (Jones Lang LaSalle, 2014). According to Smallbone and Wyer (2006), entry barriers and regulatory burdens of starting a business are low in the US, which may encourage a greater number of start-ups, which, in turn, stimulates competition in the sector and ensures that enterprises that are inefficient exit the sector.

According to Pinto and Baracsi (2012), innovative eHealth service start-ups occur under certain conditions, such as in the US where the fast growth of the eHealth sector has brought together numerous incubators and investors to
specialize in the healthcare sector. In these kinds of business ecosystems, communities of stakeholders are interacting with one another to produce goods and services (Moore, 1998), and companies are part of loose networks of actors who are interconnected and dependent on each other (Iansiti & Levien, 2004). For example, commercial medical devices and applications tend to develop in interactions between firms and other actors, such as universities, hospitals, and laboratories (Gelijns & Thier, 2002).

Southern California in the US was selected as the one of the geographical contexts of this study because of its active regional health start-up ecosystem. In terms of funding eHealth, it is the one of the most active (along with the San Francisco Bay Area, New York Metropolitan area, and Los Angeles) (StartUp Health Insights, 2014). The Southern California region has a significant presence of start-ups, close ties to research institutes, high funding levels of venture capital, and solid economies (Jones Lang LaSalle, 2014), and its dynamic ecosystem is considered ancillary to start-ups (Majava, Leviäkangas, Kinnunen, Kess, & Foit, 2016).

1.3.6 Healthcare systems in the geographical contexts of the study

According to Storey (2008), it is clearly documented that the legal-related challenges and bureaucratic burdens of entrepreneurship for both new and existing businesses vary widely from one country to another. Companies are closely associated with their financial and legal environments (Gupta et al., 2013). Each country has its different legal systems with varied complexity and dimensions (Gupta et al., 2013). Moreover, companies in the health industry are influenced by the specific healthcare systems in a country or region. Thus, it is essential to provide background information about selected geographical (country) contexts when they are the locations of investigated eHealth service start-ups.

Böhm, Schmid, Götze, Landwehr and Rothgang (2013) classified healthcare systems distinguishing three dimensions: regulation, financing, and service provision, and three types of actors: state, societal, and private actors. Finland and Sweden (as all Nordic countries in this study) are categorized in the group of national health service countries, which represent a type of system where regulation, financing, and other provisions are governed by the state. Furthermore, Sweden and Finland’s healthcare systems operate through regional structures (Currie & Seddon, 2014). In Finland, the healthcare system is a highly decentralized, three-
level, publicly funded system where municipalities are responsible for providing healthcare services for their residents.

The US is categorized as a private healthcare system, which is coordinated by market actors, private financing sources, and for-profit providers (Böhm et al., 2013; Toth, 2016). However, because of large public programs, the public sources already play a major role in healthcare funding, contributing approximately half of the overall health funding (Böhm et al., 2013; Toth, 2016). Moreover, Toth (2016) noted that the US system cannot be classified purely as a voluntary private insurance system since it is a complex, multiform type of healthcare system where government intervention is also prominent, as demonstrated by the fact that, in the US, public health expenditure is around 8% of the GDP.
2 Literature review

2.1 Theoretical framework

Business growth is one of the core topics of entrepreneurship research (Delmar, 2006; McKelvie & Wiklund, 2010; Shane & Venkataraman, 2000), which, in turn, falls within the research field of business and management, and more broadly within the social sciences (Blackburn, De Clercq, & Heinonen, 2018). The stages of growth approach is one of the many approaches that is focused on firm growth/business growth. The theoretical framework of this dissertation is based on the stages of growth literature.

Although this dissertation’s theoretical framework is based on stages of growth literature and particularly on the viewpoint of the start-up stage of service business, other research areas are integral to this study’s theoretical background. As the aim of this dissertation is to clarify growth management of eHealth service start-up businesses, relevant existing literature on start-up companies (new ventures) and the industry context of the businesses in the health sector was studied. In order to investigate growth management eHealth service start-ups and improve our understanding about the topic, it was essential to integrate the current knowledge of these fields into this study. Thus, relevant literature also regarding start-up business outside of the stages of growth research stream was reviewed. Moreover, as this dissertation is focused on eHealth service start-ups, the industry context of health services, and particularly the eHealth context, was included in the theoretical background of this study and was selectively reviewed and analyzed in Section 2 to present what is currently known about eHealth service start-up business. Theoretical basis for the dissertation framework is illustrated in Figure 5.
To be able to focus on the selected scope, some closely related theories were left out of the focus of the theoretical framework. As the stages of growth perspective was selected as the focus of this study, other business growth perspectives are not deeply explored in this study. Moreover, closely related theories that are focused on financial growth cycles (Berger & Udell, 1998; Fuerst & Geiger, 2002), start-ups’ funding phases (Ford & Nelsen, 2014), venture capital stage models (Florida & Kenney, 1988; Rhunka & Young, 1987), and start-ups’ creation process (Bhave, 1994; Block & MacMillan, 1985; Davidsson & Gordon, 2012; Gartner, Shaver, Carter, & Reynolds, 2004; Picken, 2017) are not emphasized. Neither are concepts such as business models (Alt & Zimmermann, 2001; George & Bock, 2011; Magretta, 2002; Osterwalder & Pigneur, 2010; Osterwalder, Pigneur, & Tucci, 2005) included in the analysis. However, closely related research topic streams, such as business model literature, have been reviewed in the sense that they provide current knowledge about the eHealth service start-up business.

Moreover, the analysis of this study did not cover business growth research fields that are interested in owner-managers’ motivation/attitude toward growth (Delmar, & Wiklund, 2008; Shane, Locke & Collins, 2003; Wiklund, Davidsson, & Delmar, 2003). Moreover, the broad field of strategic management literature (Ansoff, 1980; Porter, 1981) and theories such as entrepreneurial orientation (Lumpkin & Dess, 1996; Wiklund, 1999; Wiklund & Shepherd, 2005) were outside of the theoretical foundation of the study. However, strategic management literature regarding management priorities was reviewed (Section 2.2.5).
2.2 Stages of growth

2.2.1 Business growth research

In 1959, Penrose stated that business growth is a cumulative process in which firm members build knowledge and competence. Firms are a result of development processes in which interacting series of internal changes lead to increases in size, accompanied by changes in the characteristics of the growing firm (Penrose, 1959). Business growth can also be seen as a dynamic measure of change over time (Weinzimmer, Nystrom, & Freeman, 1998) and as a complex phenomenon which is hard to predict and assess (Davidsson, Delmar, & Wiklund, 2006a). Growth is multi-dimensional, and it can manifest itself in various ways and have differential effects on several levels (Davidsson et al., 2006a).

While growth firms are set up with the intention of growth (Burns, 2011), it has been well documented that most firms do not grow at all, some grow a little, and very few firms achieve substantial growth (Davidsson et al., 2010; Storey, 1994; Wiklund, 1998). According to Davidsson et al. (2010), it important to realize that business growth is not the norm. Most new firms are imitative businesses in mature industries operating in local markets, meaning that they do not have much growth potential (Davidsson et al., 2010, p. 97). Every company constantly makes a fundamental strategic choice – whether to try grow or not (Greiner & Malernee, 2005). As a company grows and evolves, the nature, style, and functions of management change considerably (Burns, 2011). An owner-manager needs to take a fresh look at the roles, organization, and even the intent that got the business up and running (Bhide, 1992). Owner-manager needs to change and adapt, and the faster the growth occurs, the more difficult this is (Burns, 2011). However, growth also involves risks, and that may be a dilemma for business owner-managers who recognize that both the pursuit and achievement of growth can generate desirable and undesirable consequences for them and for their businesses (Flamholtz & Randle, 1990; Leitch et al., 2010).

For decades, firm growth or business growth has been a core topic of entrepreneurship research (Delmar, 2006; McKelvie & Wiklund, 2010; Shane & Venkataraman, 2000). The main reason for this is the contribution of growing firms to economic development and employment, which has attracted the attention of policy makers and researchers (Smallbone & Wyer, 2006). Researchers seek to understand business growth in order to help entrepreneurs achieve it and help policy makers create favorable conditions for it (Zupic & Giudici, 2018). Growth
of business has been studied from multiple perspectives, and there are many research approaches and conceptual frameworks which have attempted to understand business growth (Dobbs & Hamilton, 2007). The business growth literature has covered various perspectives, such as stochastic model theories (e.g., Gibrat, 1931), static equilibrium theories (e.g., Coase, 1937), transaction cost theories (e.g., Williamson, 1975), resource-based theories (e.g., Penrose, 1959), evolutionary theories (e.g., Nelson & Winter, 1982), organizational ecology theories (e.g., Hannan & Freeman, 1977), strategic adaptation theories (e.g., Sandberg & Hofer, 1982), motivational theories (e.g., McClelland, 1961), and stages of growth (life cycle, configuration) theories (e.g., Churchill & Lewis, 1983; Greiner, 1972).

Even though there has been broad and continuing interest in business growth for decades by researchers, policy makers, and practitioners, there is not much of a common body of well-founded knowledge about the processes of growth. (Davidsson & Wiklund 2006; Dobbs & Hamilton, 2007; Leitch et al., 2010). Fundamental questions concerning the causes, effects, and process of business growth remain unanswered, little is known about the phenomenon, and conceptual development has been limited (Davidsson & Wiklund 2006; Dobbs & Hamilton, 2007; Leitch et al., 2010; Wiklund & Shepherd, 2003; Wiklund, Patzelt, & Shepherd, 2009). According to Witmeur and Fayolle (2011), the shortage of current business growth research is its inability to explain the heterogeneity of growth patterns that have been observed empirically. On the other hand, Leitch et al. (2010) argued that the aspiration for holistic understanding may be unrealistic, since growth is a multi-dimensional, heterogeneous, and complex phenomenon, with, as noted by Brenner and Schimke (2015), a large number of patterns, growth factors, and knowledge sources. Given that business growth is socially constructed, it is not surprising that such complexity exists (Leitch et al. 2010).

Citing Ardishvili, Cardozo, Harmon, and Vadakath (1998), Davidsson and Wiklund (2006, p. 46) pointed out that empirical growth studies can be classified, at a general level, into factors of growth studies and growth process studies. The former studies seek explanations for why firms grow, and the latter ones are concerned with the consequences of growth. When McKeelvie and Wiklund (2010) classified business growth research into different streams, they noticed that the largest stream was “growth as an outcome” (or factor of growth) studies. Davidsson and Wiklund (2006) have also noted that many of the perspectives of growth literature focus on factors leading to survival and growth. In these studies, growth is the dependent variable when the objective is to explain growth rates, that
is, researchers have tended to try to explain what leads to growth (McKelvie & Wiklund, 2010). Studies dealing with the determinants of firm growth have received considerable attention, not least because of their practical implications (Hoogstra & van Dijk, 2004). However, McKelvie and Wiklund (2010) noted that several variables do not necessarily correlate well, suggesting that the process of growth involves multiple actions and indicators. The process of growth is different in different firms, and therefore, the internal actions varies. Furthermore, as these studies have concentrated on the quantitative determinants of growth, they have not provided much insight into an understanding of growth from the process and management viewpoint (McKelvie & Wiklund, 2010). Business growth is perceived as a highly complex construct, due to, for instance, the diversity of business owners, firms, and contexts. Thus, better understanding and theoretical development require greater emphasis on the growth process (Leitch et al., 2010; Shepherd & Wiklund, 2009).

McKelvie and Wiklund (2010, p. 271) posited that there is a need for a refocusing business growth research that takes into account qualitative differences in firms’ growth paths. The literature should consider more the problem of “what happens while a firm grows.” This would lead to invaluable insights into business growth and enable us to obtain a more comprehensive picture of the heterogeneous nature of the phenomenon (McKelvie & Wiklund, 2010). In the “the outcomes of growth,” which has also been the subject of many studies (Phelps et al., 2007), growth is considered an independent variable and the consequences of growth are investigated (McKelvie & Wiklund, 2010, p. 278). This perspective has been called the stages of growth in an attempt to explain the dynamic nature of growth (Adamoko & Mole, 2018) and focuses on managerial processes (Davidsson & Wiklund, 2006) to investigate the characteristics of firms in various predetermined stages of growth (Merz et al., 1994). Studies in this stream tend to use the stages of growth, stage development, life cycle, or stage models and use a biological analogy to describe a firm’s life span (Leitch et al., 2010). However, the reality is that there are a number of overlaps among these streams of business growth research (McKelvie & Wiklund, 2010).

2.2.2 Stages of growth perspective

As mentioned earlier, business growth can be studied from multiple perspectives. This study contributes to the stages of growth perspective, which can be viewed, according to Moroz and Hindle (2012), as one approach in entrepreneurial process
models. Whereas most business growth perspectives are concerned with factors that lead to growth, the stages of growth perspective address the actual growth process (Davidsson et al., 2010; Davidsson & Wiklund, 2006). Dobbs and Hamilton (2007) noted that the stages of growth perspective does not attempt to explain what causes growth, but rather shows interest in how business adapts internally in order to continue its growth. The stages of growth perspective is also commonly called a life cycle or configuration perspective; stages of firm development (Leitch et al., 2010); a stages approach (Levie & Lichtenstein, 2010); or a life cycle paradigm (Samuel, 2010). Moreover, this perspective could also be classified as descriptive (Dobbs & Hamilton, 2007). Even though the terms used by different scholars vary, the stages which each enterprise passes through remain more or less the same (Gupta et al., 2013). In these studies, the term “stage” corresponds to a unique configuration of variables (e.g., strategies, problems, and priorities) related to the company’s context and structure that they are likely to face during growth (Hanks et al., 1994; Miller & Friesen, 1984).

Stages of growth models are not new in the organization literature (Jawahar & McLaughlin, 2001; Smith, Mitchell, & Summer, 1985). To explain changes in organizations’ growth in terms of size and complexity, scholars have adopted the biological analogy of a life cycle (Hanks & Chandler, 1994). The adaptation of the biological concept of a life cycle by organizational researchers dates back several decades (Lester, Parnell, & Carraer, 2003). Life cycle models describe the process of change in an entity as progressing through a necessary sequence of stages (Van de Ven & Poole, 1995). Clarke, Holt, and Blunden (2014) stated that the stages of development models assume firms grow as if they are developing organisms, often focusing specifically on the life cycle of human organisms. In such life cycle models, the typical progression of transformation is a unitary sequence (it follows a single sequence of stages), which is cumulative (characteristics acquired in earlier stages are retained in later stages) and conjunctive (the stages are related such that they derive from a common underlying process) (Van de Ven & Poole, 1995, p. 515).

From the middle of the twentieth century business growth researchers have adopted the approach of organic growth as a heuristic device to explain development in an organizational entity from its starts to expiration (Clarke et al., 2014, p. 239). Chandler (1962) introduced stages to a life cycle model in which firms’ strategies and structures change as they progress through distinct stages (Jawahar & McLaughlin, 2001; Lynall, Golden, & Hillman, 2003).
Greiner’s (1972) work has provided the basic foundations for the theory on firm development (evolution and revolution). Based on his theoretical review of growing companies, Greiner concluded that firms move through five distinguishable stages of growth (Gupta et al., 2013). Each stage contains a relatively stable period of growth that ends with a management crisis; in other words, an enterprise goes through evolution and revolution crises (Greiner, 1972).

Another seminal work on the stages of growth perspective was provided by Churchill and Lewis (1983). Applying the findings of Greiner (1972) and Steinmetz (1969), they presented a five-stage model, which focused on small business growth. According to Churchill and Lewis (1983), it is apparent that businesses experience common problems arising at similar stages in their development. These similarities can be organized into a framework that increases understanding of the nature, characteristics, and problems of all kind of businesses. Stages of growth models presuppose that there are regularities in organizational development. These regularities occur in such a way that organizational development processes split into stages over time (Smith et al., 1985). A consistent pattern of development tends to occur in companies over time, and activities and structures in one stage differ from the those that occur in another stage (Quinn & Cameron, 1983). McKelvie and Wiklund (2010, p. 278) argued that the stages of growth approach has traditionally been focused on how firms grow organically through a number of stages and how the managerial challenges occur within stages and/or the shifts between them.

The stages of growth perspective is based on the idea that, among certain types of firms, there could be recurring patterns of growth processes associated with the birth and existence of typical development paths (Brenner & Schimke, 2015). According to Adizes (1979), organizations have different and distinctive patterns of behavior at different life stages and that this provides a basis for classifying them and prescribing interventions likely to be successful for them. Through the stages of growth approach, researchers have identified similar characteristics within the same stage firms (Amir & Auzair, 2017). Although each company is unique in many ways, they all have similar problems, and they all undergo major changes (Churchill & Lewis, 1983). However, according to the approach’s assumptions, growth is linear, sequential, deterministic, and invariant, that is, it assumes that there are logical sequential phases in business growth (Phelps et al., 2007).

Piloting a company through the growth process represents a significant managerial challenge (Hanks et al., 1994). Davidsson and Wiklund (2006) highlighted that the stages of growth perspective concentrates on how managerial
challenges appear and can be managed during a firm’s growth along a typical growth path (Davidsson & Wiklund, 2006). It explores, describes, and explains how growth affects a company and how a growing company can best be managed (Davidsson & Wiklund, 2006; Wiklund, 1998). The process-orientated stages of growth literature has sought prescriptive and actionable knowledge from a management perspective (Davidsson et al., 2010). It assumes that companies encounter a predictable series of problems that must be managed if they are to grow and survive (Andersen, 2008). In other words, the stages of growth literature has mainly been focused on the managerial consequences of growth (McKelvie & Wiklund, 2010). Lester et al. (2003) described the stages of growth approach as being collective interpretation of the organizational environment based on the perceptions of managers. These models provide a loosely comprised set of organizational activities and structures, and the main point is to understand how these activities and structures change (Lester et al., 2003). Growth stages are critical because failure to live through them will lead to death of the business (Steinmetz, 1969). In such cases, the business must then be liquidated or sold to another company because continued business would lead to even more financial losses (Steinmetz, 1969).

Over decades, the stages of growth perspective has become multifaceted (Masurel & Van Montfort, 2006). Phelps et al. (2007) noted that this perspective shares many fundamental premises but also presents variations on established models. Individual approaches in stages of growth theories are different, and models vary widely, including the actual number of stages that are included (Jawahar & McLaughlin, 2001), which range in literature from three to ten stages (Lester et al., 2003). Hanks et al. (1994) stated that there is considerable variability among the stages of growth models, but all models include some dimensions related to organization context and structure. Quinn and Cameron (1983) found that there seems to be some consensus in the models about the characteristics of certain developmental stages as firms progress through their life stages. Moreover, Masurel and Van Montfort (2006) emphasized that, whereas individual approaches among scholars are dissimilar, some form of company’s life cycle is distinguishable, and stages of growth studies contain the same basic elements: there is a consistent pattern of development over time, and organizational activities and structures at one stage are different from those at another. Witmeur and Fayolle (2011, p. 6) highlighted that the same type of constructs (i.e., the role of the owner-manager, the strategic focus, the resources mix, and the organizational structure), the limited set of stages, and the importance of disruptive changes between sequential stages.
are typical elements of these models. Hanks (1990) posited that a comprehensive stages of growth model integrates both the content (stages) and process (dynamics) of the organization life cycle.

In the stages of growth models, each stage is characterized and culminated by a different problem or crisis (e.g., a crisis of leadership, autonomy, control, or bureaucracy) that management must resolve before growth can proceed (O’Rand & Krecker, 1990; Van de Ven & Poole, 1995). These models assume that, due to the stages following a crisis, there is necessarily a change in the way the founder manages the business. If the crisis cannot be overcome, then it is possible that the business might fail (Burns, 2011). According to Scott and Bruce (1987), the crisis confronting a business should be constantly monitored so that the manager can be proactive rather than reactive. To address this, the stages of growth models isolate the type of crises to be faced in moving from one to the next stage so that managers can more successfully plan their businesses (Scott & Bruce, 1987).

2.2.3 Practical utility of the stages of growth models

The stages of growth perspective describes how models are useful in growth management. Steinmetz (1969) noted that successful owner-managers seem to be able to figure out what causes organizational headaches, business economic problems, or personnel problems and resolve those even before such problems appear. However, management may be too slow to recognize the need for changes until the underlying problems become acute (Empson, 2010; Greiner, 1972). Thus, as mentioned, the stage of growth models emphasize the need to deal with crises in order to accelerate a move to the next stage.

Stages of growth models can help to foresee the key requirements during different stages of growth, for example, the inordinate time commitment for owners during the start-up stage (Churchill & Lewis, 1983). Scott and Bruce (1987) pointed out that, because there are sufficient similarities in the problems that managers face, stage models are useful for business management. Recognition of problems in business is the first step toward their solution (Steinmetz, 1969) and, since the development stages of companies are predictable and recurring, identifying the current position within the life cycle allows management to proceed with proactive measures, facing the future problems earlier or even avoiding them completely (Adizes, 1990; Dodge & Robbins, 1992; Ferreira, Azevedo, & Cruz, 2011; Scott & Bruce, 1987).
Models provide the main managerial factors which will be important in each stage of growth (Scott & Bruce, 1987) and must be dealt with (Churchill & Lewis, 1983). They work as a roadmap and timetable for business managers (Greiner & Malernee, 2005; Hanks, 1990), so they can better understand what lies ahead and formulate more feasible strategies (Churchill & Lewis, 1983; Scott & Bruce, 1987), identify critical transitions, and revise the company’s priorities (Hanks, 1990). Phelps et al. (2007) noted that the stage models’ main utility has been in their possible ability to predict the problems and management needs of growing businesses. Hanks et al. (1994) suggested that understanding of the organization life cycle and the associated management necessities could aid entrepreneurs through the unknown course of firm growth. According to Burns (2011), stage models particularly point out the managerial changes facing the founder. Hanks et al. (1994) asserted that the benefits of accurate stages of the growth model to start-up founders could be significant. Such models increase the understanding of the complex phenomenon of growth (Kazanjian, 1988) and provide useful insights into the question of how firms develop from the start-up stage to become large organizations (Empson, 2010), as well as increasing the ease of an owner-manager’s own development into a professional manager (Steinmetz, 1969).

Dodge and Robbins (1992) noted that stages can be used as a contingency variable to study the changes that are necessary for the planning and performance of business. Recently, Dalborg (2015) used the stages of growth approach to clarify the perceived barriers and support needs inside different qualitative growth platforms. A study by Yazdanfar and Öhman (2014) indicated that a stages of growth model can be applicable in predicting the performance pattern in terms of growth and profitability. Moreover, the findings of Perényi, Selvarajah, and Muthaly (2011) verified the applicability of stages of growth models in small and medium-sized enterprises in the ICT sector.

In addition to direct business growth research, the stages of growth concept has been employed to study several other topics. Lynall et al. (2003) pointed out that researchers have utilized stage theory and focused on the relationship between stages and a host of different firm variables, such as the priorities of top management (Smith et al., 1985), the most dominant problems perceived by managers (Kazanjian, 1988), the criteria used to evaluate effectiveness (Quinn & Cameron, 1983), organizational identity changes (Fisher, Kotha, & Lahiri, 2016), the human resource practices of organizations (Milliman, Von Glinow, & Nathan, 1991), and management control systems (Davila & Foster, 2007; Moores & Yuen, 2001). Furthermore, stage models may provide and have provided a basis for
evaluating, for example, the impact of governmental regulations and policies on different stages of businesses (Churchill & Lewis, 1983), the importance of stakeholders to the organization (Jawahar & McLaughlin, 2001), business valuation (Damodaran, 2010), cash flows (Dickinson, 2011), behavior of entrepreneurs (Mueller, Volery, & Von Siemens, 2012), the pattern of specialization (Hanks & Chandler, 1994), circumstances surrounding the growth process (Iacobucci & Rosa, 2010) and entrepreneurial networks (Jack, Dodd, & Anderson, 2008).

In sum, the stages of growth approach is well established in the literature (Samuel, 2010) and offers a useful framework within which to analyze entrepreneurship (Parker, 2006). Finally, but not least meaningfully, the stages of growth perspective is perhaps the most popular tool for teaching about business growth in entrepreneurship textbooks (Levie & Lichtenstein, 2010) and practitioner-oriented publications (Davidsson et al., 2010).

2.2.4 Criticism of the stages of growth models

Despite the stages of growth models’ benefits, they have problems associated with them, and they have been criticized by researchers. Burns (2010), Levie and Lichtenstein (2010), McKelvie and Wiklund (2010), and Phelps et al. (2007) have identified, among others, a number of criticisms of the stages of growth approach. Merz et al. (1994, p. 49) expressed their view that these models possess limited usefulness for the study of growth management as they are built upon the deterministic assumption that all companies grow linearly through a predictable series of preordained stages. Phelps et al. (2007) noted that there is a lack of integration across stages of growth studies and conflicting conceptualizations, and this body of literature is largely conceptual and descriptive. Moreover, Levie and Lichtenstein (2010) and Masurel and Van Montfort (2006) noted that the stages of growth literature has been largely theoretical.

