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Navigating the digital economy: Product development lessons learned from Finnish startups targeting East Africa

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Abstract

Digitalization is a global phenomenon and new technologies have a big impact on economic progress and development of countries. Yet, the developed countries have harnessed the new digital technologies to a higher degree compared to the developing countries. However, the digital divide is decreasing and access to mobile ICT technology has already increased dramatically in developing countries. In addition, it's estimated that future economic growth will come from these same emerging economies with a youthful population and growing middle-class. This poses an interesting opportunity for Finnish companies known for mobile-based products and engineering talent. Existing research has studied mainly multi-national corporations scaling to emerging markets and there's a gap in the literature on how resource-scarce startups adapt to such environments.

The aim of this thesis is to explore the challenges that the key decision-makers from Finnish early-stage startups have faced when developing mobile service products for emerging markets, particularly East Africa. Also, the lessons learned and participants' advice for other startups targeting the same market will be identified. The thesis consists of a literature review and an empirical study conducted in three case companies. 2-4 key people were interviewed from all the companies, mostly co-founders. This study relates its theory to the Environment-sensitive User-centered Design framework by Backhaus et al. (2014).

According to the results, most of the identified challenges were related to the different and heterogeneous operating environment (f. ex. culture and jurisdiction), the difficulty of user and market understanding, and limited resources (f. ex. expenses and access to capital). Hiring local employees, utilizing professional user researchers, and being more present on the market were some of the most common lessons learned and advice but they are restricted by the limited financial resources.

It was noted that the interviewees' previous experiences from Africa or other emerging regions, and background in UCD affected the capability of adapting to the market positively. This suggests that the founders' background and multidisciplinarity have potentially a big impact when designing services for a new and distinct context of use. On the other hand, the quality of decision making when all the founders come from Western backgrounds and the validity of the common product development processes and practices were questioned. On the theoretical side, this thesis provided empirical evidence for the framework by Backhaus et al. (2014) and contributed to the gap identified in the literature.

Keywords startups, emerging markets, East Africa, user-centered design, ICT, mobile services, internationalization

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Tiivistelmä

Digitalisaatio on maailmanlaajuinen ilmiö, ja uusilla teknologioilla on suuri vaikutus maiden taloudelliseen kehitykseen. Kehittyneet maat ovat onnistuneet hyödyntämään uusia digitaalisia tekniikoita paljon laajemmin verrattuna kehittyviin maihin. Digitaalinen kuilu maiden välillä on kuitenkin kaventunut ja pääsy tieto- ja viestintätekniikkoihin on kasvanut valtavasti kehittyvissä maissa. Arvioiden mukaan tulevaisuuden suurin taloudellinen kasvu tulee juuri näiltä kehittyviltä alueilta, joissa väestö on nuorta ja keskiluokka kasvaa. Tämä tarjoaa kiinnostavan mahdollisuuden suomalaisille yrityksille, jotka ovat tunnettuja mobiilipohjaisista tuotteista ja insinööriosaamisesta. Olemassa olevat tutkimukset keskittyvät pääasiassa isoihin monikansallisiin yrityksiin, jotka ovat laajentaneet kehittyville markkinoille, mutta sitä miten niukilla resursseilla toimivat kasvuyritykset sopeutuvat kyseisille markkinoille on tutkittu vähän.

Tämä diplomityö tutkii haasteita, joita suomalaisten alkuvaiheen kasvuyrityksien päätöksentekijät ovat kohdanneet kehittäessään mobiilipohjaisia palveluita kehittyville markkinoille, erityisesti Itä-Afrikkaan. Tämän lisäksi, työssä tunnistetaan henkilöiden saamia oppeja ja heidän neuvojansa muille kasvuyrityksille, jotka tavoittelevat samaa markkinaa. Työ koostuu kirjallisuuskatsauksesta ja empiirisestä tutkimuksesta kolmessa case-yrityksessä. Kaikista yrityksistä haastateltiin 2-4 avainhenkilöä, jotka kuuluivat pääosin yrityksen perustajiin. Tutkimuksen teoria pohjautuu Ympäristö sensitiiviseen käyttäjäkeskeisen suunnittelun viitekehykseen (Environment-sensitive User-centered Design Framework, Backhaus ym., 2014).