One of the common critical points directed toward stages of growth models is that these models are typically deterministic in nature assuming that a company must grow through the proposed stages or die (McKelvie & Wiklund, 2010). The critics argue that growth does not quite occur in the way or sequence that models predict (Burns, 2011; Levie & Lichtenstein, 2010). Moreover, the sequences of issues or imperatives predicted by the stage models are not supported by empirical research (Burns, 2011; Levie & Lichtenstein, 2010). Actual business growth does not necessarily follow a linear path (Clarke et al., 2014) as firms may grow, stop,
and decline in any order; further, this can happen more than once, and it is possible that they will even need to reverse their steps (Bridge, O’Neill, & Cromie, 2003).

Moreover, models assume that the growth of a business is achieved organically, thus ignoring different patterns and models of growth such as franchising, licensing, joint ventures, or strategic alliances (McKelvie & Wiklund, 2010). In addition, not only do many businesses fail shortly after starting their business, most companies do not actually grow (Burns, 2011). Instead, they tend to stay at the stage which is necessary for their survival and do not develop beyond that stage, preferring to remain in the lifestyle of the specific business (Burns, 2011). In 1994, Hanks et al. took note that this represented criticism, and they introduced two disengagement stages defined by specific kinds of firms: 1. lifestyle firms, where owners have chosen to keep their firms small or where growth is limited because the firm operates in small niche market and 2. status quo firms which have attained sufficient size and economic health to ensure success and maintain the business at the status quo. These disengagement stages, which do not fit traditional stage models, indicate that companies may purposely remain at a certain stage without the desire for further growth. Thus, it is important to be aware of these disengagement stages when applying growth stage models (Hanks et al., 1994).

One weakness of these models is that they are conducted in distinct stages with clear boundaries between them (Bridge et al., 2003). Even though the company’s extensive stages of development can be described, it is difficult to define when a company will move from one stage to another (Bridge et al., 2003), which leads to difficulties in applying the models in practice (Smallbone & Wyer, 2006). In actual practice, each growth stage and its typical crises are likely to overlap (Greiner & Malernee, 2005). Jawahar and McLaughlin (2001) pointed out that, in general, the life cycle of a typical organization consists of identifiable but overlapping stages. Smallbone and Wyer (2006) noted that boundaries between growth stages are blurry, rather than distinct, and some businesses tend to develop faster in relation to certain areas than others. According to Burns (2011), there are many variables in terms of growth, and growth is the result of many separate efforts (Bridge et al., 2003); thus, it is unlikely that all will come together at the same time, for example, the owner-manager’s managerial style might be inherited from previous companies.

As stage models generate practical and seemingly generalizable prescriptions related, for example, to organizational structures, managerial processes and interventions, they simplify the complexities of growth processes (Clarke et al., 2014, p. 240). In reality, a company’s growth process is more complex than stage models assume (Empson, 2010). However, Phelps et al. (2007, pp. 2–3)
emphasized that “like all classifications, the models represent reductions of large amounts of complex, voluminous data into manageable chunks, thus permitting the opportunity, by the allocation of data into sets, for sense-making through configuration or pattern recognition.” Clarke et al. (2014) have found that models also describe the anecdotally familiar experiences. Also, Siggelkow (2007) highlighted that theories and models are always simplifications, noting that they if were as complex as reality, they would not be useful. Lester et al. (2003) saw that one weakness of stage models is that they tend to provide a life cycle framework for all organizations failing to focus on small business, for example. Kazanjian (1988) stated the same concept earlier: most stage models do not account for the role of industry and contexts.

As stage models also tend to focus on the internal dynamics of growing challenges (O’Farrell & Hitchens, 1988), internal characteristics by which firms unfold into growth (Clarke et al., 2014), and internal constraints and thresholds (Burns, 2011), they pay very little attention to the meaning of external factors in the business environments and thus fail to take into account the economic environment that business is related to and impacted by, such as interrelationships (Burns, 2011; Clarke et al., 2014; O’Farrell & Hitchens, 1988). The findings of Shim et al. (2000) indicated that external/environmental management problems may even exceed the other management problems in growth stages especially in service-based business.

Moreover, Scott and Bruce (1987) noted that the description of stages is difficult because it also depends on the life cycle stage of the industry. Burns (2011) has stated that the growth process through stages depends on the industry in which the company operates; for instance, in fast-growing industries, growth periods are shorter, and in slower growth industries, they tend to be longer. Furthermore, stages of growth research (Levie & Lichtenstein, 2010; Muhos et al., 2010; Phelps et al., 2007) has provided little or no evidence regarding international aspects of start-up growth management. So far, the stages of growth theory has mostly bypassed international growth management aspects, even though internationalization may be needed for growth.

According to Burns (2011), growth stage models provide an invaluable description of the growth process, but he argues that these models should not be applied mechanistically, but rather with caution, especially regarding the sequence and timing. He emphasized that, due to their shortcomings, stage models should be considered as checklists of the imperatives that owner-managers and companies must face and deal with if they want to grow. Smallbone and Wyer (2006)
formulated their views as follows: instead of providing an explanation of what actually happens during the growth of a company, the value of stage models is more to help diagnose organizational problems and bottlenecks that need to be addressed by the owner-manager during further growth. Hanks et al. (1994) asserted that a valid stages of growth model could be helpful to manage emerging companies and revising organizational priorities.

Based on their review of stages of growth literature of the last 40 years, Levie and Lichtenstein (2010) presented strong criticisms of the theory. They stated that the stages of growth model and life cycle theories are not at all supported by empirical evidence, and that there is no consensus on the number of stages nor on how stages are related. The authors noted that the stage approach has provided limited evidence on what is the path of progress from one stage to another and the reasons behind the shift from one to the other. Based on their findings, they suggested a new dynamic state theory where events and incidents bring a company to a certain state. Companies are not like organisms, and growth can be co-created with the help of the shifting of internal but also external environments. In this sustainable growth approach, an enterprise can survive and maintain itself by being flexible and by adapting to continuous changes in the environment.

According to Davidsson et al. (2010), the stages of growth perspective is deservedly criticized. However, as it addresses problems of high practical and theoretical relevance, they argued that, with revising assumptions and improving empirical design, research on growth management is an important line of entrepreneurship inquiry. According to Zupic & Giudici (2018, p. 192), a research approach, which investigates the process of growth, is likely to be most useful to entrepreneurs in practice. Even though there has not been much recent discussion related to the stages of growth approach (Amir & Auzair, 2017; Zupic & Giudici, 2018), Amir and Auzair (2017) outlined that it is still relevant in today’s research. The accelerating growth of IT and constantly changing business environment create new type of challenges to growth management. Because the ability of companies to adapt to these current needs is critical, renewed interest in observing and understanding the managerial emphasis at different growth stages is emerging (Amir & Auzair, 2017).

From the viewpoint of this dissertation, all the presented criticism of stages of growth models does not relate to this research. This research was focused on and thus limited to the start-up stage of eHealth service start-ups; therefore, criticism about the deterministic and sequential nature of the stages and the unclear boundaries between the stages were not a concern of this research. To address the
criticism about growth stage models’ unsuitability for the life style of a business, the case selection of this study was based on the premise that the case start-ups were companies desiring growth. Moreover, to take into account external characteristics and business environment related to growth management in the case companies, inductive analysis was conducted in answering RQ2. In addition, the CIT, which was used in this study, revealed the experiences of start-up managers from business context (Kaulio, 2003), from outside of the stages of growth framework in deductive analysis for addressing RQ1, RQ3, and RQ4. This also ensured that the perceived role of the industry’s life cycle, which was related to the case companies, would be possible to reveal. Finally, according to the presented criticism, stage models tend to provide frameworks for all organizations but fail to focus on the type of business. With this criticism in mind, this study did not use a generic model but rather an empirical-based service business-focused stage model for its deductive analysis.

2.2.5 Management priorities

Stages of growth models correspond to configurations of problems, strategies, and priorities that firms are likely to face as they grow (Miller & Friesen, 1984). Scholars have argued that, as firms move through stages, differing problems must be addressed leading to different management priorities, styles, and resource utilization (Ferreira et al., 2011). Universal stages of growth models and frameworks clarify management priorities (Hanks, 1990; Smith et al., 1985) during the early stages of business growth (Levie & Lichtenstein, 2010; Muhos et al., 2010; Phelps et al., 2007). The main concept of these models is that the goals, priorities, and issues faced by firms change considerably along their respective development directions (Coad, 2007).

The concept of management priorities is not new (Smith et al., 1985). Citing Churchill and Lewis (1983), Dodge, Fullerton, and Robbins (1994), Mertz et al. (1994), Kazanjian (1988), and Smith et al. (1985), Lester, Parnell, and Carraher, (2003, p. 340) stated that managers’ changing priorities from one stage to another has been chronicled by several researchers. Smith et al. (1985) noted that different stages of organizational life cycles create different management priorities. An accurate stage of growth model could provide a timetable for revising an organization’s priorities in its growth paths (Lester et al., 2003). An organization’s priorities differ at different stages of its growth and development, that is, issues are emphasized by managers differently at different stages (Dodge & Robbins, 1992).
Researchers can investigate these priorities by focusing on how managers pay attention to and use information available for solving problems (Smith et al., 1985). Priorities could appear when a manager expresses importance, shows concern, and spends time on different business-related issues. For example, previous events reveal a manager’s priorities (Smith et al., 1985). As entrepreneurs’ behavior is crucial to the development of new businesses (Wiklund, 1998), it follows that attaining a better understanding of their actions would greatly benefit the growing discipline of entrepreneurship (Mueller et al., 2012).

Churchill and Lewis (1983) presented five management factors (management decision-making style, complexity of organizational structure, extent of operational systems, strategic planning, and the owner’s involvement in the business) in their small business stages of growth model. A company’s development stage determines managerial factors that must be dealt with. These factors are necessary for the enterprise’s success and must receive managers’ attention. Management factors’ importance changes as the business grows and develops – thus, management priorities change. Through these priorities, a clearer picture of changing management demands can be obtained (Churchill & Lewis, 1983).

Organizational growth and increasing environmental complexity tend to cause each stage to exhibit certain significant differences in broad classes of variables. (Miller & Friesen, 1984). Each of the stage models emphasizes different issues and different ways to explain the typical changes of growth between stages (Ferreira et al., 2011). Amir and Auzair (2017) noted that among the most used management factors are a firm’s strategy, organizational structure, and decision-making style (see Miller & Friesen, 1984), which are different in each life cycle stage. Moreover, researchers have formulated and analyzed stage models by defining management-related issues that vary between stages, including management factors (Churchill & Lewis, 1983), management dimensions that focus on growth (Hanks et al., 1994; Withmeur & Fayolle, 2011), categories of attributes (Levie & Lichenstein, 2010), structural configurations, managerial emphases and organizational characteristics (Hanks, 1990; Quinn & Cameron, 1983), and utilizing the patterns of control and managerial emphases (Su et al., 2015) at different stages of the organizational life cycle. Moores and Yuen (2001) highlighted that management themes can be seen as organizational internal characteristics that vary at each life cycle stage in order to be congruent with external contexts. In addition, Muhos et al. (2017) presented the nine overarching management theme areas in a service-based business framework. The framework’s theme areas are based on shared perspectives of stages of growth service-focused literature. The management theme areas provided
by Muhos et al. (2017) were used in this study as a reference source of management priorities describing important management priority categories where managers allocate and focus their attention and resources in growth management in eHealth service start-ups.

This study also gathered theoretical support for the selected management priority viewpoint (deductive analysis in RQ1, RQ3, and RQ4) from outside of the stages of growth literature. Given that firm growth is also a central concern of strategic management (Joseph & Wilson, 2018), not surprisingly, strategic management literature has also considered the issue of managers’ attention. The attention-based viewpoint of Ocasio (1997) provided theoretical principles of exploring the role of managerial attention in firms. The central argument of this attention-based view is that the behavior of firm is the result of how firms channel and distribute the attention of managers. Management’s activities depend on what issues and answers they focus their attention on (Ocasio, 1997), and the management of attention is central to control processes in organizations (Ocasio & Wohlgezogen, 2010). Managers’ attention could also be seen as a factor of growth since the growth of business varies with the focus and limits of managerial attention (Joseph & Wilson, 2018). Researchers define managerial attention as the noticing, encoding, interpreting, and focusing of time and effort by managers on business-related issues as problems and solutions (Joseph & Wilson, 2018; Ocasio, 1997). According to Shepherd, McMullen, and Ocasio (2017), managers can focus attention based on their own knowledge and experience or as a result of something in the environment that captures their attention. Giving attention to a problem or opportunity is the first step in rational decision-making (Baum & Wally, 2003). Furthermore, Ocasio’s (1997) theory argues that managers’ focus and their actions depend on the particular context in which they are situated. The focus of a manager’s attention is triggered by the specific characteristics of the situation.

2.3 Start-up stage

2.3.1 Start-up stage in the stages of growth perspective

During the growth path, entrepreneurs have to face a number of significant challenges, the first is establishing the company as a successful start-up (Hanks & Chandler, 1994). In the stages of growth literature, the start-up stage is the first stage of development of a company’s life and is also referred to by a variety of
names: inception (Scott & Bruce, 1987; Smith et al., 1985), birth phase (Lippitt & Schmidt, 1967; Miller & Friesen, 1984), birth stage (Moores & Yuen, 2001), stage one (Scott, 1971; Steinmetz, 1969), creativity stage (Greiner, 1972), existence stage (Churchill & Lewis, 1983), infant stage (Adizes, 1979), infancy (McCann, 1991), formation (Dodge & Robbins, 1992), and entrepreneurial stage (Quinn & Cameron, 1983).

According to the seminal stages of the growth study of Greiner (1972), growth occurs through creativity but is followed by a crisis of leadership in the start-up stage. Over the decades, stage models have attempted to describe the firm characteristics during the start-up stage. A company in the start-up stage is new (Hanks, 1990), young, and less than ten years old (Lester et al., 2003; Miller & Friesen, 1984), and it has a simple and informal structure (Churchill & Lewis, 1983; Hanks, 1990; Scott, 1971) and is dominated by an owner-manager (Miller & Friesen, 1984). Such companies are characterized by a single product for a single market; they have personal control (Hanks, 1990; Scott, 1971), everything has a short-term time horizon, planning is minimal or non-existent (Churchill & Lewis, 1983), and the growth rate is inconsistent (Hanks, 1990). During this time, overloaded by short-term pressures, management tends to miss long-range opportunities (Adizes, 1979). Davidsson et al. (2010, p. 123) stated that these models have an initial stage which is typically characterized by a simple organizational structure and direct supervision, and the role of founder/entrepreneur is central.

The start-up stage is characterized by a significant amount of struggle as a new company attempts to become a viable entity (Miller & Friesen, 1984), and its primary business strategy is to stay alive (Churchill & Lewis, 1983). The focus is on viability, or simply identifying enough customers to support the existence of the business (Lester et al., 2003). “Can we get enough customers, deliver our products, and provide services well enough to become a viable business?” is one of the key questions (Churchill & Lewis, 1983, p. 3). Lippit and Schmidt (1967) argued that, in the start-up stage, learning to become viable is needed. Many companies never gain sufficient customer acceptance or business capability to become viable. As a result, capital runs out and the start-up owner closes the business. Likewise, if the owner cannot accept the demands of the business regarding time, finance, and energy, they have to shut down the business, or, in the luckier cases, they may be able to sell the business for its asset value (Churchill & Lewis, 1983).

According to Hanks (1990), new business is based on an idea, some niche, or area of need in the marketplace. The new business is formed as the entrepreneur
starts to act upon his business idea and transforms it into a concrete and viable product or service. Entering the marketplace is one of the dominant concerns in start-up stage (Jawahar & McLaughlin, 2001). According to Adizes (1979), the risk becomes an issue when a company is born as there are expenses to be paid and production is crucial. This risk leads to a significant change in behavior of the entrepreneur (Adizes, 1979). To survive, a company needs to find customers and deliver products or services (Churchill & Lewis, 1983); thus, the product or service has to be effectively offered in the marketplace (Hanks, 1990). Market acceptance occurs if demand for the product is present and customers are willing to buy the product or service (Hanks, 1990). In the start-up stage, a company has no track record or experience, so a mistake in product design, sales, service, or financial planning can have fatal consequences (Adizes, 1979).

Creating business operations (Lippit & Schmidt, 1967) and organizational coordination (Quinn & Cameron, 1983) should be one of the first management priorities in the early stages if companies are to survive. Dodge and Robbins (1992) posited that developing and implementing a business plan, obtaining initial financing, and entering the market are dominant concerns in the start-up stage. Moreover, Kazanjian (1988) stated, based on his empirical study, that securing financial resources is perceived by owner-managers as the most crucial problem during the start-up stage. Jawahar & McLaughlin (2001, p. 406) summarized the literature on this issue and found that the viability of the start-up stage company and subsequent movement to the next stage of growth depend upon securing financial resources and gaining customer acceptance for products and/or services.

The findings of Kaulio’s (2003) empirical study, based on the CIT and focused on start-ups, indicated that financing and recruiting are the most frequent and most important activities to manage during the start-up stage. Obtaining funding and team recruitment are tasks to which start-up managers must allocate a considerable amount of their time. The next most important priorities are to get contract with a reference/first customer and utilization of external entrepreneurial service providers. The first customer is a validation of market attractiveness, and a large amount of the working time of a manager is devoted to getting it (Kaulio, 2003).

Churchill and Lewis (1983) emphasized that an owner’s ability to do the job gives life to the business. Businesses are based on the owner’s talents, such as the ability to sell, produce, or invent. Hanks (1990) noted that the company must be “up and running” as quickly as possible to survive. The most critical needs, which have the potential to threaten a company’s survival, are the funds of firms, cash flow planning, and customer acceptance of products and/or services (Churchill &
If the management of the start-up stage organization does succeed in identifying long-term opportunities, then the company might enter the next stage of the business (Adizes, 1979). Greiner (1972) highlighted that companies will cope with the start-up stage by overcoming the crisis of leadership arising from the need to rationalize organizational activities.

According to Steinmetz (1969), at the start-up stage (Stage 1 – live or die) a typical small businessman is an unimaginative man who thinks he has a good business idea, whose position as a leader is largely a result of his ownership rather than leadership abilities, and who is relying own personal skills or a unique product, method, or market of which he can take advantage. Adizes (1979) described that, in this stage, an entrepreneur’s frenzy of creating new ideas is discouraged, and the new entrepreneurial role highlights the importance of producing results. “I have no time to think” and “There is just too much to do” are typical comments of the manager of the start-up stage company (Adizes, 1971, p. 4). According to Hanks (1990), a successful business founder is a skilled “hands-on” and result-oriented entrepreneur.

However, the literature has also provided, to a certain degree, a more growth-orientated description. Miller and Friesen (1984) pointed out that new businesses undertake major and frequent innovations. Moreover, if growth is desirable to an entrepreneur, the business must scale up to meet demand, which means hiring additional people and increasing production capacity (Hanks, 1990). Also, a founder’s key skills in the start-up stage include creativity (Greiner, 1972), intense commitment, and the willingness to undertake risks (Adizes, 1990; Hanks, 1990), and mortgaging personal assets to gather needed start-up capital is often a prerequisite (Hanks, 1990). The owner performs all the important tasks and is the major supplier of the firm’s energy, direction, and capital, along with relatives and friends (Churchill & Lewis, 1983). Investments are made in product development, plant and equipment, and working capital (Scott & Bruce, 1987). In the start-up stage, companies are likely to concentrate on stakeholders on whom they are dependent regarding the critical resources needed to ensure the start-up’s survival (Jawahar & McLaughlin, 2001). Haar, Starr, and MacMillan (1988) have pointed out that informal investment networks are important during the start-up stage and that the most often used networks for informal finance are family and friends. According to Jawahar and McLaughlin (2001), in digital business (i.e., dot.com business), the key concern during the start-up stage appears to be attracting talented employees with the technical expertise to develop the product/service.
Companies generally have very few employees in the start-up stage (Hanks, 1990), so the organization is simple, typically like a spider’s web, with one-to-one relationship management and direct supervision (Churchill & Lewis, 1983). Decision-making and ownership are highly centralized in the hands of one, or a few (Lester et al., 2003; Hanks, 1990), job assignments of employees are very general, and, the tone is flexible, informal, and personal (Hanks, 1990). A start-up company is usually very busy, and most of the personnel sell and do every kind of task during the start-up stage (Adizes, 1979). Also, the owner does everything or, at least, is involved in doing everything (Churchill & Lewis, 1983). Adizes (1979) described this as a one-person show.

As start-up companies are usually characterized as small, centralized, and owner-controlled, they have been found to rely most heavily upon informal controls, such as an interpersonal control (Moores & Yuen, 2001), and planning and control occur often on an ad hoc and intuitive basis (Hanks, 1990). They hardly have any policies, systems, procedures, or even budgets in place (Adizes, 1979). Thus, only a minimal amount of information is used for decision-making (Moores & Yuen, 2001; Su, Baird, & Schoch, 2015). However, Davila and Foster (2007) have pointed out that financial planning is the most widely adopted management control system category at the start-up stage, followed by human resource planning and strategic planning. Furthermore, their research strongly supports the relevance of management control systems to the growth of start-up stage companies (Davila & Foster, 2007). In the start-up stage, the business value of the company is based entirely on possible future growth (Damodaran, 2010).

2.3.2 Start-up stage in service businesses

In developed economies, the labor market has become increasingly service- and information-based, and the number of start-ups in the service industries clearly outnumber manufacturing start-ups. Start-ups operating in the knowledge-intensive market services industries represent the most common type of start-ups (Delmar et al., 2013; Kim, Aldrich, & Keister, 2006). Service business is a dynamic sector in economies, more dynamic than manufacturing, with higher levels of both job creation and job destruction (Bravo-Biosca, Criscuolo, & Menon, 2013).

Traditionally, services are defined as including all economic activities whose output is not a physical product or construction, is consumed at the same time as it is produced, and provides added value in various forms, such as in healthcare (Quinn, Baruch, & Paquette, 1987). Even though the production of services may or
may not be tied to a physical product (Kotler & Armstrong, 2007), the common characteristics of services are intangibility of the offering, simultaneous production and consumption, perishability (services cannot be stored), and uniqueness (Carman & Langeard, 1980; Quinn et al., 1987; Unvala & Donaldson, 1988). These service characteristics make service-based companies “just-in-time” organizations with short-term interorganizational relationships with customers (Auzair, 2010; Brignall, 1997; Homburg & Stebel, 2009).

The service sector differs substantially from other industries in terms of the nature of demand shocks, the ability to hold inventories, and the differences in labor relations, all of which might differentially influence employment flows (Armington & Acs, 2004). Service companies utilize resources to attain their business objectives, which involve the input of purchases to a service delivery process which delivers a saleable output: services, goods, or facilities (Brignall, 1997). Service companies can only deliver a service after integrating (or outsourcing) investments in numerous assets, processes, people, and materials. Service components could be physical entities, but more often, they are a combination of processes, people skills, and materials that must be appropriately integrated to result in the service (Goldstein, Johnston, Duffy, & Rao, 2002). The characteristics of service business create difficulties for service managers to utilize resources, for instance, to schedule and control operations, control quality, measure performance, and trace, measure, and control service product costs (Auzair, 2010; Brignall, 1997). Unvala and Donaldson (1988) noted that, even though the characteristics of service business reflect the unity within the industry, there is a broad diversity of service businesses across industries. In the addition to classifying the nature of service business based on specific industries, service businesses can be classified based on characteristics of the service processes (Unvala & Donaldson, 1988).

These characteristics of service business create their own kind of challenges for business managers (Auzair, 2010; Homburg & Stebel, 2009), and service sector analysis, which is separate from production sector business, is meaningful and reasoned (Armington & Acs, 2004). However, the distinction between a firm which is product-based and another which is service-based is not always easy to establish. There are many kinds of business models that are between the pure product firm and pure service firm (Tukker, 2004). In this study, a service-based business is defined as a business whose business model is based mostly on services (where most of the value is expected to come in the future). Thus, the interpretation of the meaning of service-based business in this study was broad rather than strict.
As mentioned, there has been a major shift in economies from a product-based (or industrial) economy to one that is service-based (Kowalkowski, Gebauer, & Oliva, 2017). Moreover, because of the widespread availability of digital infrastructure, this shift has specifically appeared due to the creation of digital services (Pinto & Baracsi, 2012; Williams, Chatterjee, & Rossi, 2008). Digital development has made it possible to provide services in new and different ways. According to Williams et al. (2008), a digital service is an activity or benefit that one party can give to another which provided through a digital transaction. The one core benefit of this digital service provision is often the coordination and delivery of a product or ancillary service, which could also be linked to a physical product. Moreover, a different sense of tangible versus intangible is the difference between normal services and digital services (Williams et al., 2008).

In the start-up stage, businesses range from new restaurants to newly started high technology manufacturers (Churchill & Lewis, 1983). A great deal of the empirical literature on the stages of growth has been focused on the manufacturing sector (Masurel & Van Montfort, 2006), technology-based firms (Hanks et al., 1994; Kazanjian & Drazin, 1990), or generic models (Lester et al., 2003; Muhos et al., 2017). As service-based business is perceived to be different from other industries (Amir & Auzair, 2017; Armington & Acs, 2004), interest in service business growth has increased in recent years in the stages of growth literature (Amir & Auzair, 2017; Empson, 2012; Greiner & Malernee, 2005), and scholars have described management practices that are characteristic (Greiner & Malernee, 2005) in the start-up stage (along with the descriptions of other growth stages) of service businesses. Empson (2010) noted that the stages of growth model represents a useful analytical lens for developing a more nuanced understanding about service business. Moreover, the interest in service business-focused empirical-based stage models has increased (Muhos et al., 2017).

Ferreira et al. (2011) provided key features for service businesses in the start-up stage (birth stage). They proposed a model where small and young companies are directed by the owner(s). The structure of the organization is informal, and power is centralized with owner. However, the companies often have inadequate methods of decision-making and information processing. This leads to a high risk level in decision-making. On the other hand, some companies have remarkable innovativeness in their services in the start-up stage.

Shim et al. (2000) examined the characteristics of small service and retail firms through the model developed by Churchill and Lewis (1983). The growth stages were found to be similar with those experienced by managers of service businesses.
After a company starts, its primary goal is to stay in business. Key challenges facing the service business during the start-up stage are attracting enough customers, delivering the product or service, and meeting ongoing cash demands. The business generally has a very simple structure, including its owner-manager and maybe few employees. Strategic planning is non-existent or minimal. During the start-up stage, the entrepreneur may be in a situation where he has to resolve conflicts between the company’s business goals and his/her personal goals. The findings of Shim et al. (2000) showed that, in service business, external/environmental management problems exceeded the other problems in the start-up stage.

Greiner and Malernee (2005) introduced growth model, focusing on consulting firms, that defined the characteristics of the start-up stage (exploring stage). In their model, the first entrepreneurial step is often taken with one or more founders who are colleagues from their former firm. The founding partners go through the start-up stage of testing both the market and each other. The firm’s strategy is to sell individual expertise to clients, and the organization’s structure is centered around the founder(s), his personalities, values, and practices. The management style is authoritative but informal. The company’s personnel includes founders (core team) and possibly a few office employees. The founders split profits evenly, and minimal management systems are needed. The company’s culture is informal, family-like, and individualistic, and there is an entrepreneurial atmosphere. Challenges are related to different business visions, survival, and the uncertain future. In terms of power, consensus among the partners is essential, but decision-making could be dominated by the founder who has the most clients (Greiner & Malernee, 2005).

Empson (2012) addressed the subject of governance in professional service firms during the start-up stage (founder-focused stage). Researcher pointed out that, in a service business, the firm’s governance is relatively simple: power, benefit, and accountability are the sole responsibility of the founder(s). During the start-up stage, an initial governance crisis may occur. If the service firm succeeds and the founder(s) recruits senior professionals to manage the projects, this may lead to increased expectations by hired seniors to be involved in the firm’s decision-making and profits. However, the founder(s) who have made financial and personal investments may be reluctant to abandon management authority or ownership – particularly without sufficient remuneration.

Teeter and Whelan-Berry (2008) presented their model, based on the prior literature, for growing a small professional service firm. The key perspective of their study was organizational change management. During the start-up stage, a company is in the process of developing its business plan into a market identity.
The company must secure financial support and survive the challenges of new firm development, such as business planning and marketing, obtaining customers and delivering services, and maintaining cash flows. The success of business is owner-dependent, and the owner has significant and direct control of the company. The owner must adapt to meet the demands for increased growth and customer load. The business focus is on maintaining cash flow through the delivery of services. The early cash flows are used to meet ongoing cash demands. As the business grows, it becomes increasingly complex. At the end of the start-up stage, the business is usually confronted by a crisis of leadership. Then, a definite leader or leadership team must emerge before the firm can progress to the next stage of development. Teeter and Whelan-Berry (2008) concluded that the transitions between stages could be managed more effectively when they were viewed as organizational culture changes.

Stage models for IT services firms and software lab-type firms have been provided by Witmeur and Fayolle (2011). In their model, a small IT service start-up stage company is typically managed by one IT specialist with deep knowledge in a narrow practice. The manager focuses on the long-term sustainability in business but does not follow any kind of growth strategy. He possibly works with a few employees. In such firms, everything relates to the owner-manager and his willingness to control operations with a basic, informal, and centralized organizational structure. Such expert service firms are self-financed through regular service provision to customers. According to Witmeur and Fayolle’s (2011) model, during the start-up stage (seed stage), software lab-type firms focus on product development with a very small team of qualified technical human resources. The organization is informal and unstructured. Beyond possible early customers (early adopters), these start-ups have practically no sales activities, and research and development activities are financed by equity gathered from angel investors and/or venture capitalists. In Witmeur and Fayolle’s (2011) model, software firms typically operate below the break-even level and require additional external capital during the start-up stage.

Van Tonder and McMullan (2010) presented a stage model of a franchise business. During the start-up stage (entrepreneurial stage), this business has an informal structure. The founder is excited but, at the same time, overwhelmed, anxious, and uncertain about the future. Concerns about how things should be done occur. Requirements, systems, and procedures have not yet been internalized and entrenched during this initial stage of the business.
Masurel and Van Montfort (2006) proposed a stage model of the life cycle characteristics of small professional service firms. In their model, the founder(s) is generally a professional in his own field. The starting firm begins with small, simple service projects with a limited number of clients in markets with low entry barriers. The employment structure, for example, firm’s sales are undiversified. Gradually, new employees join the firm, which leads to a lower percentage of professional service providers. Diversification of sales and differentiation of the labor force lead to more efficiency and less vulnerability. Although the firm must prove its viability from the beginning, its business performance will only improve structurally in the long term. Ultimately, the company needs to become healthy not the least because expenses must be paid. (Masurel & Van Montfort, 2006).

Auzair (2010) presented a stages of growth model which focuses on management control systems in service companies. In the start-up stage (formation stage), the primary focus is on developing a range of services, securing adequate financial resources, and developing a market. The market position of the service company – a “niche” – is formed. The owner-manager has a central role in all functions and communications. Moreover, formal systems and procedures are almost non-existent in this start-up stage company. The key finding related to control systems was that mass service types of companies are more likely to adopt a more bureaucratic form of management control systems compared with professional service type of business.

A recent meta-analysis by Muhos et al. (2017) provided a synthesis of nine recent empirical-based service business-focused stages of growth models. The study is one of the first attempts to synthesize the central findings of the stages of growth theory related to service business. In the synthesis, recent means that research is published in 2000 or after, and empirical-based means that research includes empirical evidence. This meta-analysis integrated the findings of these models into a four-stage framework of service-based companies. The framework is a synthesis of recent service business-focused and empirical stages of growth studies conducted by Auzair (2010), Empson (2012), Ferreira et al. (2011), Greiner and Malernee (2005), Masurel and Van Montfort (2006), Shim et al. (2000), Teeter and Whelan-Berry, (2008), Van Tonder and McMullan (2010), and Witmeur and Fayolle (2011).

According to Muhos et al. (2017), one purpose of the framework was to provide a starting point for exploring context-specific perspectives on growth stages. Moreover, the framework was designed for use as a self-evaluation tool to allow entrepreneurs to reflect their current situation and anticipate challenges. The
four stages of the framework include: 1) start-up: growth through market exploration and commercialization of service(s); 2) take-off: growth through market acceptance; 3) resource maturity: growth through profitability and renewal; and 4) diversification: growth through diversification. As eHealth service start-ups are the focal point of this study, only the start-up stage of the framework was applied as a frame of reference for this study. The start-up stage and the preconceived, literature-based descriptions related to management priorities during the start-up stage are presented in Table 4.

Table 4. Framework of service-based business in the start-up stage (reprinted [adapted] by permission from Article I © 2018 Emerald Publishing Limited).

<table>
<thead>
<tr>
<th>Management priority category</th>
<th>Assumption</th>
<th>Description of assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>A1.1</td>
<td>The focus is on development and delivery of services and building market identity in order to survive</td>
</tr>
<tr>
<td>Power</td>
<td>A1.2</td>
<td>Decision-making is owner dependent as the owner-manager(s) leads small group of employees</td>
</tr>
<tr>
<td>Structure</td>
<td>A1.3</td>
<td>The structure is simple, informal, and owner-centered</td>
</tr>
<tr>
<td>Decision-making systems</td>
<td>A1.4</td>
<td>Formal decision-making systems and procedures are almost non-existent</td>
</tr>
<tr>
<td>Strategic management</td>
<td>A1.5</td>
<td>Owner-manager(s) lack time for strategic planning</td>
</tr>
<tr>
<td>Service development and delivery</td>
<td>A1.6</td>
<td>Development and delivery of innovative services are everyone’s job</td>
</tr>
<tr>
<td>Marketing</td>
<td>A1.7</td>
<td>New businesses focus on attracting early customers</td>
</tr>
<tr>
<td>Human resources</td>
<td>A1.8</td>
<td>Everyone is involved in everything in a small start-up</td>
</tr>
<tr>
<td>Financial management</td>
<td>A1.9</td>
<td>Moves from challenges to meet cash demands to a cash flow that breaks even thanks to early customers.</td>
</tr>
</tbody>
</table>

Source: Muhos et al. (2017).

The framework described above functions as the reference framework for RQ1, RQ3, and RQ4 of this study to analyze and reflect on the experiences of managers in the context of eHealth service business. RQ1 uses the entire framework shown in Table 4 as a reference. RQ3 and RQ4 use management priority categories provided by the framework (Table 4) as a classification reference. The starting point of utilizing the reference framework is that using the service business framework derived from stages of growth theory, and its matching multiple-case studies, is a relevant way of investigating (see e.g., Witmeur and Fayolle, 2011) eHealth service start-ups in order to understand their growth management.
2.4 Start-ups outside of stages of growth literature

2.4.1 Start-ups

In entrepreneurship research, entrepreneurship is considered to be the creation of new economic activity (Davidsson, Delmar, & Wiklund, 2006b; Shane & Venkataraman, 2000). The process of new business creation is central to the field of entrepreneurship (Brush et al., 2008; Moroz & Hindle, 2012). Researchers have found that there is a considerable degree of variation among types of new businesses ventures. For example, Gartner, Mitchell, and Vesper (1989) identified eight different types of new ventures, based on their experience, motivation, resources, strategy, and environmental conditions. Entrepreneurship is realized through new businesses (also described in the literature as new firms, young firms, start-ups, new ventures, and new small businesses).

This study focused on start-up companies, which are new (Sutton, 2000), active, and independent (Luger & Koo, 2005). Burgel and Murray (2000) stated that a start-up is a legally independent company that is no more than ten years old. A start-up company, according to Lumpkin and Dess (1996), is characterized by autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness when it enters the market. Based on the descriptions previously adopted by researchers and practitioners, Giardino, Unterkalmsteiner, Paternoster, Gorschek, and Abrahamsson (2014) illustrated start-ups as small companies exploring new business opportunities, trying to solve a problem where the solution is still unclear and the market is highly volatile. High uncertainty, rapid evolution, and organic growth are associated with start-ups (Delmar et al., 2003; Giardino et al., 2014; Storey, 1994). The young age of the business determines fast growth (Delmar et al., 2003; Henrekson & Johansson, 2010; Schreyer, 2000). According to Muller et al. (2019, p. 83), while there is no commonly agreed on or official definition of a start-up, it usually refers to enterprises which are younger than ten years, innovative (in terms of business models and/or product/service), and intending to grow in the number of employees and/or turnover and/or markets in which it operates.

Unsurprisingly, start-up companies and their early growth have long received considerable attention from entrepreneurship researchers and policy makers around the world (Biga Diambeidou & Gailly, 2011; Burns, 2011; Delmar, 2003, 2006; McKelvie & Wiklund 2010; Shane & Venkataraman, 2000; Zupic & Giudici, 2018). This is not least because start-ups have a great impact on job creation (Delmar, 2006; Henrekson & Johansson, 2010; Wiklund, 1998). Start-ups contribute to
employment dynamics through three main channels: they create jobs as they enter the market; they destroy jobs in business failures; and they create and destroy jobs by hiring and firing employees to a greater extent, compared with mature business, during their first years of activity (Calvino et al., 2015). In fact, Bhide (1992) stated that growth and change are the start-up’s natural environment.

In addition to job creation, small and young firms are found to have positive effects on productivity, innovation, utility, and wealth creation (Biga et al., 2011; Storey, 1994, 2008; Van Praag & Versloot, 2008). Start-ups have produced several revolutionary inventions that have departed significantly from the current technologies (Scherer & Ross, 1990). They are at the forefront of applying new technologies in practice (Giardino et al., 2014). Nooteboom (1994) stated that small firms, as start-ups, have better behavioral qualities to translate technology into a variety of new technology-product-market combinations than larger firms. One of the main quality features of start-ups is their ability to quickly take advantage of new business as well as market and technology opportunities (Giardino et al. 2014; Klotins, Unterkalmsteiner, & Gorschek, 2019). On the other hand, software start-ups’ greatest perceived challenge is the uncertainty related to newly emerging technology, followed by acquiring the first paying customer, acquiring the needed financial resources, and building the entrepreneurial team (Giardino, Bajwa, Wang, & Abrahamsson, 2015). In software start-ups, software development typically takes substantial resources, and shortfalls in these applied practices may lead to under- or over-engineering the technology development, wasting resources by building irrelevant features, and missing business opportunities (Klotins et al., 2019).

Radical and disruptive innovations require the orientation toward experimentation and the willingness to fail (Nanda & Rhodes-Kropf, 2013). Start-ups typically flourish in fast-changing markets where uncertain prospects do not attract established companies (Bhide, 1992; Gompers & Lerner, 2001). They can be flexible and agile, and in the most successful cases, they may be able to operate under conditions of limited competition for a prolonged period (Rosenbusch et al., 2011). They typically have organizational agility, promising ideas, the willingness to take risks, and the tendency toward growth (Weiblen & Chesbrough, 2015), which makes them pioneers in innovations (Rosenbusch et al., 2011). They have high volatility in terms of growth performance (Bravo-Biosca et al., 2013), as they try to do something that nobody has done before (Hite & Hesterly, 2001), even though they have limitations regarding resources, routines, products, and the environment (Sutton, 2000). The shortcomings of start-ups were recognized early on by Schumpeter (1934), who noted that new companies are hampered by limits.
to financial and human resources. According to Chang (2004), start-ups have high failure rates because they do not have resources, established effective work roles, relationships with outside suppliers and buyers, and bases of influence, endorsement, and legitimacy.

Start-ups play a critical role in growth dynamics (Haltiwanger et al., 2013; Henrekson & Johansson, 2010; Kane, 2010). Increasing evidence suggests that innovation and competitive pressure produced by start-ups are major factors in economic development (Samuelsson & Davidsson, 2009). They may also enhance efficiency among older companies through their positive influence and by adding value to the industry (Dejardin, 2011). Unterkalmsteiner et al. (2016, p. 113) pointed out that although start-up companies do not necessarily solve unemployment problems, to a large extent, they stimulate positive dynamism in societies, encouraging people to innovate, collaborate, and develop their personal skills. Moreover, Colombelli et al. (2016) stated that innovative start-ups are a key source of sustainable value creation.

There are also different perceptions among the scholars about the role of start-ups in the economy. According to Shane (2009), policy makers blindly accept the idea that start-ups transform depressed economic regions, generate innovation, create jobs, and produce all sorts of other economic wealth for society. However, researchers have revealed that the survival rate for start-ups is very low (Calvino et al., 2015; Davidsson & Delmar, 2000), and furthermore, most of the start-ups that survive do not grow (Birley, 1987; Calvino et al., 2015). As start-ups struggle to market and challenge existing actors, only the most robust business will survive in this competition (Aldrich & Martinez 2001, Clarke et al., 2014; Hodgson, 2013). According to a report by Calvino et al. (2015), around 3% of start-ups, based on the data across countries, have employment growth that is significant. Shane (2009) stated that a typical start-up is not necessarily innovative, that it creates few jobs and generates little wealth, and that only high-quality and high-growth companies enhance economic growth. There are many reasons why only small number of start-ups will achieve significant employment growth, such as the founders’ desire to maintain a lifestyle business, time flexibility, limited access to capital, and unsuccessful business models (Calvino et al., 2015; Freeman & Siegfried, 2015).

As the growth of established companies typically concerns sustaining viability, new firm growth is rather about initially gaining that viability (Gilbert, McDougall, & Audretsch, 2006). New entrants may be willing to accept greater risks than large firms. It is well known that business death rates in early age are much higher than those in later ages (Freeman, Carroll, & Hannan, 1983). This phenomenon is called
“liability of newness,” and it was coined by Stinchcombe (1965). It assumes higher risks of failure for young organizations compared with older ones. Start-ups are subject to this liability of newness where, in the absence of large size or growth results, new and small ventures face a lower likelihood of survival (Biga et al., 2011; Freeman et al., 1983). Failure is an integral part of the search process of start-ups (Blank & Dorf, 2012), and numerous studies have suggested that young firms are fragile, and the success rate of new start-up companies is low over time (Davila, Foster, He, & Shimizu, 2015; Peña, 2002). In fact, it is well known that start-ups tend to be more failure prone than older ones (Cooper, 1995; Cressy, 2006), and many survivors achieve only marginal performance (Cooper, 1995). Thus, the continuous entry of new start-ups is required to achieve net job creation (Henrekson & Johansson, 2010). In addition, large companies’ decreased efficiency due to a loss of managerial control and or excessive bureaucratic control may prompt creative individuals to leave big companies to start their own businesses with their own risks (Perrez-Cano, 2013).

Starting a new business is technically easy, and it has never been easier than it is today (Freeman & Siegfried, 2015), but most start-ups do not grow beyond the stage when they initiated their activities (Headd & Kirchhoff, 2009). During the start-up period, firms are most vulnerable and often face barriers to their survival during the initial years of operation (Peña, 2002). Also, leading a start-up and transitioning from a founder to chief executive officer (CEO) is hard for entrepreneurs (Freeman & Siegfried, 2015). Thus, growth is strategically important for most start-ups in obtaining desired viability (Biga et al., 2011). Thus, one of the primary concerns of the small business sector is to secure the survival and growth of these start-ups (Frank, Lueger, & Korunka, 2007).

Van de Ven, Hudson, and Schroeder (1984) investigated, among the first scholars, the development of start-ups. It is well established that the conditions under which an organization is planned and the processes followed in its initial development stage have consequences for its structure and performance in later business (Van de Ven et al., 1984). Although Cooper (1995) pointed out that our ability to predict performance of new firms is limited, the literature indicates that successful management of internal resources at an early stage can significantly improve business performance and the likelihood of survival (Aspelund, Berg-Utby, & Skjevdal, 2005; Biga et al., 2011; Shepherd et al., 2000).

Early innovations may enhance a start-up’s survival chances, and differences in human and financial capital, as well as the availability of opportunities, may have an influence on the survival rate of start-ups (Cressy, 2006). Start-up
entrepreneurship requires the skill and ingenuity to find and control resources, often owned by others, in order to pursue business opportunities (Timmons & Spinelli, 2009). Burns (2011) pointed out that market research is vital for start-ups. They must estimate sales potential of their product or service, which, among other things, determines the scale and nature of the resources need. Moreover, Bennett (2016) argued that a new start-up is more likely to survive if it can follow proven operational models of successful companies in that particular business sector. When resources are scarce, the survival and success of start-ups depend heavily on the managers. Their early recognition and management of critical issues can increase the chances of start-up success (Giardino, Wang, & Abrahamsson, 2014). In addition to the strong leadership from the main entrepreneur, Timmons and Spinelli (2009) emphasized that successful start-ups have almost always managed to build a team with complementary talents. It is increasingly recognized that the formation of start-ups is commonly accomplished by teams as opposed to lone entrepreneurs (Klotz, Hmieleski, Bradley, & Busenitz, 2014). The founding team, where competencies complement each other, has been found to be positively related to firm growth (Cooper, Gimeno-Gascon, & Woo, 1994; Davidsson et al., 2010). The ability to work as a team and to sense an opportunity are critical elements of success (Timmons & Spinelli, 2009). Moreover, Weinzimmer (1997) has noted that the formal structure and diverse operational competencies of management teams are main success factors for small business growth. Unterkalmsteiner et al. (2016) emphasized that, while an innovative idea is important for the start-up, its success or failure ultimately depends on the ability of the team to execute it.

Due of the lack of resources and legitimacy, start-ups need access to external resources and expertise (Hite & Hesterly, 2001). Through networking, start-ups aim at enhancing their early performance (Baum et al. 2000; Chang, 2004; Davidsson & Honig, 2003; Elfring & Hulsink, 2003; Freeman, 1996; Kask & Linton, 2013; Lee, Lee, & Pennings, 2001), achieving positive effects on growth (Hansen & Witkowski, 1995; Lechner, Dowling, & Welpe, 2006), innovation (Pittaway, Robertson, Munir, Denyer, & Neely, 2004), discovering opportunities, testing ideas, and building legitimacy (Parida, Westerberg, Ylinenpää, & Roininen, 2010). Bhide (1992) noted that start-up entrepreneurs have plenty of energy and enthusiasm but are often short on credentials. Burns (2011) asserted that personal contacts, which are the key to any relationships and networks, can bring needed credibility to start-up. Networks can provide the first customer for a start-up, professional advice, ideas, and opinions, often without charge (Burns, 2011).
Survival and growth of start-ups depend on the firm’s ability to acquire needed resources (Aldrich & Martinez, 2001; Clarke et al., 2014). One of the most important resources is funding, which is typically gathered from the founder’s own savings, friends, and family, or from banks, angel investors, venture capitalists, seed funding, or crowdfunding (Davila, Foster, & Gupta, 2003; Jordan, 2015; Nelson, 2014; Paschen, 2017; Van Osnabrugge & Robinson, 2000). Investors also finance start-ups, purchasing equity or equity-linked stakes while the firms are still privately owned (Gompers & Lerner, 2001). Despite the existence of many funding providers, there is a consensus among entrepreneurship scholars that access to finance is a major problem that affects business growth (Adomoko & Mole, 2018). Bhide (1992) noted that investors prefer solid business plans, well-defined markets, and track records from the start-up founders. Burns (2011) noted that education, track record, and ability to demonstrate possible previous achievements in the industry may contribute in building credibility and acquiring funding.

Start-ups are characterized by high uncertainty and large differences between what the founder and investors know (Gompers & Lerner, 2001; Rea, 1989). Although both seek financial rewards, they may have a different idea of what should be done to achieve the business goals (Rea, 1989). In addition to funding contributions, venture investors may support start-ups, for example, by providing managerial advice and arranging contacts with potential stakeholders (Chang, 2004).

Timmons and Spinelli (2009) found that most highly successful start-ups have managed to hold together a qualified team and acquired sufficient financial resources by chasing business opportunities that other players have not yet recognized. Also, over time, a successful business tends to be imitated and perpetuated by other firms (Aldrich & Martinez, 2001; Clarke et al., 2014; Hodgson, 2013).

Although early growth is at the core of the entrepreneurial process (Davidsson et al., 2006), understanding start-ups’ challenges, growth processes, and how growth can be managed remains limited (Biga et al., 2011; Davidsson & Wiklund, 2006; Giardino et al., 2015; Unterkalmsteiner et al., 2016), not the least because business growth emerges randomly; it consists of unintentional and emergent processes, rather than being the result of planning and design (Aldrich, 1979; Clarke et al., 2014; Hodgson, 2013).
2.4.2 Internationalization of start-ups

Growth may or may not be associated with internationalization (Davidsson, Achtenhagen & Naldi, 2005). Internationalization can be defined in the small business context as “the process of increasing involvement in international operations” (Welch & Luostarinen, 1988, p. 36). Growth through internationalization is considered as perhaps the most complex growth strategy (Adomako & Mole, 2018). Stages of growth research (e.g., Levie & Lichtenstein, 2010; Muhos et al., 2010; Phelps et al., 2007) provide little or no evidence regarding the international aspects of start-up growth management. So far, the stages of growth models have bypassed including international growth management aspects.