Tuloksien mukaan suurin osa haasteista johtui kohdemarkkinan hyvin erilaisesta operatiivisesta ympäristöstä (esim. kulttuuri ja lainkäyttö), markkina- ja käyttäjäymmärryksen haasteista sekä niukista resursseista (esim. kustannukset ja rahoitus). Paikallisten palkkaus, ammattimaiset käyttäjätutkijat sekä markkinoilla paikalla oleminen olivat yleisimpiä oppeja ja neuvoja, joita kuitenkin rajoittaa yrityksien rajalliset taloudelliset resurssit. Myös haastateltavien henkilöiden aikaisemmasta kokemuksesta Afrikasta ja muilta kehittyviltä alueilta, sekä käyttäjäkeskeisestä suunnittelusta huomattiin olevan positiivinen vaikutus uuden erilaisen markkinan kohtaamiseen. Tämä antaa ymmärtää, että perustajien taustalla ja poikkitieteellisyydellä on mahdollisesti suuri vaikutus, kun tuotetta suunnitellaan erilaiseen käyttöympäristöön. Toisaalta työ kyseenalaista päätöksenteon laadun kun kaikki perustajat tulevat länsimaisesta taustaista, sekä yleisesti käytettyjen tuotekehitysprosessien pätevyyden. Teoreettisella puolella työ antaa empiiristä näyttöä Backhaus ym. (2014) viitekehitykselle ja kontribuoi kirjallisuudessa havaittuihin puutteisiin.

Avainsanat kasvuyritykset, kehittyvät markkinat, Itä-Afrikka, käyttäjäkeskeinen suunnittelu, ICT, puhelinpalvelut, kansainvälistyminen

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Otaniemi, Espoo, 30th of March 2020

Anni Rahiala

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Appreviations

BOP	Bottom of the Pyramid
HCI	Human Computer Interaction
HR	Human Resources
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development
MNE	Multinational Enterprise
MVP	Minimum Viable Product
NPD	New Product Development
PC	Personal Computer
PD	Product Development
SMS	Short Message Service
UI	User Interface
UX	User Experience

1 Introduction

1.1 Background

New technologies and technology adoption play a major role in economic progress and development (Acemoglu, 2012; Parente & Prescott, 1994). Digitalization is a global phenomenon, yet not everyone has benefited equally. The developed countries have been able to harness the new technologies to a much higher degree compared to the developing countries (Billon, Lera-Lopez, & Marco, 2010). United Nations Sustainable Development Goals address this inequality, aiming to *"significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in the least developed countries by 2020"* (United Nations, 2019).

Access and use of mobile ICT technology have already increased dramatically in developing countries, affecting the lives of millions of people (World Bank, 2016). The inequality in access, distribution, and use of ICT between populations, called the digital divide (Wilson, 2004, p. 300), is decreasing between countries. According to World Bank (2016), roughly 80% of the population in developing countries owns a mobile phone and mobile innovations, such as M-PESA in Kenya, are transforming industries with record-breaking adoption rates (Jack, Ray, & Suri, 2013).

Looking ahead, these same developing countries with a youthful population and fast-growing middle-class will drive economic growth in the future. The emerging economies will dominate the 21st century. At the same time, according to PWC's estimations (2017) the EU27's share of global GDP could have decreased to under 10% which is less than India's share alone. By 2050, six of the seven largest economies could be among today's emerging economies and comprise almost 50% of world GDP (PWC, 2017). The term "emerging market" was first invented by the International Finance Corporation (IFC) to replace "the Third World" term that had negative connotations. Originally the list included middle-to-higher income economies from the developing countries with stock markets open for foreigners. (IFC, 2019.) Nowadays, the term has been extended to include somewhat all the developing countries.

Emerging markets have a huge potential and are an attractive business opportunity for Western companies in the long run, but many of the attempts have been doomed to fail. Some of the well-known examples are Uber losing in China to Didi Chuxing (Kalanick, 2016) and Google and Equity Bank's electronic ticketing platform, BebaPay, discontinuing operations in Kenya (Business Daily, 2015). Lack of infrastructure and logistic providers, recruiting local talent, tailoring products for local preference and inappropriate assumptions of the market (Khanna, Palepu, & Sinha, 2005; London & Hart, 2004) are some of the challenges faced by Western companies in the emerging markets. However, these challenges don't alone explain why some of the innovations have been adopted by the end-users, such as M-PESA.