Unlike in the stages of growth studies, internationalization of start-ups has attracted significant interest in international entrepreneurship research. These “born global firms” (Knight & Cavusgil, 1996), “global start-ups” (Knight & Cavusgil, 2004), or “international new ventures” (INVs) have attracted great interest (e.g., Bell, 1995; Coviello & Munro, 1995; Oviatt & McDougall, 1994). These start-ups, which seem to provide needed flexibility that offers important benefits to succeed in foreign markets, are emerging in substantial numbers worldwide (Knight & Cavusgil, 2004). INVs may make decisions about internationalization even before their foundation (Oviatt & McDougall, 1994) or immediately after inception. Knight and Cavusgil (2004, p. 124) asserted that born globals are the newly founded firms that immediately start seeking international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries. That is, the entrepreneurs operating these firms have a “global mindset” (Nummela, Saarenketo, & Puumalainen, 2004; Torkkeli, Nummela, & Saarenketo, 2018), which refers to managerial experience, risk taking, awareness of international markets, and the commitment of specific resources to international activities (Knight & Cavusgil, 2004). Burgel and Murray (2000) posited that the emergence of start-ups’ international outlook is one manifestation of a globalizing world.

Knight and Cavusgil (2004) noted that early adoption of internationalization is driven by global trends of globalization and technological development, which have reduced transaction costs and made internationalization a more viable and cost-effective option. Globalization is the international connectivity of markets and the interdependence of national economies. This connectivity means that a firms’ competitors, suppliers, and customers can be located throughout the world (Acs,
Global markets cover a countless number of companies in international resourcing, product development, production, marketing, and distribution, as well as cross-border alliances and homogenization of buyer preferences (Knight & Cavusgil, 2004, p. 125). Moreover, technological advances in ICT, production methods, transportation, international logistics, and the internet and related technologies are facilitating the growing pace of international business (Knight & Cavusgil, 2004). In fact, business opportunities in foreign markets have never been as profound or immediately available (Acs et al., 2001). A recent study by Ojala, Evers, and Rialp (2018) expanded the INV phenomenon to include digital-based INVs and born globals. Internationalization opportunities in digital markets relate to a firm’s ability to make its technology available on different platforms and create working ecosystems around this digital innovation. Digitalization provides business opportunities, even globally, for innovative start-ups. However, according to Ojala et al. (2018), only when the major challenges related to technology and regulations are solved can these digital-based INVs penetrate global markets.

International entrepreneurship research and the INV approach both view the growth of start-ups through the perspective of internationalization, including factors influencing the early internationalization of start-ups, but without a special growth management focus (e.g., Oviatt & McDougall, 1994). Knight and Cavusgil (2004) have noted that there has been little research that attempts to explain the processes in a firm’s internal environment in global start-ups.

2.5 eHealth

2.5.1 Healthcare industry

The healthcare sector aims to improve people’s health and well-being (Kyriazakos, 2017), and the healthcare industry is considered to be the world’s largest industry in terms of budget, employees, and customers (Ahmadi, Pishvae, & Torabi, 2018; Bliemel & Hassanein, 2004; Girsch, 2002; Wickramasinghe et al., 2005). Because of aging populations and the increasing prevalence of chronic diseases and obesity, demand for healthcare services is increasingly causing sustainability problems (Van Limburg et al., 2011). The industry faces many challenges, such as healthcare cost increases, waste of time and resources, failure to safeguard the availability of
supplies (Ahmadi et al., 2018), inefficiencies, inequities, quality variations (Kirsch, 2002), and lack of qualified health workers (Mettler & Eurich, 2012).

From an economic perspective, healthcare and the well-being of populations are critical considerations and some of the most pressing challenges confronting countries (Agarwal et al., 2010). This growing demand has led to a dramatic increase in health spending in most developed countries (Meier et al., 2013). In 2013, healthcare expenditure accounted for approximately 9% of GDP in OECD countries. Increased spending is not a problem if the benefits exceed the costs; however, there is extensive evidence of inequities and inefficiencies in healthcare systems (OECD, 2015). These challenges in healthcare have imposed public pressures on the healthcare providers (Ahmadi et al., 2018). Also, increasing demand and economic challenges have recently intensified the need for effective, scalable, sustainable, and innovative healthcare services (Barnett et al., 2011; Pinto & Baracsi, 2012; Rocha et al., 2013).

Digitization impacts many industries and the health sector is currently undergoing some major transformations as well (European Commission, 2014; Gauthier et al., 2018). But, unlike other sectors of the economy, the healthcare industry lags behind other industries in the deployment of emerging technologies (Klein, Hostetter, & McCarthy, 2014; PwC Health Research Institute, 2016). However, the infusion of ICT into health services, known as eHealth, is an emerging area in healthcare at this time (Srivastava et al., 2015).

Digitization and its dimension in the health sector, eHealth, are seen to be key responses to the increased requirements for cost-effectiveness and quality improvement in healthcare systems and services (Agarwal et al., 2010; European Commission, 2012; Valeri, Giesen, Jansen, & Klokgieters, 2010). In addition to reducing healthcare expenditure, such technologies have the potential to revolutionize medical and public health practice and produce better outcomes for patients (Gauthier et al., 2018; Lupton, 2014; Parente, 2000). Using tools ranging from smartphones and tablet computers to remote sensors and monitoring devices, healthcare providers can deliver care, information, and support to patients where and when they need it (Klein et al., 2014). Digital technologies can provide tools to support the transition from hospital-based healthcare models to patient-centered models, as well as to improve the access to healthcare and contribute to the sustainability of healthcare systems (European Commission, 2017b; Valeri et al., 2010).

Traditionally, in healthcare services, production and consumption occur simultaneously, requiring the local presence of the service firm (Erramilli, 1990).
Modern technology allows both development and delivery of health services online without physical presence. The potential of these technologies to improve access to information, reach rural or underserved populations, engage practitioners and patients, and integrate healthcare services and information is significant (Harrison & Lee, 2006; Klein et al, 2014; Meier et al., 2013). Moreover, due to its scalability, eHealth has the capacity to address health disparities among traditionally underserved populations. Reducing health disparities is a common objective of countries’ health policies, and eHealth has the potential to help nations to achieve these policy goals (Ahern, Kreslake, & Phalen, 2006; Valeri et al., 2010). EHealth interventions can play an important role in providing a variety of patient-centered care options, overcoming common barriers to care, including geographic location, availability of providers, limited operating hours, and readiness and willingness to engage when needed (Morland et al., 2017), as well as facilitating healthcare and preventive medicine, promoting health and care of the elderly, and gathering better data on patients, medical outcomes, and disease patterns (Lupton, 2014). Borrelli and Ritterband (2015) pointed out an unprecedented opportunity to utilize digital technologies to prevent, assess, inform, promote, and treat health behaviors across different segments of the population. Moreover, eHealth offers new opportunity areas related to medication management with personalization, monitoring, and adherence to medications (Car, Tan, Huang, Sloot, & Franklin, 2017).

Even though the global economy is fast becoming more digital, and the market potential of eHealth is strong (European Commission, 2015), development of digital technologies and the internet’s evolution have already had an impact on healthcare and public health (Lupton, 2014; Kyriazakos, 2017); however, healthcare practices have been slow to adopt new possibilities enabled by technologies and e-business (Kerwin & Madison, 2002; Medina-Garrido & Crisóstomo-Acevedo, 2010; Parente, 2000; Wickramasinghe et al., 2005). Health businesses have not yet realized the full benefits of digital services (European Commission, 2015). Also, healthcare systems face considerable difficulty in the implementation and diffusion of new initiatives (Hannan & Celia, 2013), despite the common understanding that healthcare organizations are among the most knowledge- and research-orientated institutions (Barnett et al., 2011; Berwick, 2003).

As there are pressures to cut public expenditures and urgent needs to provide innovative and more effective health services, which are evident across the globe, the applications of eHealth provide the promise to restructure the business model of healthcare delivery (Chowdhury, 2012; European Commission, 2017a; Meier et
From a business perspective, digitalization means opportunities for getting involved in areas as diverse as personalized medicine and advanced analytics, as well as mobile technologies and applications (European Commission, 2012).

Digital technologies in health facilitate the development of innovations, products, and services, providing opportunities that are also spurring commercial interest (Elenko, Underwood, & Zohar, 2015). The health industry offers a unique opportunity to build businesses that will have a positive social impact by improving healthcare sustainability (Chowdhury, 2012). For instance, there is a tremendous potential for health-related commercial activity via the internet (Whitten et al., 2001), ranging on a spectrum from information display and advertising to online commercial transactions and payments (Coile Jr., 2000). EHealth opens significant business opportunities for companies, for instance, related to information flows (Kirsch, 2002), health communications, health processes, and e-commerce in business-to-business (B2B), business-to-customer (B2C) (Medina-Garrido & Crisóstomo-Acevedo, 2010; Parente, 2000), and business to professional (B2P) (Bliemel & Hassanein, 2004) types of businesses. In addition to making processes more efficient, digitalization in the healthcare sector involves digitalizing entire organizations, such as products and services, channels, processes, and data analytics (Gauthier et al., 2018). Digital development potentially affects all aspects of healthcare, opening new avenues for value creation and businesses (Biesdorf & Niedermann, 2014). This continually provides new business opportunities as eHealth represents a chance to create business (Medina-Garrido & Crisóstomo-Acevedo, 2010; Valeri et al., 2010).

2.5.2 Concept of eHealth

During the 1990s, as the internet exploded into the public consciousness, several electronic terms (e-terms), such as eHealth, began to appear. According to a report by the WHO (2006), the term of eHealth has been in use since 1967, when Dr. Kenneth Bird created a two-way audio-visual microwave circuit that enabled physicians at a hospital in Boston to provide medical care to patients three miles away at the Airport Medical Station. Eysenbach (2001) has assumed that the term eHealth was apparently first used by industry and marketing people in line with other e-words such as e-commerce, e-business, and e-solutions, in an attempt to convey the promises, principles, and hype around e-commerce to the health field. According to Deluca and Enmark (2000), the “e” in eHealth means that technology
is an integral component of it. Although activities that are included in eHealth have existed for longer and were known as telemedicine (the oldest form of eHealth), which was first used in the 1920s (Rooij & Marsh, 2016), eHealth is a relatively new concept (Oh, Rizo, Enkin, & Jadad, 2005).

Currently, the implementation of ICT in the health sector is a growing and active area of research (Srivastava et al., 2015), and eHealth has gained increasing attention from researchers of different disciplines, including health and medicine, public health, information and communication, and business and management (Chen, Wen, & Yan, 2014; Jiang et al., 2015; Lupton, 2014), which indicates that eHealth is an interdisciplinary research field (Jiang et al., 2015). Jiang et al.’s (2015, p. 29) systematic review of the body of eHealth literature in social science journals has shown that 54% of the eHealth publishing journals are related to health and medicine, 22% to psychology, 10% to information science and communication, and 14% to other disciplines, such as biology, engineering, business, and management. EHealth has been a priority for the WHO since 2005, and more than half of the WHO member states have an eHealth strategy (WHO, 2016).

Almost twenty years ago, Coile Jr. (2000) described eHealth (e-Health) as nothing less than the digital transformation of the practice of medicine, as well as the business side of the health industry. About the same time, Eysenbach (2001) defined eHealth as “an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the internet and related technologies.” The European Commission (2012) has provided the definition of a more general level: eHealth entails the use of digital tools and services for health. It is an umbrella term incorporating any area that combines healthcare and technology to improve efficiencies and reduce costs (Rooij & Marsh, 2016). The WHO (2016) describes eHealth as a broad concept which is defined as the cost-effective and secure use of ICT in support of health and health-related fields. EHealth includes various areas (WHO, 2016):

- mHealth (mobile health): e.g., apps, wearable technologies, and medical devices
- telehealth (teledmedicine): e.g., whereby a patient can consult a healthcare professional on the computer, a tablet, or a phone
- health-related e-learning (use of technology and media for training and educating audience and the health professionals)
- electronic health records
social media for health (informal, social online communication channels)
health data analysis.

Many other definitions of eHealth have been introduced among scholars. Broadly defined, eHealth is an application of ICT across the entire range of functions that affect health (Li et al., 2013), and its objective is to rationalize treatment selection to improve patient safety and outcomes (Rooij & Marsh, 2016). Kuziemsky and Weber-Jahnke (2009) stated broadly that eHealth has been coined to describe applications of ICT in the healthcare sector. Lupton (2014) defined eHealth as a term that is adopted to encompass a wide range of technologies related to health and medicine. These differing viewpoints indicate that the concept of eHealth has some variability in its scope and definitions. It is a broad term encompassing various activities, and its definition depends on the functions, stakeholders, context, or the theoretical framework which is referred to (Medina-Garrido & Crisóstomo-Acevedo, 2010). Typically, eHealth definitions have referred to technology and health, but also commercial aspects are presented. In fact, the literature review findings of Oh et al. (2005) pointed out that the term eHealth encompasses a set of disparate concepts, including health, technology, and commerce, but the precise meaning of eHealth varied with the context in which the term was used. Maheu et al. (2001) noted that, in a broad sense, the term eHealth is not necessarily “professional-centric” but rather consumer-centric since consumers are demanding and using services and tools that eHealth can provide; thus, they are the driving forces of eHealth solutions.

Typical eHealth solutions are electronic medical records, applications in telemedicine, consumer health services (e.g., personal health records), public health surveillance systems, and health decision support systems (Kuziemsky & Weber-Jahnke, 2009). EHealth holds promise for supporting and enabling health behavior change, healthy lifestyle approaches, and the prevention and management of diseases (Ahern et al., 2006; Valeri et al., 2010). It provides patients with more health-related information, facilitates increased involvement in health, improves access to health advice and treatment, and allows people to monitor and manage their health and well-being online or through devices such as smartphones (Campbell, 2014; European Commission, 2012).

In recent years, eHealth has experienced a period of significant growth (WHO, 2016), and it is one of the fastest growing areas of innovation (Campbell, 2014). There has been a substantial increase in the number and range of eHealth solutions, particularly in the field of mobile health (mHealth) (WHO, 2016). Broadband
internet, along with wireless technologies, has allowed an explosion of mHealth applications (Rooij & Marsh, 2016). Smart devices and apps are now ubiquitous in our digitally connected world (Elenko et al., 2015). Smartphones are all-pervasive healthcare tools that are able to offer health advice within arm’s reach and with around-the-clock access (Car et al., 2017). The use of mobile devices has been increasing exponentially internationally, and the rapid adoption of technology brings new opportunities with significantly greater impact and scalability than would be possible with traditional health services (WHO, 2016).

MHealth, a component of eHealth (Meier et al., 2013), includes the use of mobile and wireless technologies to support the achievement of health goals (WHO, 2011), as well as to affect the behavior of patient-consumers (Meier et al., 2013). MHealth encompasses medical and health practices supported by mobile devices, such as smartphones, lifestyle and well-being applications that can connect to medical devices or sensors, and personal healthcare systems and health information (European Commission, 2014). The portability of mobile phones provides access to health information and interventions regardless of time and location. The increasing capabilities, such as sensors, of smart phones enhance the delivery of these health services (Stoyanov et al., 2015). Wearable sensor technologies as activity trackers, smartwatches, and smart clothing, jewelry, and patches have recently emerged. These innovations, which aim to capture physiological data, such as movement, respiration, hydration, glucose, skin conductivity, heart rate, sleep, temperature, posture, brain activity, oxygen level, muscle activity, blood pressure or eye tracking, can now be used for diagnostics and user monitoring (Elenko et al., 2015; European Commission, 2014; Rooij & Marsh, 2016). The use of mobile apps for health and well-being promotion has grown exponentially (Stoyanov et al., 2015). Thus, mHealth has the potential to play a role in the dramatic transformation of healthcare, to increase the quality and efficiency of healthcare, and to create new businesses (European Commission, 2014). Kao and Liebovitz (2017) pointed out that there are more than 165,000 mobile health apps publicly available in major app stores. They noted that the top app categories are wellness management and disease management apps, followed by self-diagnosis, medication reminder, electronic patient portal, and physical medicine apps, and rehabilitation apps are also available.
2.6 eHealth start-ups

2.6.1 eHealth business

Increased demand and economic challenges of health services have intensified the need for effective, scalable, sustainable, and innovative healthcare services (Barnett et al., 2011; Rocha et al., 2013). EHealth is seen as one of the key responses to the increased requirements for cost-effectiveness and quality improvement in healthcare systems and services (Agarwal et al., 2010; European Commission, 2012). The applications of eHealth have the potential to restructure the business model of healthcare delivery (Meier et al., 2013). The market potential of eHealth is strong (European Commission, 2015), and it offers unique opportunities to build businesses (Maheu et al., 2001) that will have a positive social impact by improving healthcare sustainability (Chowdhury, 2012). An increasing number of eHealth start-ups are appearing in the industry, created for the purpose of using digital solutions to meet needs, fill gaps, and even create new markets (Elton & O’Riordan, 2016, p. 138). Moreover, Bashshur (2004) has argued that many eHealth start-ups are motivated by expectations of large financial gain from large and untapped markets. EHealth start-ups try to find gaps in the market and race to fill them before others (Elton & O’Riordan, 2016).

In recent years, there has been strong growth in eHealth companies which has been based on the premise that consumers want to promote their own health, access health information independently, or interact with health professionals regardless of time and place (Morland et al., 2017). EHealth start-ups develop digital applications, such as smartphone apps and wearable devices, to better manage, measure, and improve health and achieve wellness goals (Aue et al., 2015). The number of investors in eHealth market is growing and venture capitalists have invested increasing amounts of funding into eHealth companies worldwide (Morland et al., 2017). Because eHealth technologies have the ability to scale up rapidly, the payoff for small investments in eHealth start-ups can be significant for investors (Rupert, 2002). According to one estimate, eHealth start-ups collectively raised more than $14 billion from venture capitalists in 2018, and in 2014, there were over 5,000 eHealth start-ups across the globe that were developing novel technologies in digital health (StartUp Health Insights, 2014, 2019). According to a recently published investor report, eHealth innovation funding has continued its strong upward trend and $70 billion has been raised in eHealth since 2010, and the funding level and the number of investors has increased tenfold during the 2010’s
(Plaster, Hanin, & Powers, 2020). It is evaluated that eHealth sector is the second most funded industry in number of deals in Europe (Mohout & Staëlraeve, 2017). However, Parente (2000) noted that the short-term perspective of venture capital could be a risk in the long-term development of eHealth business as venture capitalists like to see a return on investment in three to five years, or even sooner.

The eHealth start-up may even be designed to be a temporary organization, as described by Jordan (2015). A start-up’s aim is to uncover a business opportunity that can be exploited by an advantage, such as unique personnel, relationships, know-how, assets, or intellectual property, and its final objective is to provide wealth to investors through acquisition, merger, or an initial public offering (Jordan, 2014, p. 59). Livi and Jeannerat (2015) have also pointed out that eHealth start-ups seem to be more often aimed at increasing firm value and arousing the interest of large companies, with the intention of being sold. Moreover, Jordan (2015, p. 122) argued that other types of eHealth start-ups try to reach smaller or mature markets aiming to build revenue and profit over time. They are satisfied generating revenues along the way, and they may also eventually get acquired. These types of start-ups may be attractive to angel investors rather than venture capitalists (Jordan, 2015, p. 122).

In addition to start-ups that tend to raise awareness, there are new digital health players, who are global giants, such as Google, Apple, Facebook, and Amazon, and have increasingly conducted health technology initiatives and offered services through modern technologies which are practical and adapt to people’s ways of life (André, 2019; Elenko et al., 2015; StartUp Health Insights, 2014). This may further accelerate innovations and investment activity of start-ups through new applications and devices that can leverage the platforms of these global digital corporations (StartUp Health Insights, 2014). Moreover, there are incumbent healthcare companies (e.g., Philips Medical and IBM Watson Health) that have put digital initiatives at the center of their strategies (Elton & O’Riordan, 2016).

EHealth is an emerging area in research and public discussion from a business viewpoint. A significant part of previous business-related eHealth literature has been focused on business models of eHealth services (see Chen, Cheng, & Mehta, 2013; Fredriksson, Mazzocato, Muhammed, & Savage, 2017; Kijl et al., 2010; Lin et al., 2010; Oderanti & Li, 2018; Parente 2000; Pascal, 2017; Van Gemert-Pijnen et al., 2011; Van Meeuwen et al., 2015) and often on the level of public programs and systems (see Valeri et al., 2010; Wass, 2017). Zeitoun and Osdoit (2019, p. 185) pointed out that business models for traditional healthcare products (drugs, medical devices, and software) have been extensively studied and are classifiable into three
classes: coverage through insurance, out-of-pocket from consumers (i.e., patients), and direct selling to healthcare professionals and organizations (hospitals). However, the business aspects of eHealth innovations have been poorly researched (Chen et al., 2013; Jiang, et al., 2015; Lin et al., 2010; Oderanti & Li, 2018).

This study focused on start-ups, since start-ups can be potential promoters of new service innovations in various industries, including healthcare, where opportunistic eHealth start-ups are disrupting the industry (Elton & O’Riordan, 2016). However, starting up is the most critical period in establishing a new eHealth service business, and the decisions made by founder(s) have a definitive influence on a company’s success (Bennet, 2016; Furlan & Grandinetti, 2014). According to Pinto and Baracsi (2012), only the best ideas survive the period called the “valley of death,” wherein new eHealth start-ups operate to turn their ideas into marketable products or services.

Despite the increasing investments in eHealth initiatives, many of these tend to fail (Chen, et al., 2013; Mettler & Eurich, 2012; Oderanti & Li, 2018). According to Kijl et al. (2010), the major part of eHealth service development has been limited to the piloting or R&D phase, and most never reach the market. Also, Mettler and Eurich (2012) and Urueña et al. (2016) have identified a gap between a successful pilot and the first stage of a commercial service of an eHealth solution. Maheu (2001) pointed out that many eHealth start-ups have an inability to sustain themselves without continued large-scale funding. Also, eHealth solutions’ utilization has been challenging, largely due to lack of sustainable business models (Mettler & Eurich, 2012; Oderanti & Li, 2018), or they failed to articulate a clear value proposition to users (Mettler & Eurich, 2012).

Kirsch (2002) highlighted that, although technological development is rapid, health markets are not new. Actually, health markets have always been highly competitive (Maheu et al., 2001). Even though healthcare and well-being markets are large and global, the market for completely new eHealth services may also be narrow and niche (Oderanti & Li, 2018). Elton and O’Riordan (2016, p. 145) pointed out that eHealth start-ups often look for specific niches: geographic areas or certain disease- or condition-specific markets, in order to create value for caregivers and patients, and they sometimes focus on straightforward retail business. It is estimated that over 60% of eHealth start-ups are business-to-business companies (Mohout & Staelraeve, 2017).

The true market test of eHealth services is whether they can provide new value for users and/or the general public (Lin et al., 2010). If eHealth services are based on new technology for end users, start-ups must create new markets, which takes
time and is not likely to produce profits in the short term (Kirsch, 2002). Adoption of new eHealth technologies may require time and changes in consumer behavior (Campbell, 2014). Burns (2011) noted that, for instance, estimating the size of a completely new market for a completely new service may be a troublesome task for start-ups. Olsson et al. (2004) stated that there are different needs and demands for health services (wearable eHealth solution for health management in their case). Needs are related to the prevalence of the diseases and the health risks or to the improvement of health, but demands are more related to customers’ willingness to pay for the new products or services.

As there is currently a lack of sustainable methods of commercializing eHealth innovations (Oderanti & Li, 2018), Kirsch (2002, p. 109) has argued that it has always been difficult to make a profit in the healthcare sector because of the role of governments in financing and policy making, distortions of the market (the central role of doctors in decision-making), the lack of incentives for improvements, and fundamental business challenges (lack of paying customers). Shepherd et al. (2000) pointed out that the mortality risk of start-ups depends on the technological complexity of the industry. Researchers have noted that it may be riskier to start a business in the healthcare sector than in many other industries due to the multitude of legislative and regulatory obstacles faced by start-ups. Ackerman, Filart, Burgess, Lee, and Poropatich (2010, p. 93) have described the complexity of the eHealth (telehealth) and emphasized that it is a system of systems in terms of scale and complexity. Mas and Hsueh (2017) have clarified that the commercialization of eHealth innovations may involve such aspects as R&D, preclinical and clinical studies, manufacturing, regulatory approvals, sales and marketing, and company operations, among other challenges. Moreover, uncertainty and financial and time pressures were the highlighted characteristics of software service design in the eHealth start-up in the case study of Lim (2018).

Borrelli and Ritterband (2015) outlined the role of the start-up team in commercialization. They argued that the process of commercialization in eHealth requires a team of people with specialized skills. Recently, Oderanti and Li (2018) provided an analysis, based on prior literature, related to the eHealth areas of telecare, telehealth, and telemedicine, and they pointed out that the failure of successful commercialization of eHealth innovations is based on the lack of sustainable business models due to poor coordination, lack of user-centered design, security and privacy concerns, management and power issues in business, small market size, and cost effectiveness.
Although the attributes of newness and smallness of start-ups typically imply limited resources for investing in R&D processes (Battistella, De Toni, & Pessot, 2017; Fisher et al., 2016), eHealth service start-ups are often technology-driven (Spil & Kijl, 2009). Yet, eHealth service innovations do not necessarily have to be based on new technology, and services may also use an existing technology (Lin et al., 2010). In addition, Rupert (2002) found that, to be innovative in eHealth and reach and maintain a proprietary position in the healthcare industry, businesses must use disruptive technologies. Even advanced technology or service alone does not guarantee market success (Lin et al., 2010; Oderanti & Li, 2018). Medina-Garrido and Crisóstomo-Acevedo (2010) asserted that eHealth firms must create value, and they must be first and foremost business ventures, not technology ventures.

2.6.2 Market barriers faced by eHealth business

Despite the recent strong growth in the eHealth business, eHealth start-ups have not yet lived up to their potential due to multiple barriers (Kao & Liebovitz, 2017). EHealth is located at the intersection where the fast-moving technology sector is on a collision course with the much slower moving and highly regulated healthcare industry (Elenko et al., 2015). According to Hird et al. (2016), the healthcare sector’s patient-centric, regulation-driven safety environment, with rigorous testing and risk mitigation, is completely opposite to the demos and pilots’ approach of the technology industry.

Many researchers (e.g., Fried, Weinreich, Cavalier, & Lester, 2000; Kao & Liebovitz, 2017; Kyriazakos, 2017; Mas & Hsueh, 2017; Mestres, 2017; Shepherd et al., 2000; Van Limburg et al. 2011; Whitten et. al., 2001) have found that eHealth business solutions have difficulty breaking into market because of the entry barriers of the highly regulated healthcare sector. According to Fried et al. (2000), eHealth entrepreneurs, who may be more focused on business than on healthcare, are surprised by unsuccessful business results due to health regulations. The highly regulated nature of this sector (Whitten et al., 2001) raises several intractable questions, ranging from licensure requirements to efficacy of services, from the perspective of eHealth start-ups. Furthermore, the literature (Campbell, 2014; Eysenbach, 2001; Maheu et al., 2001; Oderanti & Li, 2018; Parente, 2000) has raised security and privacy issues as substantial challenges faced by businesses. These legislative and regulatory obstacles make the healthcare industry a risky business environment for start-ups (Shepherd et al., 2000).
development is moving fast, faster than technology adoption and faster than regulation in the healthcare industry (Zeitoun & Osdoit, 2019). Moreover, the regulations in healthcare have not caught up with today’s digital world (Aue et al., 2015), and legislative and regulatory norms related to eHealth vary from one country to another (Mestres, 2017). The great complexity of healthcare systems makes it challenging to jump into multiple foreign markets and, thus, to scaleup eHealth business (Mohout & Staelraeve, 2017).

In addition to legal and regulatory requirements, the literature has recognized multiple barriers faced by eHealth business which are related to the need of science-based evidence (Eysenbach, 2001), differences in cultural environments, payment policies, structures for practitioners, software availabilities (Maheu et al., 2001), scarcity of customers and long lead times in contract negotiations (Lim, 2018), absence of industry standards (Mieczkowska, Hinton, & Barnes, 2004; Parente, 2000), and challenges in interoperabilities (Kuziemsky & Weber-Jahnke, 2009) and delivery of health services (Whitten et al., 2001).

Mestres (2017) and Mieczkowska et al. (2004) have emphasized that, as there are a large number of actors with different and even opposing viewpoints in the healthcare industry, particularly in public health structures, a mutually acceptable approach may be difficult to achieve, which is one of the major challenges in eHealth. For example, Menko, Visser, Janssen, Hettinga, and Haaker (2013) and Van Meeuwen et al. (2015) have pointed out differences in perspective between the opportunities offered by innovative eHealth solutions and the reality of routine healthcare. Often, eHealth companies providing innovative services must try to change cultural norms enshrined in the health delivery system (Whitten et al., 2001). Mieczkowska et al. (2004) noted that public health organizations have risk averse cultures in which many individuals practice defensive behaviors and follow deeply embedded working practices. The healthcare professionals’ readiness to adopt eHealth service into their routines depends on how well these are integrated into the healthcare environment’s workflow, as it is too often constrained, for example, by complex reimbursement structures, heavy workload, lack of time, and unsuccessful alignment or support within the existing clinical process (Ahern et al., 2006; Granja, Janssen, & Johansen, 2018; Olsson et al., 2004). According to Hannan and Celia (2013), the lack of involvement by physicians and other clinicians in eHealth projects is a major factor in the failure of these initiatives. Moreover, rapidly changing technologies may be one reason for the relatively slow adoption of new technologies among health organizations (Wen & Tan, 2003).
One of the biggest challenges of eHealth is the requirement of research-based evidence (scientifically proven), especially in the area of healthcare (Ahern et al., 2006; Eysenbach, 2001; Morland et al., 2017). Quality problems in healthcare may even be life threatening, and the market may lose confidence in the start-up’s ability to avoid such mistakes (Shepherd et al., 2000). Morland et al. (2017) noted that research does not keep pace with technological development. For instance, applying for a research grant, receiving the grant, conducting the trials, and then publishing the findings take time, which can result in the studied technology being outdated before it can generate enough evidence. As eHealth start-ups often suffer from the lack of resources, acquisition of research-based evidence may be difficult for them to achieve (Livi & Jeannerat, 2015; Morland et al., 2017). Furthermore, as healthcare has a much greater degree of existing political lobbying than many other industries (Parente, 2000), start-up companies may have weaker leverage than large companies.

2.6.3 Success factors of eHealth business

The eHealth business-related literature has sought to reveal and provide the factors that contribute business success in this industry (e.g., Maheu et al., 2001; Menko et al., 2013). To be innovative and to capture new opportunities and develop new business models in eHealth, an entrepreneurial mindset is required (Rupert, 2002). Chen et al. (2013), Kijl et al. (2010), Lin et al. (2010), Oderanti and Li (2018), and Van Limburg et al. (2011) have all pointed out that developing an initial and appropriate business model for an eHealth start-up during its early stages can play a pivotal role in reducing risks and costs related to service deployment, while increasing its probability of success and survival in the market. Mettler and Eurich (2012) emphasized that the context and nature of a business matters in terms of its business model. Thus, eHealth services have to create value for all stakeholders by designing an appropriate business model (Valeri et al., 2010). The situation as to what kind of business and eHealth start-up is operating has a decisive impact on the choice of what kind of business model to use.

According to Ahern et al. (2006), the infrastructure of healthcare systems must be considered in eHealth applications. Kirsch (2002) provided three key suggestions for eHealth business success: beware the hype (while eHealth contributes to healthcare, it will not necessarily transform it), identify the valid business proposition (saving money or making money), and define a focused and realistic vision (making existing processes better is a more reliable way than
inventing something new). Moreover, the credibility and value of eHealth is based on its ability to demonstrate positive outcomes (Ahern et al., 2006). Unlike many other commercial environments, the value creation in eHealth requires taking into consideration both financial and non-financial factors (Valeri et al., 2010, p. 54). Jordan (2015, p. 59) emphasized that successful start-ups have experienced management personnel who understand how to navigate in the complex healthcare sector and are able to connect innovation sources, such as inventions from universities, other firms, or their own firm, with capital sources.

In addition, Pascal (2017) pointed out that any payable eHealth service must scientifically demonstrate its ability to meet health needs in a cost-effective manner. Rupert (2002) noted that strategies in eHealth appear to be more about strategic experimentation and trial and error learning at minimum possible cost rather than analysis and forecasting. According to Lin et al. (2010), if eHealth start-ups manage to be close to the market interface and manage to be market-driven, the likelihood of business success will rise. The same is true when an eHealth start-up is managed to ensure that intellectual property rights are impervious to the advancement of competition (Jordan, 2015). Ackerman et al. (2010) asserted that, for eHealth initiatives, the critical issues are communication, training, cultural sensitivity, and end user customization. Urueña et al. (2016) stated that collaborative leadership, networking, evaluation capabilities, and a customer-centric approach promote eHealth implementations. Recently, Gauthier et al. (2018) pointed out that eHealth entrepreneurs must be aware of the possibility of losing control of information management, which might be the biggest pitfall for start-ups.

To implement eHealth services successfully in actual practice, one important success factor is to have a healthcare supplier as a partner during the development of the eHealth service. The opinion of healthcare professionals, especially medical specialists, is of crucial importance (Menko et al., 2013). Rupert (2002) argued that strategic partnerships with infrastructure providers are essential for success. Innovation needs to be institutionalized; otherwise, even an achieved position will weaken over time due to the rapid changes in eHealth (Rupert, 2002). Gauthier et al. (2018) emphasized that the success and longevity of eHealth start-ups rely on their ability to manage networks, and Medina-Garrido and Crisóstomo-Acevedo (2010) highlighted that an eHealth business needs to have a good reputation, which may take substantial time and money to build.
2.7 Synthesis of literature review

In this study, the theoretical foundation for the investigation of the growth management of eHealth service start-ups was based on a selected scope of earlier literature focusing on stages of growth and, particularly, the start-up stage of service business.

The stages of growth perspective of business growth has decades of history behind it. Growth management is incorporated within this perspective (Davidsson & Wiklund, 2006). As the continuous changes in a business environment generate new types of challenges to growth management, the stages of growth perspective has become even more relevant in today’s research (Amir & Auzair, 2017).

A broad collection of literature exists about the stages of business growth model, including the start-up stage among other growth stages. However, there is lack of growth studies focused specifically on the start-up stage. And, as there are many generic (or universal) models and frameworks seeking to describe the stages of firm growth, less stages of growth research has focused on service-based business. Moreover, based on the prior literature, context-specificity, such as industry-specific understandings of growth management, remains understudied. Furthermore, the earlier stages of growth research has provided little or no evidence regarding international aspects of start-up growth management.

As this study’s aim was to clarify the growth management of eHealth service start-ups, current knowledge about the topic as it relates to other fields was required. Thus, relevant literature from outside of the stages of growth literature stream was reviewed. Particularly, prior research about start-up business and eHealth industry context were reviewed. Outside of the stages of growth literature, scholars have shown great interest in both start-ups/new ventures and the topic of eHealth. However, the development of eHealth service start-ups and the business aspects of eHealth have been poorly researched. Thus, empirical-based research on eHealth service start-ups is needed to reveal the characteristics of this business, which will increase the understanding of growth management of eHealth service start-ups.

In sum, a broad range of previous literature exists on stages of business growth, start-up business, service businesses, and eHealth, but not much attention has been paid particularly to growth management of eHealth service start-up business. Thus, further research is needed to study this phenomenon.

The discussion areas, related focus, and main references of the literature are summarized in Table 5.
Table 5. A summary of main discussions and concepts of this dissertation.

<table>
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<th>Discussion</th>
<th>Focus</th>
<th>Examples of key references</th>
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<td>Business growth</td>
<td>Stages of growth perspective</td>
<td>Davidsson &amp; Wiklund (2006); Davidsson et al. (2010); McKelvie &amp; Wiklund (2010); Burns (2011); Churchill &amp; Lewis (1983); Greiner (1972); Smith et al., (1985); Hanks et al., (1994); Scott &amp; Bruce (1987); Phelps et al. (2007); Levie &amp; Lichtenstein (2010); Lester et al. (2003); Amir &amp; Auzair (2017); Steinmetz (1969).</td>
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<tr>
<td>Start-up stage</td>
<td>Growth management during the first stage of business</td>
<td>Adizes (1979); Davidsson et al. (2010); Miller &amp; Friesen (1984); Jawahar &amp; McLaughlin (2001); Churchill &amp; Lewis (1983); Smith et al., (1985); Steinmetz (1969); Hanks (1990); Kaulio (2003); Kazanjian (1988).</td>
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<td>Service business start-up stage</td>
<td>Growth management of a service-based business in the start-up stage and reference framework.</td>
<td>Muhos et al. (2017); Auzair (2010); Empson (2012); Ferreira et al. (2011), Greiner &amp; Malernee (2005); Masurel &amp; Van Montfort (2006); Shim et al. (2000); Teeter &amp; Whelan-Berry (2008); Van Tonder &amp; McMullan (2010); Witmeur &amp; Fayolle (2011).</td>
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<td>Start-ups/New ventures</td>
<td>Current knowledge about start-up business characteristics</td>
<td>Gartner et al. (1989); Bhide (1992); Burns (2011); Delmar et al. (2003); Calvino et al. (2015); Biga et al. (2011); Shane &amp; Venkataraman (2000); Gompers &amp; Lerner (2001); Unterkalmsteiner et al., (2016).</td>
</tr>
<tr>
<td>Internationalization of start-ups</td>
<td>Current knowledge about start-up internalization</td>
<td>Welch &amp; Luostarinen (1988); Knight &amp; Cavusgil (1996); Oviatt &amp; McDougall (1994); Knight &amp; Cavusgil (2004).</td>
</tr>
<tr>
<td>eHealth</td>
<td>Context of health industry, concept, and current knowledge about eHealth</td>
<td>Eysenbach (2001); Kirsch (2002); Meier et al. (2013); Elenko et al. (2015); Pinto &amp; Baracsi (2012); Parente (2000); Lupton (2014); Campbell (2014); Chowdhury (2012); Ahem et al. (2006).</td>
</tr>
<tr>
<td>eHealth start-ups</td>
<td>Current knowledge about eHealth start-up service business</td>
<td>Morland et al. (2017); Whitted et al. (2001); Mettler &amp; Eurich (2012); Oderanti &amp; Li (2018); Mestres (2017); Maheu et al. (2001); Kirsch (2002); Mas &amp; Hsieh (2017); Mieczkowska et al. (2004); Elton &amp; O’Riordan (2016); Chen et al. (2013); Parente (2000); Rupert (2002); Pascal (2017); Lin et al. (2010); Kao &amp; Liebovitz (2017).</td>
</tr>
</tbody>
</table>
3 Research contribution

This section presents the dissertation’s research contribution. Sections 3.1–3.4 present the contributions of the original four articles. Chapter 3.5 presents a summary of these contributions and the collective research contribution of this dissertation.

3.1 Stages of growth theory and experiences of Finnish eHealth service start-ups

Article I addressed the RQ1 (How do managerial experiences in eHealth service start-ups relate to the recent empirical-based and service business-focused stages of growth literature?) of this dissertation by focusing on eight Finnish eHealth service start-up managers’ experiences (Case A–Case H) related to assumptions (descriptions) derived from the stages of growth theory (service business framework in Table 4). The article’s deductive case-by-case data analysis approach was based on an empirical service business growth framework by Muhos et al. (2017), which was one of the first attempts to synthesize the central findings of the stages of growth theory related to service business. This study focused on testing the framework’s applicability in the context of Finnish eHealth service start-ups. By doing this, the intent was to reveal experiences that were contradictory to assumptions of the service business-focused growth framework and experiences that did not fit into it. These experiences could then be considered as industry-specific characteristics of eHealth service start-up business in the Finnish context. To understand growth management in the eHealth service start-up business, it is important to recognize the industry-specific characteristics of business.

3.1.1 Experiences of start-up managers in relation to the assumptions of the service business framework

Article I answered RQ1 of this dissertation by focusing on eHealth service start-up managers’ experiences related to assumptions of general service business framework presented in Chapter 2.3.2 and Table 4 (Muhos et al., 2017). In the original Article I, a case-by-case analysis of eight Finnish eHealth service companies during the start-up stage was conducted. First, parallel and contradictory (or partly contradictory) experiences related to preconceived assumptions were investigated. Thereafter, contradictory and partly contradictory experiences were
presented and further analyzed to test the applicability of the framework in each case.

The results of Article I indicate that the assumptions of the framework corresponded only partially with the actual experiences of eHealth service start-up managers in the start-up stage. The results provided partial support for the applicability of the service framework since the majority of its assumptions were supported by cases. However, the results revealed various contradictions, and partly contradictions related to the general service business growth framework in the studied context.

The exposed contradictions were particularly prevalent among assumptions related to focus (A1.1), power (A1.2), strategic management (A1.5), human resources (A1.8), and financial management (A1.9). These assumptions were frequently contradicted by the experiences of the eHealth service start-up managers.

The literature synthesis (Muhos et al., 2017) indicated that the focus of start-up service companies is on the development and delivery of services and on building a market identity in order to survive (A1.1). However, the results of Article I determined that the focus of the case companies was on pushing the service business idea forward through a start-up company. Often, digital service requires technical development, which in turn requires seeking and applying for external funding. Seeking and applying for funding takes up a major portion of the manager’s effective working hours. These tasks typically take more time and attention than the managers expected. Furthermore, besides focusing on services, eHealth service start-ups’ may focus on developing service-related technology or service-related products.

According to the general service business growth framework, decision-making is owner dependent (A1.2). However, in a few case companies, the founders shared responsibilities and power with team members from their own sectors.

The results related to strategic planning differed from the framework’s assumption that owner-manager(s) lack time for strategic planning (A1.5). Contrary to this assumption, the managers of the case start-ups typically engaged in some level of business and formal strategic planning, often utilizing advisory boards and external experts to tackle strategic issues.

The framework assumes that everyone in a small start-up is involved in every task (A1.8). According to the results, the owner-managers generally participated at some level in all operations in eHealth service start-ups; however, contradictory experiences emerged in many cases as there was a distribution of roles in terms of tasks and responsibilities between core team members and/or co-founders. For
instance, the founders may have separated tasks response areas based on their abilities or previous experience.

According to the framework, service start-ups typically move from challenges to meet cash demands to a break-even cash flow, thanks to early customers (A1.9). In this study, contradictory experiences emerged in all cases (Case A–Case H). Cash flow challenges were prevalent among the cases, and revenues were insufficient to reach the break-even point during the start-up stage. Even though the start-ups may have already had early paying customers, the companies did not earn sufficient income to break even, which actually created a long-term “death valley” effect.

A summary of the key contradictions between assumptions and managerial experiences is presented in Table 6.

Table 6. A summary of key contradictions (reprinted [adapted] by permission from Article I © 2018 Emerald Publishing Limited).

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Key contradictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1.1</td>
<td>The focus is on the development and delivery of services and building market identity to survive - The focus is on pushing the service business idea forward in the form of a start-up company. - The focus of operations during the start-up stage has, to a large extent, been on seeking and applying for funding (Cases: A, C, G, and H). - In addition to focusing on service, the focus of the start-ups has partly been on developing service-related software and/or hardware (Cases: E, G, and H). - Furthermore, the start-ups identified that their focus has been on obtaining research-based information on the effectiveness and benefits of this service (Case E). - In sum, often eHealth service requires technical development which, in turn, requires seeking and applying for external funding.</td>
</tr>
<tr>
<td>A1.2</td>
<td>Decision-making is owner-dependent, as the owner-manager(s) leads small groups of employees - The owner-manager leads a small group of employees. However, partly contradictory experiences have emerged due to the employees’ shared responsibilities; each employee is clearly responsible for his or her own sector (Case E). - The start-up has encouraged team members to take actions, on their own initiative, and to respond to issues in their own areas (Case F).</td>
</tr>
<tr>
<td>A1.5</td>
<td>Owner-manager(s) lack time for strategic planning - Contrary to the framework’s assumption, the founders conducted strategic planning from the start (Cases A, C, D, E, F, G, and H).</td>
</tr>
</tbody>
</table>
Assumption | Key contradictions
---|---
A1.8 Everyone is involved in everything in a small start-up | -In general, the founders have participated in all kinds of tasks; however, the coding of the application has been delegated to a particular employee(s) (Cases A, C, and H).
| | -The founders have separated tasks based on natural abilities and experience (Cases B, F, and H), the pilot production was outsourced (Cases A and G), or a software design was delegated to particular employees (Case E).
A1.9 Moves from challenges to meet cash demands to a cash flow that breaks even, thanks to early customers | -Contrary to the framework’s assumptions, challenges relating to cash flow occurred in all cases. Even though the start-ups had developed customer partnerships and attracted early paying customers, their income was insufficient to break even (Cases A, B, C, D, E, F, G, and H).
| | -Due to the fact that eHealth start-ups are not a pure service business and that development of service-related software and/or hardware is needed, the business is characterized by a long-term “death valley” effect.
| | -In addition to revenues, the start-up stage is financed by, for example, private and public funding (Cases A, B, and C), owners’ funds or loans (Cases B and C), or via revenues from consulting services (Case H).

3.1.2 Experiences of start-up managers outside of the service business framework’s topics

Article I also presented start-up managers’ recalled experiences that did not fit the service business framework’s topics.

The essential role of technology and technology development in eHealth service start-ups was a clearly visible characteristic of the case companies. The eHealth service start-ups were developing service-related technology, such as applications, programs, or products. Yet, developing such technology and coding applications and platforms with the service providers may take years.

However, the start-ups were unable to develop needed service-related technologies without external funding. Seeking and applying for external funding consumed considerable amounts of time and resources and was highlighted as a most significant activity in many start-up managers’ interviews.
In Finland, only a few companies in the eHealth business can achieve organic growth, particularly if the start-up is not a clear service business. (Case D)

Applying for funding has taken up so much time that a little bit of everything else has been at a standstill. (Case C)

In addition to private funding, start-ups often seek and apply for external funding from public funding actors. This role of the public sector as a funding actor and an important supporter of eHealth start-up businesses in Finland was recognized. However, grant funds are limited, public funding is generally fragmented, and procedures are perceived to be time-consuming. Moreover, public support for commercialization and growth in Finland was found to be lacking and funding to survive the “death valley” time period was not easily accessible. Also, public support systems are more often focused on development, even though the main challenges of eHealth businesses relate to early commercialization activities.

We had a lot of technical expertise, but business skills, we didn’t have. (Case F)

The role of the public sector is essential, not only from the funding point of view, but also when considering the demand side of services. Moreover, the public sector can provide, for example, support via a business incubator, or from a research institute that may develop the plausibility of the eHealth service business. Interactions and partnerships with public health operators can be key to business success. This essential role of the public sector in health services was another key characteristic that emerged from the data.

The statutory requirements and certifications were highlighted. Research-based evidence regarding the effectiveness, benefits, and safety of technology and services were pointed out as important characteristics of eHealth business. As start-ups imply limited resources for investing in R&D processes, there is typically a need for scientific justification for all presented claims about services and service-related products in the healthcare sector. Securing such justification, which may be produced by public research institutes, can be a prerequisite for action in the field of health services and may take years. Moreover, since certification requirements are prepared only for existing products and services, available information and guidelines concerning applicable certifications are insufficient from the perspective of start-ups. The studied eHealth businesses provided new innovations, which may be incompatible with existing requirements. Such prerequisites may slow down the business development of eHealth start-ups.
It feels that the characteristics of this field relate to what service can be produced with a particular certification, which services require certifications, and which do not. (Case G)

The interviewed start-up managers perceived that the industry of eHealth service market is still small and emerging in Finland, and most of the eHealth service enterprises are in the early stages of development and growth. Start-ups are providing innovative services in new areas or at the edge of positioned interfaces where standards and practices are still developing. Moreover, eHealth start-ups’ ability to gain access to the healthcare industry was perceived to be challenging. Resistance to change toward innovative services and practices was noted as being prevalent in the public-driven healthcare industry, where old and traditional practices are applied. Thus, this complicates and slows new business. In addition, challenges may appear in regard to estimating the demand for services, to whom services should be primarily sold, and how selling should be conducted.

The start-up managers perceived that having a good start-up team is critical and possible changes in human resources create typical challenges. Business uncertainty of start-ups may lead to challenges in recruitment. Skilled employees could be unwilling to accept jobs or co-partnerships due to the uncertainty of a start-up’s prospects. In addition, unemployed job seekers are not necessarily willing to lose the social safety net provided to employees by becoming co-owners of a company.

Slow growth of eHealth service business due to uncertainty relating to several of these characteristics was a commonly emphasized factor. It was noted that the development of an eHealth business is a slow process, resulting in a significant “death valley” presence among eHealth businesses.

The findings of Article I revealed key contradictions related to the framework’s assumptions. Moreover, start-up managers’ recalled experiences that did not fit the framework’s topics, and these were pointed out. Thus, Article I was able to make a comparison between eHealth service start-ups and general service-based business (reference framework). The key findings of Article I can be considered as industry-specific characteristics of eHealth service start-up business in Finland. The characteristics that were determined should be taken into consideration when applying the reference framework to eHealth service start-up business, particularly in a Finnish context.
To summarize RQ1 and Article I’s contributions, the key industry-specific characteristics of Finland’s eHealth start-up service business which were identified are illustrated in Figure 6.

3.2 Classification of critical incidents in Finnish and Swedish eHealth service start-ups

Article II concentrated on analyzing the critical incidents related to the early development of eHealth service business in the Nordic context. The study inductively identified the themes of critical incidents in eight Finnish and six Swedish eHealth service start-ups (Case A–Case N).

As a result of the original Article II and the answer to RQ2, the identified positive and negative critical incidents were classified inductively into eight themes:

- Human resources
- Marketing
- Financial resources
- External relations
- Regulations
- Decision-making
- Development and delivery of services
The revealed critical incidents were often related to the human resources of start-ups. Successful developers, staff competence, successful recruitments, and multi-professional expertise in core teams, for example, were factors that were perceived as critical when starting-up a business. A committed, experienced, and reliable staff was considered by most to be vital. Previous entrepreneurship experience and the team’s good references were noted as helpful during the start-up stage. Combinations of various competencies and a clear division of responsibilities among co-founders or among staff members were cited as positive factors in many cases which emphasized that teams must work well together.