Startups are expected to be one of the main sources of economic growth in Finland, known for Nokia mobile phones, Rovio and Supercell (Wallin, Still, & Henttonen, 2016). Finland's long history with mobile-related products combined with the growing digital economy in developing countries, provide an interesting market opportunity for Finnish startups. But if large multinational companies with digital innovations, such as Google and Uber, have faced

large difficulties when entering emerging markets, what kind of challenges do early-stage startups from Finland face in a similar attempt?

1.2 Motivation of the study

The majority of existing literature regarding Western companies and emerging markets has been focusing on large multinational corporations (MNCs). There has been increased interest in research of MNCs and emerging markets due to attractive business opportunities (Khanna et al., 2005; London & Hart, 2004; Meyer, 2004; Ramamurti, 2004). Small resource-scarce startups face different challenges in product development and market entry compared to MNC's with large budgets and big headcounts. Therefore, the lessons learned from these studies can't be directly generalized for startups.

Startups and product development for emerging markets have been studied relatively little in the academic literature. Most of the articles are case studies with individual companies with a specific technology (Bouwman, de Vos, & Haaker, 2008; Riikkinen, Still, Saraniemi, & Kallio, 2016; Wooder & Baker, 2012; Yermack, 2018). Many of the studies are about development aid or ICT4D projects (Masiero, 2013; Miettinen et al., 2016; Patterson, Sim, & Aiyelokun, 2009), which tend to be donor-funded and lack a sustainable long-term business model. This research will fill the gap by studying the experiences and challenges of Finnish startups developing digital services on a mobile platform, targeting the fastest growing mobile economy in the world, Sub Saharan Africa (GSM Association, 2019), and more specifically East Africa. The research seeks to provide lessons learned and expand the body of relevant and useful literature for the Finnish startup ecosystem and contribute to the identified research gap.

This thesis studies the experiences of three Finnish startups developing mobile service products for Eastern Africa. There are multiple definitions of a startup company, but in this thesis a startup is defined as a rather young company that is working on finding a product-market-fit with little operating history and limited resources (Sutton, 2000). The focus of this study is particularly on the product development challenges and lessons learned. Moreover, the interviewees' advice for other startups seeking to enter the same market is gathered.

1.3 Research objectives and scope

Developing countries with fast-growing middle classes are driving the economic growth of the 21st century (PWC, 2017). This is a fascinating opportunity for startups looking to expand into new markets. According to Brewer et al. (2005), despite there is a great demand for new products and services, such as mobile-based innovation, the needs often differ from Western countries. Therefore, the technologies originating from the West have mostly been a poor fit for the emerging world. At the same, there's very little research on how technology needs are different in these regions.

When early-stage startups coming from a very different context try to develop new products or services for emerging markets with limited funding, small team and often without experience from the target market, various challenges can occur. Understanding of the contextual variation can be particularly relevant for North American and West European businesses entering emerging markets, due to large physical, cultural and economic distance (Meyer, Mudambi, & Narula, 2011). This thesis delves deep into the experiences of three Finnish mobile-service startups developing products for emerging markets, particularly East Africa. The objective of this thesis is twofold. First, this study aims to identify the type of

challenges the Finnish startups have encountered. Second, the lessons learned and advice for future startups are identified in order to gain an understanding of how to overcome the challenges.

The main research question this thesis answers is:

> ***RQ:*** *What kind of challenges do the key decision-makers of Finnish early-stage startups encounter when developing mobile service products for emerging markets, particularly East Africa?*

Moreover, two research subquestions, RQ1 and RQ2, were defined to support the main research question:

> ***RQ1:*** *What kind of lessons learned can be identified from the experiences of these startups?*
>
> ***RQ2:*** *What kind of guidance do these key decision-makers offer other startups seeking to enter the same market?*

The main research question (RQ) addresses the key objective of the research and attempts to deepen the understanding of the challenges that occur when startup product development is taken into an emerging context. The answer to the first supporting research subquestion RQ1, helps to focus the study to explore the lessons learned in relation to the challenges. The second supporting research question (RQ2) collates the advice given by the interviewees for other startups in a similar situation. That is the practical part of the study and aims to gather concrete suggestions for startups, now, and, in the future. Together, the research questions provide knowledge and tools for future founders and startups and, on the theoretical side, explore the gap identified in the existing literature. This study focuses purely on the experiences of the key decision-makers of these startups during different stages of product development. The detailed product development practices and steps have been left out of the scope because that would have extended the study too much. The focus is on the challenges and lessons learned from the product development process rather than the detailed process itself.