However, recruitment problems, personal relationships between owners, and possible conflicts were noted as possible turning points for start-ups. Also, the recruitment of competent employees was highlighted as being difficult if job seekers perceive the start-up as risky and if the most qualified employee candidates have higher expectations regarding salary.

The demand for new eHealth service is a crucial part of business success. Critical incidents related to marketing were described clearly in the interviews. A small start-up has limited resources, but getting attention and being accepted in the market are crucial for their development. A major challenge is that society is still unfamiliar with the sector. The newness of eHealth service technology puts start-ups in a situation where they must take responsibility for educating customers to use their services. Also, shareholders, as financiers, need to be convinced about usability and benefits of eHealth services. The plausibility of start-up business and the ability to produce persistent service are needed to convince customers and to help a start-up succeed. A positive marketing-related critical incident occurs when a start-up gets its first paying customer in the early stage. An early customer can be considered as a proof of concept, which makes it much easier to attract other customers and investors. In order to develop services, customer feedback is considered a vital issue for start-ups.

For a small start-up, it is difficult to compete with large companies in obtaining visibility. However, the initial success of a start-up, as well as in invention competitions, is one way to gain funding and media visibility. Success in a start-up competition helps to give a business a head start. Moreover, it helps to create networks, which can be more successful when somebody has heard of or read about a start-up.
As healthcare systems are public-driven in the Nordic context, public units play a strong role in deciding which medical products, technologies, and services are provided to end-consumers. According to the interviewees, the healthcare actors in the public sector are unaware of the eHealth solutions small enterprises could provide. The resistance to try new technologies is regarded as common in public healthcare and poses challenges in marketing start-ups’ services. Care units and personnel are highly focused on their daily tasks, and implementing a new technology is not a common practice. From the marketing point of view, it is essential to get in contact with care units and to convince them of importance and usefulness of the new technology and services.

particularly if the potential customers of the provided service are public actors, successful access to public procurements and framework agreements are essential to the survival of the business. However, previous references are often a prerequisite for access to public contracts, which is a major challenge to a newly established eHealth start-up.

Seeking and applying for financial resources were noted to be central themes of eHealth start-ups. The lack of resources during the start-up stage was often emphasized. This indicates that external funding is required when challenges related to cash flow and revenues arise. However, external funding for new technology development is not easy. Business development during the early stage is difficult because of the discontinuity and fragmentation of funding. Start-up managers perceived that their focus on day-to-day operations was more directed toward seeking and applying for funding than toward business development. Typical business loan financiers, such as banks and other potential financiers, are often unfamiliar with the eHealth industry and thus unsure of how to tackle this new type of business. As a result, if other funding sources are not available, start-up owners may have to use their own savings, loans, and resources.

Critical incidents related to funding and paying customers were noted to be turning points of start-up business. Getting the first investor helps to develop the technology-related services further into forms that are more sophisticated. In addition, the practical and psychological contributions of private investors, as venture capital and business angels, to start-ups was highlighted. Start-up managers perceived it as encouraging having an investor who believes in their business. The role of the public sector as a funder (e.g., Vinnova in Sweden and TEKES in Finland) was recognized as an important support of eHealth service start-up business.

The start-up managers asserted that external relations, such as cooperation and networking, are important elements for their start-up stage development. They
perceive cooperation and interactions with other companies and different healthcare actors in the industry as positive drivers. Synergy is considered positive, for example, in the healthcare focused business hubs. In the healthcare sector, partnerships with bigger companies may open doors to close collaboration with practical care units. Moreover, cooperation with public sector actors, such as research institutions, is recognized as a key contributor to business. Obtaining research-based information about the effectiveness and benefits of a service or service-related product is often a prerequisite in the field of health services. Also, the role of research-based credibility is central to the whole business.

Regulations and legal matters surrounding eHealth business were emphasized as being challenging. The healthcare sector is strictly controlled by legislation, and technical requirements for innovations must be properly met. For example, in Finland, before putting a service-related device, product, or software on the market, the company must demonstrate safety, suitability for use, and performance. At the same time, the authorities’ practices lag behind the emerging field of eHealth business. Start-ups consider that legislation and quality standards are strict and, to a large extent, still mainly absent for eHealth business. Healthcare-related digital technology differs from traditional health technology because it is fast-changing and includes new features that perhaps cannot be measured using old standards. Also, the current certification requirements were prepared for existing static products and services and are therefore outdated. Moreover, official processes take a long time and information and guidelines concerning innovations and applicable service certifications are regarded as insufficient.

In many cases, the managers described their companies’ internal practices as having influenced start-up development. The study data revealed that critical incidents appear when decision-making and ownership are separated at a very early stage. A small core team, wherein each team member has focused task areas based on their strengths and clear shared responsibilities for their own sector, is seen as constituting a critical decision during the early stages of a business. Moreover, the successful delegation of tasks, a clear operating model, shared ownership arrangements, measuring business, agile management and communication tools, and management-related cloud services were all perceived positively. However, it was noted that supporting management systems may also be a challenging area as introducing and learning these systems take too much of a manager’s time, or they could even be inappropriate. For instance, the customer relationship management system was considered to be more suitable for bigger companies than for small start-ups. Moreover, nascent business models and processes of start-ups should be
implemented and acknowledged throughout before management can recognize what kind of data and support systems are needed.

Critical incidents related to development and delivery of services emerged clearly from the data. Particularly in the beginning of eHealth business, management’s attention and time are focused more or less on the management of technology development. Because eHealth start-up services are typically linked to a technology, the general slowness of the development of a product-related service was identified as a negative factor. According on the interviewees, providing innovative services and operating in a new industry require significant amounts of time. When developing a completely new kind of services, it is difficult to estimate when the service and related technology will be completed, or when it is the right time to seek market acceptance. Moreover, production costs were considered by many as high. Thus, it was argued that it would be simpler to get started by introducing a first minimal viable product with reasonably low costs. However, this can be risky as providing inadequate service may lead to increasing challenges.

Critical incidents occur when start-ups are able to develop the technology to the stage where the first customer is willing to pay for the service. Developing a service with partners and redirecting development based on customer feedback were described as clearly positive incidents. Some interviewees had had a positive experience with successful outsourcing of technology development or the firm’s own expertise in development.

Incidents were often associated with external support. Some cases had employed expert services to focus activities and strategy building. External support, for example, was often realized via an advisory board or incubators. Experienced advisors with networks in the industry were considered important for eHealth start-ups. To foster strategy development, a variety of experts and feedback through start-up competitions were used. Positive and negative incidents related to external support from public sources emerged from the data. The public sector’s role of technology support was clearly acknowledged, as well a lack of public support related to the commercialization of services. The data revealed that public funding has been targeted more at technology development than at commercialization.

According to these findings, a major number of critical incidents were, at least partly, related to the public sector. From the perspective of eHealth service start-ups, the public sector plays an essential role in the Swedish and Finnish healthcare industry contexts, both in positive and negative terms. However, the role of public actors is connected differently among cases and depends, for instance, on whether the public sector is the end-customer of the start-up or not.
In summary, Article II’s contribution is that it has provided themes of critical incidents. These themes are perceived as critical in eHealth start-up business from the perspective of managers. Table 7 provides a summary of the categorized critical incidents. To highlight the pivotal role of the public sector, it is presented as a horizontal theme across the categories related to inductively categorized critical incident themes in Table 7.

Table 7. Themes of positive and negative critical incidents (under CC BY-NC-ND from Article II © 2017 Authors).

<table>
<thead>
<tr>
<th>Theme</th>
<th>Positive incidents</th>
<th>Negative incidents</th>
<th>Horizontal theme: Public sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resources</td>
<td>Successful recruitments and staff competence.</td>
<td>Conflict between founders.</td>
<td>Previous references expected in cooperation (framework agreements/public procurements).</td>
</tr>
<tr>
<td></td>
<td>Committed staff with experience and good references.</td>
<td>Incorrect recruitment decisions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Previous entrepreneurship experience.</td>
<td>Jobseekers perceive a start-up as a risky employer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A well-functioning core team.</td>
<td>Salary expectations exceed start-up’s budget.</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>The first paying customers.</td>
<td>Users and purchasers of eHealth technology need to be educated first.</td>
<td>Public care units are important clients and test users.</td>
</tr>
<tr>
<td></td>
<td>Customers’ needs and willingness to accept a new eHealth technology.</td>
<td>Resistance to try new technologies in public healthcare.</td>
<td>Success in public procurements and obtaining framework agreements.</td>
</tr>
<tr>
<td></td>
<td>Satisfied customers give positive feedback.</td>
<td>Dominating role of doctors.</td>
<td>Public sector is unaware of the eHealth solution small enterprises could provide.</td>
</tr>
<tr>
<td></td>
<td>Pilot users during product development.</td>
<td>Incentives to develop and make services more effective are missing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visibility through media and competitions help businesses get a head start.</td>
<td>As a small start-up, it is difficult to compete against large companies in gaining visibility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Persistence to convince customers and to make a start-up succeed.</td>
<td>Public funding crucial in the early stages.</td>
<td></td>
</tr>
<tr>
<td>Financial resources</td>
<td>Financing in the early stages helps to develop the technology further.</td>
<td>Lack of resources.</td>
<td>Lack of public funding for commercialization.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banks and other potential financiers unfamiliar with eHealth technology.</td>
<td></td>
</tr>
</tbody>
</table>

104
<table>
<thead>
<tr>
<th>Theme</th>
<th>Positive incidents</th>
<th>Negative incidents</th>
<th>Horizontal theme: Public sector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Having one investor makes getting another one easier.</td>
<td>Personal savings needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Business angels provide both financing and advice.</td>
<td>Funding rounds take a long time.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both public and private funding are needed.</td>
<td>Fundraising takes resources from actual product development and marketing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partnership with bigger companies.</td>
<td>Inadequate agreement practices lead to conflicts between partners.</td>
<td>Public sector care units</td>
</tr>
<tr>
<td>External relations</td>
<td>Innovation cooperation with other start-ups.</td>
<td>Research partnerships with public organizations increase credibility.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooperation with healthcare organizations.</td>
<td>Public sector makes decisions on procurements: contacts and discussions are important.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visibility and contacts through start-up competitions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulations</td>
<td>Not mentioned.</td>
<td>Legislation regarding eHealth is, to a large extent, absent.</td>
<td>Legislation and authority guidelines.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legislation and quality standards are strict for healthcare business.</td>
<td>Technical requirements (patents, etc.).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bureaucracy and authority processes are slow.</td>
<td>Certification requirements have been prepared for existing static products and services.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New eHealth solutions may be inaccurately categorized.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision-making</td>
<td>Decision-making and ownership separated.</td>
<td>Improper agreement practices.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td></td>
<td>Plans to grow and reach new markets.</td>
<td>Lack of business skills.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Task and responsibility delegation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Focus on core products and processes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development and delivery of services</td>
<td>Developing skills of start-ups.</td>
<td>Because eHealth start-up services are typically linked to technology development, service development takes time.</td>
<td>Public support for technology development.</td>
</tr>
</tbody>
</table>
### 3.3 Management priorities of eHealth service start-ups in Southern California

The Article III addressed RQ3 of this thesis and focused on the management priorities in eHealth service start-ups located in Southern California. The question was answered in Article III by analyzing case-by-case the positive and negative incidents that the managers of the case companies experienced. In analyzing the critical incidents, the study investigated one feature of management: the management priorities in the process of starting up digital businesses in the healthcare and life science ecosystem in Southern California. The results were drawn case by case from interview data on the positive and negative critical incidents recounted by the manager/management teams of the selected eHealth service start-ups. In the Article III, cases were presented first as single case analyses.

Next, a cross-case analysis was provided by using the nine overarching management theme areas developed by Muhos et al. (2017) as a framework for management priorities. The analysis of these incidents employed a deductive approach to synthesize the managers’ experiences by using management priority categories that were derived from the stages of growth literature. In Article III, the experienced positive and negative critical incidents of the selected start-ups were presented using these categories of management priorities.

As the majority of the critical incidents fell into the predefined management priority categories, the critical incidents that did not were further analyzed. These
critical incidents were found to form a relatively consistent new category that was focused on external networks of the eHealth service start-ups. This category was labelled as network management.

The second contribution of Article III was the condensed findings related to the management priorities of eHealth service start-ups in California, which are presented in Table 8. As a contribution to theory, the modified framework functions as a platform (a set of propositions) of the qualitative and contextual characteristics in the eHealth service start-up business in California.

**Table 8. Management priorities of eHealth service start-ups in California (under CC BY license from Article III © 2018 Authors).**

<table>
<thead>
<tr>
<th>Management priority category</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Focus</td>
<td>The central aim of an eHealth service start-up is to bring radically new digital services to the healthcare market with a scalable business model. Describing and selling the business idea and model to diverse stakeholders requires attention.</td>
</tr>
<tr>
<td>2. Power</td>
<td>In an owner-centric start-up, the founders might face conflicting interests related to vision, core values, and strategy. These conflicting interests can cause a loss of focus but can be seen as a necessity for the birth of radical innovations.</td>
</tr>
<tr>
<td>3. Structure</td>
<td>Transition from a simple owner-centric structure to a scalable structure starts early because the aim is at scaling the business in the large digital healthcare market of the US and beyond.</td>
</tr>
<tr>
<td>4. Decision-making systems</td>
<td>Affordable, easy-to-access, and scalable decision-making systems are devised. These digital tools include digital systems, such as for communication, resource management, project management, cloud computing, and data management.</td>
</tr>
<tr>
<td>5. Strategic management</td>
<td>The strategic aim is to attract investors and scale up. However, strategies must be flexible to cope with the unexpected changes of the target market.</td>
</tr>
<tr>
<td>6. Service development and delivery</td>
<td>Through a process of early piloting, minimal viable products, experimentation, pivots, customer verification, and evidence about scalability are generated. Premature service releases and hard-to-access IT systems can cause challenges.</td>
</tr>
<tr>
<td>7. Marketing</td>
<td>Convincing opinion leaders to support the service provides invaluable recognition for new-to-market start-ups. However, finding key opinion leaders and verifying the target customer segment are often challenging.</td>
</tr>
<tr>
<td>8. Human resources</td>
<td>Start-ups need to compete for capable people. Companies acquire human resources by equity-based rewards, part-time staff, volunteers, interns, trainees, freelancers, outsourcing (domestic or overseas), advisers, and virtual methods. The core is protected by involvement and ownership.</td>
</tr>
<tr>
<td>9. Financial management</td>
<td>Creative methods are used to raise capital, including self-funding, seed capital competitions, family and friends, business angels, super angels, foundations, patient groups, large companies, and so on. The complex market requires long development times with nothing yet being sold.</td>
</tr>
</tbody>
</table>
Network Management

In a complex, multi-faceted, and highly protected market with many stakeholders (for example, patients, caregivers, physicians, hospitals, insurance companies, associations, and charity organizations), network management is important. The ecosystem supports start-ups by providing access to university accelerator programs, start-up competitions, incubators, health sector-specialized accelerators, business angel networks, private investors, advisers, and mentors.

Moreover, analysis of management priority areas revealed key context-specific characteristics of Southern California eHealth service business. In Article III, the management priority categories of focus, service development and delivery, financial management, and network management were emphasized and considered as context-specific characteristics of Southern California eHealth service business.

The business focus of eHealth start-ups management is to create new health services under extreme uncertainty and the high risk of failure. Describing and selling the business idea and model to diverse stakeholders requires attention. The findings indicated that the increased spending on healthcare, the megatrend of digitalization, and the economic shift to services were perceived among the cases as promising opportunities for disruptive digital service businesses. The start-ups felt that they had promising business ideas but a lack of resources. With radical eHealth service innovations, the risk-reward ratio was considered high due to the complex, slow-to-change, highly protected and regulated health care market. As eHealth start-ups aim to create something that nobody has done before, they often face shortcomings in respect to resources, service offerings, routines, and the environment. For instance, the market’s slow speed of deploying emerging technologies increases the risk of failure. However, the start-ups expected that, with radical service innovations, they could create business opportunities with limited competition.

Service development and delivery in the complex and hard-to-access eHealth service market require early specialization in skills, time, and the systematic development approach from early experimentation, to a large scale. The development process may involve early piloting, minimal viable products, experimentation of technology, pivots, customer verification, and evidence about effectiveness and scalability of services. The eHealth market is perceived as
requiring contextual understanding from the founding team and effective acquisition of capable and context appropriate human resources. Development-related specialized skill sets can be acquired through freelancers, part-time staff, volunteers, outsourcing (domestic or overseas), interns, and so on. However, the core of the business can be protected by building these in-house and generating a culture of involvement and ownership. However, premature service releases and hard-to-access IT systems in the health industry can cause challenges.

As part of financial management, fundraising was described as an integral part of the strategy and managers’ target of action. The complexity of eHealth service market requires an extended period for service development and, in some cases, approval cycles with nothing yet available for sale. As organic cash flow is often zero or limited, eHealth service start-ups are forced to raise capital from a broad range of sources, including self-funding, seed capital competitions, and family and friends. Funding also came from venture capitals, business angels, government agencies, start-up foundations, non-profit organizations, family offices, patient groups, large companies, hybrid funds, and so on.

According to the interviewees, in the highly regulated, protected, complex, and multifaceted eHealth service market, network management was experienced as a critical part of success and growth. Given start-ups’ lack of necessary capital, resources, and legitimacy, networking provided them with access to external resources and expertise. Through networking, eHealth start-ups aim at strengthening early development, achieving improving effects on innovation, discovering opportunities, testing ideas, and building legitimacy in the market. The interviewees perceived that they belonged to the health and life science ecosystem in Southern California, which provides fast access to useful networks, including university accelerator programs, start-up competitions, incubators, health sector-specialized accelerators, business angel networks, private investors, advisers, and mentors. Healthcare and life science ecosystems in Southern California have developed a solid platform for networking. Networking with these communities is seen as important, as it can provide, for example, subsidized rent, business advice, marketing assistance, and new network opportunities. Particularly in terms of success opportunities, networking with funding actors was highlighted in all cases. Incubators and accelerators were seen as the main entrances into the ecosystem of the health business.

In sum, the study described in Article III revealed the qualitative and contextual characteristics of the eHealth service start-ups in Southern California by determining the experienced managerial priorities. Interviewees of the eHealth
service start-ups considered that they had created eHealth services under conditions of extreme uncertainty. They had promising ideas and accepted the high risk of failure in experimenting with their business idea and aiming toward a scalable business model in the eHealth service market. Everything in their business model, including the strategies, structures, and systems of the case start-ups, were prepared for scaling. Furthermore, missteps and small failures were recognized as an integral part of the search process. The key industry-specific characteristics of eHealth service start-ups in Southern California are presented in Figure 7.

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**Fig. 7. Key industry-specific characteristics of eHealth service start-ups in Southern California (under CC BY license from Article III © 2018 Authors).**

### 3.4 International aspects of growth management in eHealth service start-ups

Article IV addressed RQ4 of this dissertation. The question was answered by describing the growth management priorities in international eHealth service start-ups and providing the international aspects of international eHealth service start-ups related to management priority categories derived from the stages of growth literature. Five companies in total were investigated, two in Finland (Case C and Case H), one in Sweden (Case L), and two in the US (Case R and Case S).

Article IV shows that every case start-up reported critical incidents related to the management priority areas (Hanks, 1990; Smith et al., 1985) derived from the
stages of growth literature (see Muhos et al., 2017). The findings of the study emphasized that general management priorities are essential from the point of view of internationalization, though not all of them are of equal importance. The study also provided a detailed analysis of the management priorities in international eHealth service start-ups. The focus of this subsection is on the international aspects of international eHealth service start-ups related to management priority areas.

The international aspects were related to the focus (e.g., central aim of the business) (in cases C, H, L, R, and S), structure (H and S), decision-making systems (S), strategic management (C, H, L, R, and S), service development and delivery (C, H, R, and S), marketing (H, L, and R), human resources (H, L, and R), and financial management (C, H, and L). As revealed international aspects are closely related to the management priorities derived from the stages of growth literature, these aspects can be seen as inseparable from the growth management process of selected internationally orientated case start-ups. Moreover, growth is related to internationalization, and internationalization, in these cases, can be seen at least in part as a prerequisite to growth.

Related to the management priority of focus (central aim of the business), Case C aimed at international business from the beginning with the US as the first foreign target market.

*From the beginning, we have had US what we have been desired [sic]. (Case C)*

*Case H tried to ensure success in international business by assembling a team of international co-founders.*

*I was thinking of who are the best in the world to accomplish this story with me [sic]. (Case H)*

Cases L and R pursued customers and partners in both domestic and foreign healthcare markets immediately after the first version’s development. Case L did not have a clear target market, but the aim was to find, with worldwide search, customers whose needs the company could fulfill. Case R found the domestic market in the US constraining, so the company focused from the beginning on several domestic and overseas target markets.

Case S had adopted a different approach. The founders recognized the global, long-term potential of their service, but, with a new-to-the-market business idea, they wanted to build a proven success case in their home market before scaling up abroad.
According to the findings of the study for Article IV, critical internationalization issues related to power did not occur in any of the selected cases.

In terms of organizational structure, in Case H, the team, including a product developer and a sales specialist from the US, was formed from the existing network of the founder. Case S developed a virtual management structure and practices early on as it outsourced its software development to Romania, where it employed a team of five developers.

Case S used virtual and globally scalable decision-making systems from the beginning to enable future international expansion.

The global market was noted as a strong factor in the strategic management of eHealth service start-ups that aimed for internationalization. Immediately after the inception of Case C, a strategic internationalization plan was implemented with the support of a publicly funded internationalization project, which arranged a market investigation trip to the US. That led to a partnership with a US eHealth firm.

Our strategic thought has been that service needs to put in shape before we can export it to a bigger market. (Case C)

An eHealth start-up may have a clear idea of its target market or may look for potential partners or customers first. Case H made a strategic decision to target the US market, but its early attempts had failed, so the start-up reconsidered and revised its strategy.

It was not so easy to start abroad. We chose Silicon Valley as a strategic step to get visibility that would help to get funding. But it’s probably the most difficult place to compete. Now, we have changed the strategy and go [sic] closer to Sweden to get an easier start. We will use more resources there. (Case H)

Case L chose to target domestic and international markets simultaneously as its born global strategy led it to its first international reference customer from Finland. Case R targeted cost-driven capitation-based markets both in the US and overseas. These were the markets where the company’s attributes were desired. Case R aimed primarily at Europe, with its national healthcare systems, but also parts of Africa and South America, where cost is a driver of healthcare services.

According to the findings, start-ups must sometimes make creative strategic choices to tackle barriers of internationalization. Case S needed to create a strategy to overcome the high cost and availability barriers faced by software developers in
California. As the start-up had very limited resources, the founders made a strategic decision to outsource software development to Romania.

Concerning the management priority of service development and delivery, Case L launched its service first in a foreign market (Finland) as it had found the first reference customer with whom the company co-developed the beta version. Also, the aim of Case C was to develop a service that was applicable in both small and large markets and in different cultures. Thus, scalability and adjustability of service and related technology were important considering several potential target markets.

In a way, our aim has been towards it [the US market] all the time, and it [the trip to the US] gave [sic] sense of a certain kind of understanding of what things should happen to make it possible, that is, integrations with a smart watch, at least. (Case C)

Case R found beneficial partners in international non-profit organizations that helped to improve service delivery in developing countries. Pilot projects throughout the world were carried out with an extensive network of partners. Internationalization of service development may not be planned, but it may occur as a necessary reaction to obstacles that a start-ups face. For example, after Case S had failed in software development in California, the company outsourced the work to a Romanian software development team. Thereafter, the minimum viable product was developed quickly with affordable loss. This collaboration was conducted with virtual communication tools and platforms.

Marketing-related international issues occurred in Case H, which selected the US as its first foreign target market partly based on the expected boost in visibility. Also, the marketing strategy of Case L was to send mass emails targeted at potential international partners and customers.

We spammed a lot of healthcare providers, and one of them responded, and that was basically the foundation for our success. (Case L)

A multi-market approach was also used by Case R. They offered free service trials and recruited users from 28 countries. From a marketing perspective, being mentioned in the internationally distributed report of Frost & Sullivan as the only company in the world to “look at” was perceived as a success.

Internationalization aspects related to human resources were highlighted in three cases. Case H took a strategic decision to begin internationalization efforts in the US market, and an American expert was involved in the company as one of the
co-founders. Case L pursued another successful international human resource strategy because, after hitting the first foreign market, the company found well-positioned advisors in other international markets (United Kingdom).

To find the right people in different markets is extremely important and we definitely hit the right [sic]. (Case L)

Case S acquired resources from international freelancer pools and worked virtually with a group of developers. The virtual collaboration with an international team enabled the utilization of overseas experts and the formation of cost-effective long-distance relationships.