The scope of this study will be on Finnish early-stage startups developing mobile service products for the East African market. All the products are based on a mobile interface, but the industries vary. This way we can compare the experiences of the startups and most likely we are able to build a more comprehensive picture of the challenges. For example, with product companies production, supply chain management and logistics could be problems that mobile service startups are not facing. In addition, all the companies are still seeking to find a product-market fit and operate with limited resources. Therefore, based on Sutton's (2000) definition, they are all startup companies. Despite the varying age of the companies, all the startups are still developing the product further and building new features, even though the amount of users or customers varies. This enables that the companies are in a similar stage of the startup life cycle.

Due to the iterative approach of this thesis, the final form of the research questions was refined only after finishing the data analysis and defining the results and the interpretations. This ensured that the interview data was not fitted into a pre-defined question, but the data

and the main findings determined the research questions. Still, the initial research questions and their focus was shaped at the beginning, which helped specify the startups to be interviewed and constructing the interview questions. Even though early identification of research questions and potential constructs can be helpful, according to Eisenhardt (1989) it's as important to remember that these are tentative in this kind of research. Similarly, the research questions can change or sharpen during the research which happened also in this study.

2 Literature review

In this chapter, the existing literature relevant to this thesis is presented. First, the state of the digital economy in Africa is discussed, focusing especially on the penetration rates of mobile phones, phone models, and mobile subscriptions. These all affect heavily the operating environment for digital and mobile services. Second, the requirements for information and communications technologies (ICT) in developing context are reviewed. Finally, the user-centered design process is presented and discussed particularly from the perspective of developing countries. Moreover, the underlying framework used in this thesis, the Environment-Sensitive Framework for User-Centered Design by Backhaus, Brandenburg, & Trapp (2014) will be presented in detail.

2.1 The digital economy in Africa

According to the World Bank (2016), ICT has a remarkable impact on countries' economic development and can make the development more innovative, efficient and inclusive. Moreover, the mobile penetration rate has been noted to have a positive effect on equality (Asongu, 2015). Due to various positive effects, the digital divide has become the topic of interest for both researchers and policymakers. Even though ICT diffusion has progressed in developing countries, the level of digital development is still much higher in the developed world. The digital divide is increasingly influenced by the speed and quality of access to ICT (Billon et al., 2010.).

World Bank (2016) estimates that 80% of the population in developing countries own a mobile phone compared to 98% in developed countries. Sub-Saharan Africa has the lowest mobile penetration rate in the world, 73%. Even developing countries have been lagging behind in digitalization the speed of transformation has been fast. According to World Bank's (2016) estimations the rate of mobile phone ownership in developing countries increased from about 20% to 80% in just 10 years (2005-2015) and the growth is continuing strong. However, some of the world's poorest countries still have a mobile penetrations rate of 50% or under.

Even though the mobile penetration rate in many developing countries seem high, there are big differences between different demographics and communities. World Bank (2016) has acknowledged that the digitalization has treated people, even from the same country, differently. The main segregating factor inside a country is rural versus urban population where the urban habitats are more likely to own and use mobile phones. Moreover, Steinfield, Wyche, Cai, & Chiwasa (2015) noticed that socioeconomic status, education level, and gender affected the phone usage of Malawian farmers which is supported by PEW Research Center's research (2018). Also, age affects: young people are more likely to own a phone and go online (Pew Research Center, 2018). The smartphone growth will be driven by younger tech-savvy users (GSM Association, 2017).

Even though smartphones are the new normal in countries like Finland, basic phones, such as feature phones, are still the most usual phone type in many developing areas (Figure 1). In Kenya, 80% of the population is reported to own phones out of which only 30% are smartphones. The respective numbers in neighboring Tanzania are 75% and 13%. At the same time, it was estimated that 77% of Americans owned a smartphone in January 2018. (Pew Research Center, 2018.) In addition to phone type, also access to electricity and mobile operator coverage affects the usage of phones. According to the World Bank (2016) more

households own a mobile phone than have access to electricity in developing countries which impacts how and when these devices can be used.