In respect to financial management, funding was also a significant factor. In addition to public support, the founders of Case C invested their own money (bank loan) to participate in an internationalization project.

Without it [investment to project], we would not go to US and come back with a partnership and the understanding that we must be there [sic]. (Case C)

Lack of financial resources limited international growth for Case H, whose international breakthrough is still in process.

We had too little [sic] resources so we haven’t succeeded yet. It has slowed down things. Basically, we are still in the domestic market. (Case H)

In Case L, the external investment by the Finnish customer was an important turning point in its internationalization.

To summarize the findings detailed in article IV, with respect to internationalization, issues related to focus, strategic management, and service development and delivery were found to be the most central management priorities for international eHealth service start-ups. However, power, organizational structure, and decision-making systems were most often tackled without the internationalization aspects.

All the studied cases faced internationalization issues related to the management priority area of focus. The focus (central aim of the business) is, at first, on the development of a scalable service and building network relationships. However, fundraising is an integral part of the focus of eHealth service start-ups.

Internationalization was part of the strategic management in five cases, and these cases conducted business planning and formal strategic planning, often with advisory boards and external experts. However, in some cases, strategy had to be adjusted several times.
The target market may be strategically decided, or the choice may be based on where a company finds its first reference customers. In niche markets such as eHealth services, domestic markets are often constraining, making internationalization a prerequisite for growth. One strategy is to target the domestic and one or more international markets simultaneously to increase the probability that at least one of the efforts succeeds.

*Service development and delivery* has been highlighted by international eHealth service start-ups. Internationalization of service development may be planned or not, and it also may occur as a necessary reaction to obstacles the start-up faces. Scalability and adjustability of services and related technology are important when considering several potential target markets. However, technology alone does not guarantee the survival or sustainability of a new service. The commercialization of health innovations requires preliminary steps, such as R&D and regulation approvals, as well as successful marketing to the right target groups. To solve these challenges in commercialization, start-ups may seek partners and develop their technology internationally.

Article IV presented the novel approach of combining both early stage growth management and internationalization considerations, and it analyzed them side by side in the context of eHealth service start-ups. The findings for five international eHealth service start-ups indicated that international considerations are inseparable from the growth management in international eHealth service start-ups.

### 3.5 Results synthesis

The aim of this dissertation was to clarify growth management of eHealth service start-ups. This dissertation provides new knowledge and empirical understanding about management of eHealth service start-ups. In addition, it focuses on revealing the key characteristics of the early development of eHealth service business. The topic is clarified based on the experiences of managers of eHealth service businesses at the critical start-up stage.

The research problem of this dissertation was formulated as follows:

*The current understanding of growth management in eHealth service start-up business is incomplete. Industry-specific research is needed in order to reveal characteristics of eHealth service start-up business and thereby to improve understanding of growth management in eHealth service start-up business.*
The research problem of this dissertation was divided into four separate RQs, which jointly addressed the research problem. The four RQs were answered through the results contributed by four original articles presented in Sections 3.1–3.4.

To answer RQ1: *How do managerial experiences in eHealth service start-ups relate to the recent empirical-based and service business-focused stages of growth literature?*, the results described in Article I indicated that the assumptions of the general service business framework correspond partially with the actual experiences of eHealth service start-up managers. Parallel and contradictory (or partly contradictory) experiences related to preconceived assumptions were revealed. Exposed contradictions were particularly prevalent among assumptions related to focus, power, strategic management, human resources, and financial management.

In addition, the start-up managers’ recalled experiences which did not fit the framework’s topics were pointed out. In this regard, the study made a comparison between eHealth service start-ups and general service-based companies (reference framework). The revealed key contradictions related to the framework’s assumptions and experiences outside of framework’s topics can be considered as industry-specific characteristics of eHealth service start-up business, particularly in the Finnish context.

According to the findings related to RQ1, the empirical-based service stage framework seems to be a starting point for reflecting on and predicting the managerial challenges faced during the early development of eHealth service start-ups. However, the findings indicate that the prior stages of growth literature does not provide research evidence that is accurate enough about growth management of eHealth service start-up business. Thus, the revealed industry-specific characteristics should be taken into account in growth management of eHealth service start-ups.

RQ2 was answered by the study described in Article II, which investigated the positive and negative critical incidents related to the early development of eHealth service business in Finnish and Swedish start-ups. The study inductively identified the themes of critical incidents in eight Finnish and six Swedish eHealth service start-ups. The identified critical incidents were inductively classified into eight themes:

- Human resources
- Marketing
- Financial resources
The main themes identified in Article II are partly in accordance with the management priority categories in the general service business framework (see Muhos et al., 2017) derived from the stages of growth literature. The common themes include human resources, marketing, financial resources (financial management), decision-making, and development and delivery of services. However, in this industry context, one particular theme was highlighted: the regulations. In the context of eHealth business, the business environment is heavily regulated, and it is important for eHealth start-ups to cope with the challenges and opportunities of this environment.

Results related to RQ2 revealed that a major number of critical incidents were, at least partly, related to the public sector. From the perspective of eHealth service start-ups, the public sector plays an essential role in the Swedish and Finnish healthcare industry contexts. For example, a significant portion of healthcare businesses between the private and public sectors is conducted via public procurement. However, start-ups perceived themselves as having difficulties in accessing public contracts. In public tenders, public entities require references and capacities that start-up businesses usually do not yet have. However, the role of public actors can vary among cases, depending, for instance, on whether the public sector is the potential customer of the start-up’s services or not.

The results that addressed RQ3 were provided in Article III, which presented the positive and negative incidents that the managers of the eHealth service start-up companies located in Southern California had experienced. Also, the distribution of the critical incidents into management priority categories derived from the stages of growth theories (see Muhos et al., 2017) was provided. In other words, the analysis of these incidents was conducted with deductive logic to synthesize the managers’ experiences by using management priority categories.

As the majority of the critical incidents fell into the predefined management priority categories, the critical incidents that did not fall into to the predefined categories were further analyzed. These critical incidents were found to form a relatively consistent new management priority category that is focused on external networks. This category is labelled as network management.
In addition, Article III presented the condensed findings related to each management priority category, of which 9 of 10 were deduced from the stage of growth literature, and 1 was a new inductive management priority category (network management). The study analysis provided descriptions about management priorities in eHealth service start-ups in Southern California. The highlighted management priority categories were focus, service development and delivery, financial management, and network management, which can be considered as context-specific characteristics of Southern California eHealth service business.

The devised empirical-based framework can act as a useful starting point for reflecting on and predicting the challenges faced during early development of an eHealth service start-up, taking into account the context-specific characteristics of eHealth service businesses in Southern California.

As an answer to RQ4, the findings emphasized that general management priorities are essential from the point of view of internationalization, though not all of them are of equal importance. The key management priority categories related to internationalization were focus, strategic management, and service development and delivery. The findings for five international eHealth service start-ups indicated that international considerations are inseparable from the growth management in international eHealth service start-ups. Moreover, growth can be seen as a prerequisite for internationalization, and internationalization was, in these cases, needed for growth. Article IV presented the novel approach of combining both early stage management and internationalization considerations, and it analyzed them side by side in the context of eHealth start-ups.

The answers to the four RQs connected with the research problem provided research evidence about growth management of eHealth service start-ups from different viewpoints. There was also a noticeable consistency among the answers to the RQs.

According to results for RQ2, eHealth service start-ups consider external relations such as cooperation and networking to be important elements for their start-up stage development. Start-up managers perceived cooperation and interactions with other companies and different healthcare actors in the industry as a positive driver. These findings are consistent with the results for RQ3, which provided a new management priority category that focused on external networks, labelled as network management. This network management category could be considered industry-specific management priority in eHealth service start-up business. Moreover, networking (external relations) emerged in the results for RQ4,
which highlighted that building network relationships is one of the central aims of international eHealth service start-ups.

The specific research results that answered RQs of the dissertation are summarized in Table 9.

**Table 9. Research summary.**

<table>
<thead>
<tr>
<th>RQ</th>
<th>Main results</th>
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<tr>
<td><strong>RQ1:</strong> How do managerial experiences in eHealth service start-ups relate to the recent empirical-based and service-business-focused stages of growth?</td>
<td>Only partial support for the assumptions of the general service business framework was determined. The key contradictions were related to focus, power, strategic management, human resources, and financial management. The focus was on pushing the service business idea forward in the form of a start-up company. Often, digital service required technical development, which in turn necessitated seeking and applying for external funding.Decision-making was owner dependent; however, founders sometimes shared responsibilities and power with team members for their own sectors. Strategy planning was conducted, often utilizing advisory boards and external experts. Owner-managers participated at some level in all operations; however, there was a distribution of roles in terms of tasks and responsibilities between team members and/or co-founders. Cash flow challenges were prevalent and, despite early paying customers, revenues were insufficient to reach a break-even point, which threatened to create a long “death valley” effect. In addition, experiences that did not fit the topics of the reference framework emerged from the data which included: developing service-related technology, such as applications, programs, or products, and developing technology, coding applications, or service platforms were highlighted but were found to take time. Seeking and applying for external funding consumed time and resources. The public sector played a significant role, particular as the controller of the healthcare industry and as a funding actor. Public support focused on technology development rather than on early commercialization. Other considerations were the statutory requirements and certifications; research-based evidence about effectiveness, benefits, and safety of services and related technology; the market still being small and emerging; access to the health industry perceived to be challenging; and slow growth of eHealth service business for the above reasons.</td>
</tr>
<tr>
<td><strong>RQ2:</strong> What are critical incidents related to the early development of eHealth service start-ups?</td>
<td>The investigated positive and negative critical incidents were inductively classified into eight themes: human resources, marketing, financial resources, external relations, regulations, decision making, development and delivery of services, and external support. Moreover, regulations were clearly identified clearly as industry-specific theme. A significant number of critical incidents were related to the public sector which plays an essential role in the Swedish and Finnish healthcare industry contexts. However, the role of public actors depends on the business model of the start-up, for instance, whether the public sector is the customer of the start-up or not.</td>
</tr>
</tbody>
</table>
RQ Main results

RQ3: What are the management priorities in eHealth service start-ups in Southern California?

Critical incidents were deductively distributed into management priority categories, and majority of them fell into the predefined management priority categories. The critical incidents that did not fit into the predefined categories were further analyzed. These were found to form a relatively consistent new management priority category that was focused on external networks. The category was labelled as network management. The condensed descriptions related to each management priority categories were presented.

The highlighted management priority categories which can be also be considered as context-specific characteristics in Southern California eHealth service start-up business were focus, service development and delivery, financial management, and network management.

RQ4: What are the management priorities in international eHealth service start-ups?

The findings emphasized that management priorities are essential from the point of view of international eHealth service start-ups, though not all of them are of equal importance. The key management priority categories related to internationalization were focus, strategic management, and service development and delivery. The findings indicated that international considerations are inseparable from the growth management in international eHealth service start-ups. Thus, the stages of growth theory could be strengthened by the integration of internationalization aspects as elementary functions of business growth management.

Overall contribution

The characteristics of eHealth service start-up business were determined (Figure 8).

The aim of this dissertation is to clarify growth management of eHealth service start-ups. By combining the answers to the RQs and the knowledge in the articles, the synthesis regarding the key characteristic of eHealth service start-up business in the industry context could be presented.

As digital technology is strongly related to eHealth service business, the management of technology development was found to be a clearly visible characteristic of eHealth service start-ups business. The investigated start-ups were developing service-related technology, such as applications, programs, and online platforms or products. However, such efforts as developing technology and coding applications and platforms for service provision most often take time.

The managers of eHealth service start-ups typically engaged in some level of business and formal strategic planning, often utilizing advisory boards and external experts to tackle strategic issues. Co-founders often shared power and separated response areas based on their abilities or previous experience.
Naturally, the general features of healthcare context were also reflected in eHealth businesses. Regulations, different legal matters, and possible certification requirements were pointed out as characteristics of the eHealth business. However, as this study’s healthcare scope was broad, the role of regulations was less significant in the cases which were related, for instance, to well-being rather than healthcare.

Obtaining research-based information about the effectiveness and benefits of a service or service-related product was often shown to be a prerequisite in the field of health services. The meaning of research-based credibility was perceived as central to the whole eHealth service business. There may be a need for scientific justification for all presented claims about services and service-related technology in the healthcare sector.

The essential role of new or even radical technology-related service innovations was clearly indicated as typical characteristic of eHealth service start-ups. However, commercialization of services and gaining access to the health industry were perceived to be more difficult than expected by eHealth start-ups managers. Resistance to change toward innovative services and practices was prevalent in the industry, where old and experienced practices are still applied. From the perspective of eHealth start-ups, customers are not necessarily ready to adopt new digital services fast enough, and some case start-ups considered that they may be ahead of their time.

The general start-up business issues also appeared in the investigated eHealth service businesses. The results that answered the RQs were mutually consistent in that sense. These issues influence the development of start-ups in many ways; for example, eHealth start-ups were unable to develop needed service-related technologies without external funding. Seeking and applying for external funding consumed considerable amounts of time and resources and were highlighted as the most significant activities in many start-up managers’ interviews. Even if the eHealth start-ups already have early customers, the income level is often not sufficient to ensure profitability. The start-up stage is financed mainly by investment funding, personal savings, and public support (in the Nordic context).

Moreover, it was apparent from the interview comments that having a good start-up team is critical. The owner-managers generally participated at some level in all operations in eHealth service start-ups; however, specialization such as coding was not uncommon. Typical challenges facing small businesses included for example, managing change in human resources. Business uncertainty may lead
to challenges in recruitment. Also, skilled employees could be unwilling to accept jobs or co-partnerships due to the uncertainty of a start-up’s prospects.

A small start-up has limited resources, but getting attention and being accepted in the market are crucial for their development. In addition, the shareholders have to be convinced about the usability and benefits of eHealth services. Visibility, for instance, through media and start-up competitions helps businesses get a head start.

EHealth service start-ups tend to have promising ideas but lack resources. They create new health services under high risk of failure and extreme uncertainty, which relates to several of the presented characteristics of eHealth service start-up business. In general, the findings of this study indicate that the development of the eHealth service start-up business is a slow process, resulting in a significant “death valley” effect among eHealth service businesses.

Although a multiple-case study enables the researcher to explore differences within and among cases (Yin, 2003), the aim of this dissertation is not to compare geographical contexts or eHealth service start-ups located in different geographical contexts, but rather to use data from different geographical contexts to clarify growth management of eHealth service start-up business from different viewpoints. This geographical context triangulation was carried out to obtain a more comprehensive picture of the topic. However, the findings from Nordic countries (Finland and Sweden) and one US region (Southern California) clearly indicate that companies face geographical context-related issues in their early growth. Healthcare systems, which differ among the Nordic countries, which are public-driven, and Southern California, which is a multiform type of healthcare system, have an influence on eHealth service business, for instance, in the terms of payment policies. In the Nordic countries, the highlighted role of the public sector is that a significant part of the public-private partnerships is conducted via public procurement. It is well known that policies on procurement impact on the funding available for eHealth services (WHO, 2006). However, the influence of the healthcare system on eHealth start-ups is strongly dependent on the business model of the start-up.

In the Nordic context, the interviewed eHealth start-up service managers perceived that the industry of the eHealth service market as still small and emerging. In addition to private funding, the start-ups seek and apply for external funding from public funding actors. The role of the public sector is significant, not only from the funding point of view but also from the demand side of services. Moreover, the public sector can provide support via a business incubator, or via a research institute that may argue the plausibility of the eHealth services.
Based on the findings, it is noteworthy that the impetus of the Finnish start-up cases was typically focused on the technology-driven development of eHealth services. However, the lack of commercialization orientation during the start-up stage was recognized. In the context of Southern California, the healthcare ecosystem and the market of private funding are highly developed. The growth of the eHealth sector has brought together numerous actors, incubators, and investors who are specialized in the healthcare sector. In Southern California, eHealth service start-ups are considered to be part of the entire network of the healthcare and life sciences ecosystem. The domestic market potential in the healthcare sector is seen as tremendous, and business models tend to be designed with the definite goal of scalability. However, the multiform type of healthcare system in the US is also regarded as highly competitive and hard to access from the perspective of a start-up.

By combining the answers to the RQs and the significant research contributions of the original articles, the following synthesis of revealed characteristics of eHealth service start-up business can be viewed as the key result of this thesis (Figure 8). Twelve revealed characteristics describe growth management eHealth start-up business during the start-up stage. Slow growth and extreme uncertainty were found to be key characteristics and the results of the other revealed characteristics. These revealed characteristics were reflected extensively in the research on the growth management of eHealth service start-up business. This study indicates, through its examination of these cases, that these specific characteristics of eHealth service start-up business can be presented as illustrated in Figure 8. Moreover, these revealed characteristics are integrally involved in growth management of eHealth service start-ups and thereby they are involved in success or failure of eHealth service start-ups business.
Fig. 8. Characteristics of eHealth service start-up business.

This study’s revealed characteristics of eHealth service start-up business will improve understanding about growth management in eHealth service business during the start-up stage. The findings indicate that the prior stages of growth literature has not provided research evidence that is precise enough about growth management of eHealth service start-up business. Thus, these characteristics of eHealth service start-up business should be taken into account in the growth management of these businesses.
4 Discussion

This dissertation presents a novel approach and fresh perspective as it provides new and industry-specific knowledge about the growth management of eHealth service start-up business from the geographical contexts of Finland, Sweden, and the US. Using the theoretical foundation of the stages of growth perspective and a multiple-case study method, empirical context-specific evidence about the characteristics of eHealth service start-up business was revealed, and a better understanding about its growth management was improved. This has not been done before.

This study’s results indicate that current business growth literature does not provide sufficiently accurate research on growth management for eHealth service start-up business. Moreover, the findings show that prior stages of growth literature, which focuses on growth management (Davidsson et al., 2010; Davidsson & Wiklund, 2006) and serves as the theoretical basis of this dissertation, do not provide research evidence precise enough about growth management of eHealth service start-ups. As the stages of growth perspective is interested in investigating the characteristics of firms in different stages of growth (e.g., Churchill & Lewis, 1983; Merz et al., 1994), the results of this dissertation complement stages of growth literature by providing industry-specific characteristics of eHealth service business during the start-up stage. This study determined the essential characteristics of eHealth service start-up business (Figure 8). These characteristics should be taken into account in growth management. The findings indicate that using the multi-case method and stages of growth theory make it possible to ascertain these characteristics of business and improve understanding about growth management of eHealth service start-up business.

The results of this dissertation are discussed in this section. First, the theoretical contributions and practical implications of the research are discussed. Then, limitations of the research are evaluated. Finally, some future research needs are addressed.

4.1 Theoretical contributions

This paper is one of the first research contributions to investigate eHealth service start-ups. In this study, new theoretical insights are provided in particular about the stages of growth literature. Article I has provided a theoretical contribution by testing of the applicability of the stages of growth approach related to actual experiences of eHealth start-up service managers in the Finnish context. The article
reveals the contradictory experiences related to the assumptions of the stages of growth theory and experiences that do not fit in to areas of theory. The stages of growth approach seems to be the starting point for reflecting on and predicting the managerial challenges and opportunities faced during the early development of eHealth service start-ups. However, the findings indicate that prior stages of growth literature have not provided research evidence accurate enough about growth management of eHealth service start-up business. Revealed industry-specific characteristics should be taken into account in developing and applying stages of growth models and frameworks.

The theoretical contribution of Article II is based on the findings of its inductive analysis. The main themes identified in this study were in accordance with the main management priorities (Hanks, 1990; Smith et al., 1985) derived from the stages of growth literature on service businesses (Muhos et al., 2017). The common themes include human resources, marketing, financial resources, decision-making, development, and delivery of services. However, other themes such as regulations and external relations also emerged. In this context, the business environment is heavily regulated, and it is important for eHealth start-ups to cope with the challenges and opportunities of this environment. Moreover, the role of the public sector was emphasized in the Nordic context. These findings should be considered when developing stages of growth models.

In Article III, critical incidents, perceived by owner-managers of eHealth service start-ups, were deductively distributed into management priority categories. Those that did not fit into the predefined categories were found to form a new management priority category labelled as network management. Next, the condensed descriptions related to each management priority categories were presented. As a contribution to theory, the modified framework functions as a platform (a set of propositions) for further clarification of the qualitative and contextual characteristics in the eHealth start-up business. Moreover, the highlighted management priority categories (focus, service development and delivery, financial management, and network management) were presented as the key industry-specific characteristics of eHealth service start-ups particularly in the context of Southern California.

Article IV has contributed to the stages of growth literature by describing growth management priorities in international eHealth service start-ups and providing the international aspects related to management priority categories. The article demonstrates that international considerations are inseparable from the growth management process. Moreover, it argues that the stages of growth
The stages of growth perspective could be strengthened by integrating internationalization aspects into business growth management. This study’s theoretical contributions to stages of growth theory are summarized in Table 10.

Table 10. Summary of theoretical contributions to stages of growth theory.

<table>
<thead>
<tr>
<th>Title of the original article</th>
<th>Theoretical contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth management of eHealth service start-ups</td>
<td>Testing stages of growth approach related to eHealth service start-ups in the Finnish context. Presenting the industry-specific characteristics in the Finnish context. Providing new viewpoints about the stages of growth literature.</td>
</tr>
<tr>
<td>Critical incidents of growth in Nordic eHealth service start-ups</td>
<td>Classifying critical incidents and labelling themes. Identified themes corresponding partially with the stages of growth literature. Theme areas should be taken into account when developing stages of growth models. The role of regulations is pronounced. The multifaced role of public sector is highlighted in the Nordic context.</td>
</tr>
<tr>
<td>Management priorities of digital health service start-ups in California</td>
<td>Categorizing critical incidents related to management priority categories. Identifying a new management priority category: network management. Proposing the modified framework with condensed descriptions related to each management priority category. These function as a set of propositions for eHealth service start-up business, particularly in the Southern California context. By revealing the key industry-specific characteristics of eHealth service start-ups in Southern California, new viewpoints to the stages of growth theory are provided.</td>
</tr>
<tr>
<td>International aspects of growth management in eHealth service start-ups</td>
<td>Describing growth management priorities in international eHealth service start-ups. Providing the international aspects related to management priority areas. Demonstrating that international considerations are inseparable from the growth management process. The stages of growth perspective could be strengthened by integrating internationalization aspects into business growth management.</td>
</tr>
<tr>
<td>Summary</td>
<td>Compared to available growth models, this study provides an in-depth, empirical-based and industry-specific view of the early growth processes of eHealth service start-ups. By revealing the characteristics of eHealth service start-up business of investigated geographical contexts, a deeper understanding of growth management is provided. New insights and research evidence are provided for the stages of growth theory to improve industry-specific growth models focused on eHealth service companies in the start-up stage.</td>
</tr>
</tbody>
</table>

The stages of growth perspective has also been criticized. However, most of the criticism does not apply in this study, as it is focused only on the start-up stage. Moreover, the previously presented criticism toward the stages of growth was taken into account in the study’s methodological choices, thus enabling the external
business environment perceived by eHealth start-up service managers to also be considered.

In addition to providing insights for stages of growth theory development, this research contributes to the research fields of start-ups and eHealth by creating a study of eHealth service start-ups. Specially, this study provides new empirical evidence about the business aspects of the eHealth field. In general, it complements and verifies the findings of prior studies related to start-ups and eHealth.

EHealth is located at the intersection of fast-moving technology sector and slow moving and highly regulated healthcare industry (Elenko et al., 2015; Hird et al., 2016; Zeitoun & Osdoit, 2019). As areas of business, healthcare and technology development are combined, resulting in context-specific challenges in growth management.

As Pinto and Baracsi (2012) have pointed out, eHealth start-ups operate in order to turn their ideas into marketable products and services in the form of a company. The results of this study indicate that the eHealth service start-ups try to push their start-up idea forward and sell it to stakeholders in order to achieve success for the business idea and the growth of the business. Start-ups have promising ideas, but there is a high risk of failure in experimenting with their idea and the goal of reaching their specific market. Consistent with Rupert (2002), this study found that, although eHealth service start-ups engage in growth-oriented strategic planning with the help of advisory boards and external experts to address strategic issues, strategic experimentation and trial and error learning more often occur rather than analysis and forecasting. Small failures are an integral part of the search process (Blank & Dorf, 2012; Davila et al., 2015; Peña, 2002; Steinmetz, 1969), and the strategy may need to be adjusted frequently. As noted by Aldrich (1979), Clarke et al. (2014), and Hodgson (2013), start-up business consists of unintentional and emergent processes, rather than being the result of strategic planning. Even today there is no guidebook for eHealth, as Deluca and Enmark (2000) pointed this out two decades ago.