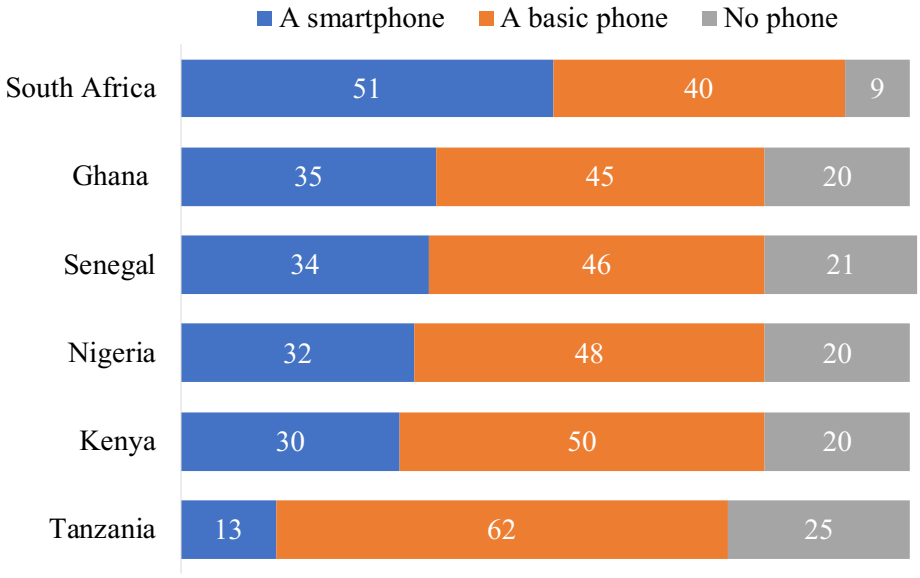

Figure 1 Smartphone coverage in some African countries (Pew Research Center, 2018, p. 12).

New affordable devices and the growing availability of second-hand devices are the main reason for promoting smartphone adoption. Together with the uptake of mobile broadband services, this drives the increase in mobile data traffic and the demand for new digital content and services. (GSM Association, 2017.) Even mobile coverage is raising the internet adoption lags considerably behind in developing countries. It was estimated that only 31% of the population in developing countries had access to the internet in 2014, compared to 80% in developed countries (World Bank, 2016). Sub-Saharan Africa has the lowest level of internet use in the world ranging from 59% in South Africa to 25% in Tanzania. 39% of adults were reported to use the internet in Kenya in 2017 compared to 89% in the USA (Pew Research Center, 2018). 3G will continue as the main broadband technology for the foreseeable future, but the adoption of 4G is increasing swiftly when the coverage increases. Smartphone connections in Sub-Saharan Africa accounted for one-fourth of mobile connections is 2016. (GSM Association, 2017.)

In Africa, the prepay or "pay as you go" subscription models are dominating. The main reason for this is that it's often harder for these consumers to meet the creditworthiness requirements of fixed-term contracts or pay-monthly subscriptions. (GSM Association, 2018) Also, being able to manage expenses in an inexpensive and discreet manner has been crucial to the widespread usage of mobile telephony in developing countries (Dhawan, Dorian, Gupta, & Sunkara, 2001; Hodge, 2005; Prahalad, 2005; as cited in Donovan and Donner 2010).

Even
though these figures give an idea of mobile usage and penetration in Sub-Saharan Africa and other developing areas, it needs to be noted that the accuracy of these figures can be questionable, and the definitions vary. By definition of GSMA Intelligence (2014) the mobile penetration rate is usually counted by dividing the number of registered SIM cards by the region's population. Since people in developing countries often own more than one SIM

card (for example, in China 1.79 per subscriber) the mobile penetration rate gives an insufficient picture of the number of people actually connected to a mobile network. As previously mentioned, the mobile penetration rate in Sub-Saharan Africa was 73% (World Bank, 2016).

If we look at the number of unique mobile subscribers in Sub-Saharan Africa the number corresponded to 43% of the population (GSM Association, 2017). The unique mobile subscribers refer to the number of individual people subscribed to a mobile service or tariff and take into account that the same person might have multiple SIM cards. The rate is not restricted by the number of people owning a phone. (GSMA Intelligence, 2014.) The mobile subscription rate in Eastern African countries such as Eritrea (9%), South Sudan (16%) and Malawi (26%) is low compared to, for example, Kenya (59%) (GSM Association, 2017).