The business idea of eHealth service start-up often necessitates developing service-related software and/or hardware. As discussed in prior literature (Aue et al., 2015; Lin et al., 2010; Medina-Garrido & Crisóstomo-Acevedo, 2010; Rupert, 2002; Spil & Kijl, 2009), eHealth service start-ups are typically developing service-related software and/or hardware that differentiate those start-ups from basic service start-ups. However, developing technology and coding applications and platforms with the services provided may take years. When software development is at the core of the start-up’s daily activities (Giardino, Wang, & Abrahamsson,
2014), inadequacies in software/hardware development practices could lead to wasted time and resources, and missed market opportunities (Klotins et al., 2019).

Traditionally, in healthcare services, production and consumption occur simultaneously, requiring the local presence of the service firm (Erramilli, 1990). Digital development allows both development and delivery of health services without physical presence. Scalability of services and technology is an opportunity which eHealth service start-ups aim to take advantage of. However, start-ups are unable to develop needed service-related software and/or hardware without external funding. Thus, the focal short-term strategy is to attract investors to enable the necessary resources. Based on the findings, the business mindset of eHealth service start-up owners is entrepreneurial (see Rupert, 2002), and when they are seeking growth through internationalization, they adopt a global mindset. This approach to business is somehow broader than that in the seminal work provided by Churchill and Lewis (1983), who argued that, in the start-up stage, the business strategy is simply to stay alive. Also, if the eHealth service start-up is operating in a niche service market, domestic markets are often constraining, making internationalization a necessary prerequisite for growth, which leads to the creation of eHealth born globals/INVs (Knight & Cavusgil, 2004; Oviatt & McDougall, 1994). One strategy is to target the domestic and one or more international markets simultaneously aiming to increase the likelihood that at least one of the efforts succeeds. This demonstrates start-up manager’s global mindset and openness to foreign markets (Nummela et al., 2004; Torkkeli et al., 2018).

According to the findings, seeking and applying for funding typically take up a major portion of eHealth service start-up manager’s effective working hours, which is even greater than the managers would expect or want during the start-up stage. These findings are consistent with those of Kaulio (2003) and Livi and Jeannerat (2015) who determined that, due to the lack of their own resources and a great deal of uncertainty of business, it often becomes extremely difficult for eHealth start-ups to secure financial capital for innovation, thus requiring the establishment of external resources and networks. The findings are also in line with the Mohout and Staelraeve’s (2017) report, which pointed out that it takes an average of five years for eHealth start-ups to raise substantial external financing. As prior literature (e.g., Cressy, 2006, Davila et al., 2003; Haar et al., 1988; Maheu, 2001; Nelson, 2014; Paschen, 2017; Timmons & Spinelli, 2009; Van Osnabrugge & Robinson, 2000) has clearly shown, fundraising is a significant concern among start-ups. In addition, financial resources present one of the central foundations for the legitimacy of start-ups (Fisher et al., 2016).
The findings of this study also support prior start-up literature (e.g., Baum et al. 2000; Burns, 2011; Chang, 2004; Elfring & Hulsink 2003; Haas et al., 1988; Hansen & Witkowski, 1995; Kask & Linton, 2013; Lechner et al., 2006) and the recent eHealth study of Gauthier et al. (2018) which shows that networks play an important role for start-ups. The findings also support those of Freeman (1996), who noted that managers are especially skilled at using their time to develop relationships with people whom they assume to be crucial to the success of their start-ups, as well as those of Covello and Munro (1995) who pointed out that building network relationships is also one of the central actions in the internationalization of start-ups. Furthermore, fundraising and networking themes were found to be interconnected, and as Mas and Hsueh (2017) have noted, the most important partners of eHealth start-ups are often external investors who can provide the capital and expertise to get the business successfully to market.

The findings of this study verify earlier research (Ahern et al., 2006; Eysenbach, 2001; Livi & Jeannerat, 2015; Morland et al., 2017; Pascal, 2017) by emphasizing the role of research-based evidence in eHealth business. The findings indicate that there may be a need for scientific justification for all presented claims about services and service-related products in the healthcare sector. Any payable eHealth service has to scientifically demonstrate its ability to meet health needs in a cost-effective manner (Pascal, 2017). However, securing such justification may take years.

Earlier research (Aue et al., 2015; Fried et al., 2000; Hird et al., 2016; Kao & Liebovitz, 2017; Kyriazakos, 2017; Mas & Hsueh, 2017; Mestres, 2017; Shepherd et al., 2000; Van Limburg et al. 2011; Whitten et. al., 2001) has pointed out that eHealth business solutions have difficulty in breaking into the market because of the entry barriers of the highly regulated healthcare sector. The findings of this study support these notions that regulations raise several questions and are one of the key characteristics that affect eHealth service start-up business. Before placing radical eHealth innovations on the market, the start-up may need to demonstrate safety, suitability for use, and performance. But, at the same time, practices of the authorities and regulations are perceived as often lagging behind, which was noted also by Aue et al. (2015) and Zeitoun and Osdoit (2019), as eHealth is a fast-changing and emerging field of business where standards and practices are still developing. This results in uncertainty and slowing down the business development of eHealth start-ups. However, it is noteworthy that the role of regulation depends on the business model of start-up, and is often more limited in the cases related, for instance, to fitness and well-being rather than healthcare.
The findings also support the current literature (Borrelli & Ritterband, 2015; Jawahar & McLaughlin, 2001; Kaulio, 2003; Timmons & Spinelli, 2009) regarding human resources as being an essential factor in start-ups from the management perspective. The results show that having a good start-up team is critical. The founders generally participate in all kinds of tasks; however, there is a distribution of roles in terms of tasks and responsibilities among team members and/or co-founders. Business uncertainty may lead to challenges in recruitment as skilled employees could be unwilling to accept jobs or co-partnerships due to the start-up’s uncertain prospects. In addition, outsourcing and subcontracting are often utilized.

Consistent with the earlier literature (e.g., Kijl et al., 2010; Maheu, 2001; Mettler & Eurich, 2012; Pinto & Baracsi, 2012), this study indicates that cash flow challenges are prevalent in eHealth service start-ups, often because they do not yet have a service to sell. Despite having possible first paying customers, the start-ups often do not earn sufficient income to achieve a break-even position. The start-up stage is financed mainly by investment funding, personal savings, and public support/government agencies. Operating without positive cash flow during the start-up stage was experienced by many of the interviewees as characteristic of eHealth service start-up’s growth management.

The findings also revealed that commercialization was perceived as being even more difficult than expected by managers, which also clearly corresponds with the findings of prior studies (e.g., Kijl et al., 2010; Maheu, 2001; Mas and Hsueh, 2017; Mettler & Eurich, 2012; Urueña et al., 2016). Start-ups aim to provide innovative and even radical solutions, but gaining access to the healthcare industry appears to be challenging. Resistance to change, especially in the public sector, complicates and slows new business. These results are in the line with the findings of Mieczkowska et al. (2004), Van Meeuwen et al. (2015), and Hannan and Celia (2013) who noted that public health organizations have the lack of involvement in new eHealth solutions and risk averse cultures in which individuals practice defensive behaviors and follow deeply embedded working practices. Moreover, adoption of new eHealth technologies may take time and often requires a change in consumer behavior, as noted by Campbell (2014) and Kirsch (2002).

The complexity of the eHealth market emerged from the research. The findings are supported by the previous literature (e.g., Ackerman et al., 2010; Burns, 2011; Kao & Liebovitz, 2017; Kirsch, 2002; Lin et al., 2010; Maheu et al., 2001). Supporting the findings of prior studies, this research found that, from the start-up perspective, eHealth market is perceived as multifaced (Mestres, 2017;
Mieczkowski et al., 2004) and conservative (Menko et al., 2013; Van Meeuwen et al., 2015).

According to results described in this dissertation, eHealth start-ups gaining access to the competitive health sector is challenging. Although the economic shift to services is occurring (Pinto & Baracsi, 2012), the healthcare and well-being markets are large and global; however, the market for completely new eHealth service may be narrow and only a limited niche (Oderanti & Li, 2018), or even hard to estimate by start-ups (Burns, 2011). However, these markets are related to the business model adopted by the individual eHealth company, and markets can appear to be very different, for example, between a start-up that provides medical services to a local hospital and a start-up that provides fitness mobile apps via Google Play.

In order to draw a better picture of the issue, cases from different geographical contexts were investigated in this study. It became apparent that healthcare systems, which differ between Nordic countries where they are public-driven and the US where they are multiform systems, have a significant influence on the eHealth market. The multifaceted role of public actors creates business conditions that affect the growth management of eHealth service start-up, and this was definitely found to be the case in the Nordic context. Interactions and partnerships with public health sector operators can be a key to business success. The role of the public sector may be crucial, not only from the demand side of services but also from the point of view of funding. In addition, the public actor can provide, for example, support via a business incubator or through a research institute that may help to determine the plausibility of the eHealth service business. However, the role of public actors varies among cases and depends on the specific business model of the start-up.

The findings emphasized the role of the business ecosystem in Southern California for eHealth service start-ups. This ecosystem supports start-ups by providing fast access to useful networks, which was also found by Davidsson and Honig (2003), Lee et al. (2001), Majava et al. (2016), and Pinto and Baracsi (2012).

EHealth start-ups operate under conditions of extreme uncertainty, which is the result of the general characteristics of start-ups (e.g., McMullen & Shepherd, 2006; Nanda & Rhodes-Kropf, 2013; Shepherd et al., 2000; Weiblen & Chesbrough, 2015) and the complexity of the healthcare context. Moreover, the risks of failure are high due to the barriers (OECD, 2017) presented by the complex, slow-to-change, and highly protected and regulated healthcare market. These barriers can result in a long-term “death valley” effect on the development of eHealth service start-ups.
As pointed out by this research, the slow growth of eHealth service start-ups is due to the uncertainty relating to several of above presented characteristics, which are commonly encountered in eHealth service start-up business. The research results of this study highlighted the importance of taking these revealed characteristics into consideration in growth management of eHealth service start-ups.

4.2 Practical implications

There are several important practical implications of this study. Shepherd and Wiklund (2020) recently argued that an entrepreneurship research should provide information about an entrepreneurial phenomenon that is relevant to an audience beyond that of only entrepreneurship scholars. This study fulfils this objective by providing empirical evidence about the topic to an audience in the healthcare sector. The study analyzed the business aspects of eHealth services, particularly from the growth management point of view, which have been poorly researched. In addition, the dissertation provides interesting implications for practitioners since it contributes to a better understanding of eHealth service start-up business. Both the empirical research and the presented review of literature provide a comprehensive picture of the topic. The characteristics of eHealth service start-up business have been revealed, and new knowledge has been found with the goal of supporting growth management of eHealth start-ups. The revealed characteristics are critical to take into consideration in growth management.

The results of this study may be used effectively in new eHealth service businesses to predict managerial challenges during the early stages of growth. The findings discussed in this dissertation can be beneficial to the managers of existing eHealth service start-ups, as well as to potential entrepreneurs who want to enhance their long-term chances of success in the eHealth sector. In addition, the findings can help up-and-coming eHealth service start-up teams to better understand what lies ahead and to formulate more feasible strategies. The practical use of this study is, however, not limited to managers, founders, and up-and-coming entrepreneurs, but extends to policy makers who are responsible for the course of public entrepreneurship or who have an interest in the development of small businesses. In addition, intermediary organizations, such as business developers and public advisory services, can use the results to improve their business services to be more focused on eHealth service start-ups. Moreover, the findings can be used for consultation and education of start-up entrepreneurs. EHealth service start-ups face
many different types of stakeholders when marketing their service. This study provides stakeholders useful insights into this innovative set of companies, which can contribute to the health industry's renewal. Thus, a wide range of health sector actors can better understand the viewpoint of eHealth service start-ups. These findings are important to those who desire to achieve an effective eHealth business strategy, and author believes that an awareness of specific issues analyzed in this study will help managers to focus their attention on these critical issues, which may lead to risk reduction. As Ahern et al. (2006) has noted, the infrastructure of healthcare systems must be considered, and it is critical to cope with the challenges and opportunities of this complex business environment.

4.2.1 Recommendations to management

A successful commercialization of an eHealth service requires various preliminary steps, such as R&D, as well as successful sales and marketing (Mas & Hsueh, 2017); thus, complex challenges need to be addressed in growth management. One recommendation to the management of eHealth service start-ups is that they must realize that advanced technology alone does not guarantee the success or sustainable growth of a new eHealth service. Service development and delivery in the complex and hard-to-access eHealth service market may require early specialization in terms of skills, time, and the systematic development approach from early experimentations to large-scale services. Also, if a strategy needs to be adjusted, there must be sufficient preparedness to conduct necessary changes rapidly. Moreover, scalability of eHealth services is an opportunity of which start-ups should aim to make maximum use. Everything, including the strategies, structures, and systems should be prepared for service scaling.

The eHealth market requires contextual understanding by the managers and effective acquisition of capable human resources who fit the context. EHealth management is neither pure business nor pure technology management (Duluca & Enmark, 2000). As eHealth service start-ups operate at the intersection of business, health, and technology development, adequate knowledge of all sectors is needed inside a start-up or it must be obtained from the outside. Indeed, start-ups must actively seek partners and acquire external expertise to tackle challenges before the commercialization that is a critical part of growth management. Moreover, they need to design/redesign their business model for the selected eHealth market and be able to demonstrate positive outcomes and a clear value for users and stakeholders in order to reach successful commercialization. As stated earlier by
Urueña et al. (2016), eHealth is a changing field, which evolves constantly and thus requires that people, processes, services, and businesses also evolve.

Because of the lack of necessary capital and legitimacy, an eHealth service start-up needs access to external resources and expertise. According to the interviews conducted for this study, network management should be seen as an integral part of successful growth management. Through networking, start-ups can enhance their early performance, attract funders, sell their service business idea, discover opportunities, test ideas, and build legitimacy.

According to the findings, eHealth start-ups in Southern California perceived that they are interconnected with the health and life science ecosystem in Southern California. This ecosystem supports start-ups by providing fast access to useful networks, including university accelerator programs, start-up competitions, incubators, health sector-specific accelerators, business angel networks, private investors, advisers, and mentors. This indicates that eHealth service start-up managers operating anywhere should strive to be part of a larger ensemble, such as ecosystems, which can support access to complex, multifaceted, and regulated eHealth service markets.

For eHealth service start-ups aiming for internationalization, study suggests that they should consider the different context-specific characteristics of the targeted health markets such as legal and regulatory requirements, different healthcare systems and payment policies, cultural environments, structures for practitioners, and hard/software standards. Scalability of eHealth services is of the utmost importance when aiming at international markets. These opportunities relate to a start-up’s ability to make its technology compatible on different platforms and create a working environment around the eHealth service development. Also, international partners should be involved in service development as early as possible to ensure market acceptance. In international start-ups, growth management must not be forgotten; it needs to be considered side by side with internationalization.

4.2.2 Recommendations to public sector

In addition to recommendations to management, this study suggest the need for public policy actions to support eHealth start-ups and remove structural and context-specific barriers. Based on its findings, the study advances some recommendations, mainly from the Finnish perspective, for policymakers and public healthcare managers.
Because of the relatively weak capital market and the lack of venture capital in Finland, start-ups must seek and apply for external funding from public funding actors. However, these procedures are perceived to be time-consuming. In addition, grant funds are small, and funding is generally fragmented. Thus, the public funding system should be simplified.

The focus of Finnish eHealth start-up founders seems to be pushing the service business idea forward in the form of a start-up company, and their efforts are often focused on developing service-related software and/or hardware, which are seen as enablers of eHealth service business. The focus of public funding instruments on development instead of commercialization further emphasizes this technology-driven approach in Finland. This may slow down business development of eHealth start-ups. In order to enhance commercialization of eHealth innovations, more public funding, attention, and support should be targeted at commercialization efforts.

From a policy perspective, the study results suggest that legislation and regulations should stay up to date with the fast-changing business environment. This may reduce market barriers and clarify guidelines for the industry. Moreover, the practical implication for the public health sector is to develop management policies that support positive attitudes toward the implementation of new technologies among clinical professionals.

In Finland, a major portion of the healthcare business is produced via public procurement. However, eHealth service start-ups consider themselves as having difficulties in access to public contracts. The policy implications of the study include the need for eHealth service start-ups to have better opportunity to participate in the public contracts. The public buyers in health sector should take this into account in their procurement policies and practices. As eHealth service start-ups have innovative solutions but difficulties in bringing services to the market, innovation procurements are a good way to provide business opportunities in the public-driven healthcare sector. Indeed, some of these abovementioned issues have already been promoted by the public sector since the data were collected in 2014–2015.

Based on the findings, it is noteworthy that US eHealth start-ups believe that they belong to the health and life science ecosystem in Southern California, which supports start-ups by providing fast access to useful networks. Efforts should be made to promote conditions that support creation of such an ecosystem in Finland. The findings of this research indicate that it is important to stimulate a dynamic entrepreneurial culture and create platforms and forums that contribute networking

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and partnerships of eHealth actors from the business, technology, and healthcare sectors.

### 4.3 Reliability and validity

Some limitations of this study must be acknowledged. All research approaches and methods of collecting and analyzing data necessarily involve trade-offs and shortcomings (Patton, 1987; Saunders et al., 2009). According to Bryman and Bell (2007, p. 426), whereas the quantitative researchers want their findings to be generalizable to the relevant population, the qualitative researchers attempt to understand behavior in terms of the contexts in which the research is conducted. This research was qualitative in nature. Information was gathered through interviews, which can be subjective, but it was considered as being credible in this research. Moreover, in the analysis, the researcher tried to be as objective as possible.

The research quality is important during the designing, conducting, and reporting of scientific research (Bryman & Bell, 2007). Multiple cases were selected to obtain multiple viewpoints to support understanding of similarities and differences between cases (Baxter & Jack, 2008). According to Yin (1989), the key criteria for judging the quality of a case study are construct validity, internal validity, external validity, and reliability.

Construct validity refers to establishing appropriate and correct research settings for the concepts being studied. Construct validity can be enhanced using multiple sources of evidence as was done in this study by interviewing the owner-managers at various start-ups from different geographical contexts. A semi-structured interview guide was constructed based on theory, and overlapping questions were added in order to systematically gain information from different viewpoints. One important research quality measure is to establish a chain of evidence from the initial RQs to the case study conclusions (Yin, 1989). Maintaining the chain of evidence was implemented in this study, and the data were recorded and transcribed by an external professional. To get close to the case and gain an in-depth understanding about the case being studied (Yin, 189), analysis by the researcher included written notes, audio recorded interviews, additional documentation, and publicly available materials from case companies. For practical reasons, the third tactic strengthened the construct validity mentioned by Yin (1989), but allowing the owner-managers to review the article drafts was not done. However, construct validity assessment was conducted through member checking.
and investigator triangulation (Stake, 1995, p. 113) as at least two authors of original publications analyzed the data and reviewed drafts for protection against researcher bias. Moreover, the analysis logic was also confirmed by other researchers to reduce researcher bias.

Internal validity refers to making causal statements whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Bryman & Bell, 2007; Yin, 1989). This rarely has a major role in a case study, and according to Yin (1989), internal validity is not applicable to descriptive or exploratory studies, such as this multiple-case study. Therefore, internal validity was not further analyzed.

External validity refers to the establishment of the domain in which a study’s findings can be generalized (Yin, 1989). The one main limitation of this study derives from the use of the case study approach, which does not permit the generalization of results to other cases (Eisenhardt, 1989). According to Yin (1989), in case studies, instead of statistical generalization, generalization relies on analytic generalization in which the researcher strives to generalize results to a theory. External validity can be measured by using replication logic in multiple-case studies. According to Yin (1989), each individual case study consists of a whole study, in which convergent evidence is sought regarding the facts and conclusions of the case. Then, each case’s conclusions are considered to be the information needing replication by other individual cases. The replication logic was utilized in this study so that the selected cases could predict similar results (literal replication) based on the literature about the topic (Yin, 1989). External validity can be enhanced by comparing the results with literature about the same subject (Riege, 2003; Yin, 1989). This was done in this study. Moreover, this study used replication logic in the research design phase and gathered cases from different geographical contexts (countries), which increased the external validity (Parkhe, 1993; Riege, 2003). Thus, analytic generalization (generalization on the basis of a theory) is possible when building new theories about eHealth service start-ups’ growth management.

It is noteworthy that this study includes the analysis of 19 eHealth service start-ups which were selected intentionally to represent the broad eHealth field and predicated on their being exposed to the characteristics within eHealth industry. Thus, the case companies represented various types of eHealth services. The other research approach, the selection of more narrow business types or sub-areas of eHealth start-up business, such as mHealth, online services, or wellness, can result in different observations.
Reliability refers to the extent to which studies can be replicated and aims at minimizing errors and bias during the research process (Yin, 1989). It also refers the ability to replicate the original study using the same research methods and procedures and get the same results, regardless of the researcher (LeCompte & Goetz, 1982; Orum et al., 1991; Yin, 1989). According to Yin (1989), the case study protocol can be used to improve reliability. In this study, it was implemented based on the guidelines developed by Yin (1989, p. 51). According to Yin (1989, p. 40), “The general way of approaching the reliability problem is to make as many steps as possible as operational as possible, and to conduct research as if someone were always looking over your shoulder.” The repeatability was intentionally aimed at being improved by using as consistent as possible research procedures in every case start-up’s interview.

Moreover, the reliability of the case study can be improved by establishment of a case database and storing and archiving the research data systematically (Yin, 1989), which was also done in this study. Moreover, to reduce threats to reliability, multiple participant researchers, peer reviews, and recorded data were used in the original publications as guided by the recommendations of LeCompte and Goetz (1982) and Riege (2003). This study’s database consisted of semi-structured interview frames, related company records, recorded and transcribed interviews, code markings, and the research notes, which were stored in electronic form, ensuring that the relevant evidence could be retrieved if necessary.

This study was a qualitative research study, which is, according to Stake (2006), interpretive by nature and can lead to faulty and biased interpretations. Regardless of this study’s case database, it is questionable whether another researcher could reach the same conclusions, given that the role of the researcher is integral to analysis. The data analysis is dependent on the researcher’s way of thinking about the phenomena, and the interpretation of the given data can result in different results among the other researchers. Different researchers may emphasize different topics by asking potentially deeper questions according to their own background. The competence, interest, knowledge, and previous experience of researcher may be seen to influence the interpretations in qualitative research. To reduce this observer bias (Saunders et al., 2009), the perspectives of several researchers were utilized in the data analysis in the original publications. Also, in this dissertation, the researcher has done his best to be as objective in the analyses as possible.

The original publications’ studies upon which this dissertation was based were conducted in different researcher configurations, so consensus interpretations may have varied among the publications. These publications were peer-reviewed before
publication. In this dissertation, the author has sought to interpret the data as coherently as possible. For practical reasons, the data gathered for original publications were obtained in cooperation with three researchers. There are different ways of asking questions, and to avoid this possible observer error (Saunders et al., 2009) and to increase the clarity of both questions and responses, the semi-structured questionnaire was designed to be as accurate as possible. When qualitative research is realized by using semi-structured interviews, the objectiveness of the interviewees can be questioned as well, as there might be subject or participant bias (Saunders et al., 2009). In order to avoid this subjectivity, anonymous data handling was implemented.

Research method choices always impact research findings (Saunders et al., 2009). The results presented in this study could have been somehow different if other methods had been used. As the original publications’ data were gathered mostly through a collaborative effort with other researchers in a research group, the researcher had limited ability to influence the selection of the research methods.

Moreover, the selected geographical context limited the applicability of the study to the other contexts. The findings would have been different if the data had been collected from other countries or business contexts. Finally, findings may also depend on the time of the data collection.

4.4 Recommendations for further research

This dissertation presents a novel approach and a fresh perspective as it provides new and industry-specific knowledge about growth management of eHealth service start-up business. It also offers insights into the ongoing discussions about business growth, start-up business, and eHealth, but further empirical evidence would be valuable from all of these viewpoints. During this research, several interesting topics were pointed out for further research.

From the perspective of the stages of growth theory, it would be beneficial to develop more industry-specific and nuanced models and frameworks for supporting growth management of eHealth companies. This kind of theory development could also be done by focusing the research on some narrow sectors in eHealth service business, for example, mHealth, online services, or wellness. This would generate more accurate knowledge and support for the eHealth companies in their critical early stages. Moreover, this study proposes that the stage of growth models could be extended to include context-specific characteristics and internationalization aspects in them. The extended framework could be applied in
the context of international eHealth start-ups. Even more sophisticated business growth models, such as dynamic states of growth models (Levie & Lichtenstein, 2010) will hopefully be considered.

Recommended future study topics include eHealth growth companies, which have experiences in successful commercialization. To support eHealth start-ups and remove structural and context-specific barriers to their growth, in-depth knowledge from the growth processes involved is required.

The business model aspect was touched upon but left out of the major scope of this dissertation. Moreover, a start-up’s creation process and life cycles were not selected as specific topics for this study. The research evidence provided by this research could be complemented by analyzing business models and/or start-up’s creation process, particularly comparing eHealth service start-up business with different sub-areas of eHealth.
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