It needs to be noted that the number of unique subscribers doesn't necessarily correspond to the number of mobile users either. World Bank highlighted (as referred by GSMA Intelligence 2014) that when there's a mobile phone in a household, theoretically all the members could access it even though this is not seen in the statistics. In developing countries, it's more common to share mobile devices and the perception of ownership of these devices is different than in Western countries (Aker & Mbiti, 2010). Sharing can make access to ICT realistic even for the poorest users (Brewer et al., 2005). Therefore it would be more reasonable to understand how many people are using different devices than actually owning them (James & Versteeg, 2007). Despite this challenge, the GSM Association (2014) suggests using unique mobile subscribers rather than registered SIM cards when trying to gain an understanding of mobile market penetration or growth opportunity. Painting a comprehensive picture of access to ICT and mobile penetration rates can be challenging due to the aforementioned factors.

2.2 Requirements for ICT projects in developing context

The wide distribution of technology and the growing access to capital have created a favorable ground for entrepreneurship and experimentations around ICT for developing countries. Novel ICT can have a great impact on both national and personal levels ranging from education to healthcare all the way to economic efficiency. According to Brewer et al. (2005) the needs and demands are great in developing countries but they are often different from Western countries. Therefore, the technologies originating from the West has been mostly a poor fit so far for the emerging world. Nevertheless, there's little research done on how technology needs differ in these regions.

Brewer at el. (2005, p. 25) argues that *"Western market forces will continue to meet the needs of developing regions accidentally at best."* They suggest that ICT can be successful in developing context only when implemented with a broad understanding of the local context and multidisciplinary approach. Arvila et al. (2018) emphasize that the socio-cultural aspects need to be thoroughly considered before the new technology can provide successfully benefits for the users in an emerging context. This contextual variation can be particularly relevant for North American and West European businesses entering emerging markets, due to large physical, cultural and economic distance (Meyer et al., 2011).

According to Brewer et al. (2005), the technical needs of ICT projects can be divided into four main categories: **connectivity**, **power**, **low-cost devices**, and **appropriate user interfaces (UI)**. **Connectivity** is a challenge especially in rural areas, where population density

is low. The situation in urban areas is better but it needs to be noted that smartphone connections accounted for one-fourth of mobile connections in Sub-Saharan Africa in 2016 and 3G is the main broadband technology. (GSM Association, 2017.) Most of the networking technologies are providing real-time, continuous and synchronized communications, but due to limitations in the connectivity and power infrastructure, this might not be a viable option in all developing areas. According to Brewer et al. (2005) this needs to be taken into account when applications are designed, for example, by developing applications that work without a connected end-to-end networking path when needed. In addition, the availability and quality of **electric power** affect the usage of mobile phones and applications. More households own a mobile phone than have access to electricity in developing countries. (Brewer et al., 2005)

Thirdly, access to **low-cost devices** is crucial for the digitalization of developing areas. This can be achieved by enabling sharing, enhancing cell phones and reducing the price of the devices and their components (Brewer et al., 2005). Most of these factors are beyond the influence of service developers but they need to be aware of the circumstances. For example, in Kenya, 80% of the population own phone out of which only 30% are smartphones (Pew Research Center, 2018). This affects what kind of services can be built and what technologies should be used. Also, sharing phones can affect the usage of mobile applications.

Finally, **UI** challenges can vary from basic issues, such as a keyboard or font problems, to deeper conceptual challenges such as how to build an interface that takes into account users with limited literacy (Brewer et al., 2005). Shen et al. (2006) highlight the importance of culture-specific factors in user interface design. Since software development has traditionally taken place especially in the USA, the interfaces have been based on American navigational logic, metaphors, color associations and representations. However, for example, the color associations vary from culture to culture and icons and emojis are culturally sensitive (Shen et al., 2006). In addition, the technical history of using technical artifacts such as PC's and smartphones is usually shorter in developing countries compared to the West, which affects how the users use the devices. Even the basic interactions, such as mouse movements and clicks might not be intuitive for inexperienced users.

Even though infrastructural, environmental and cultural aspects require consideration, the success and long-term impact of technical products or services are determined by economic sustainability. This has been a challenge for many ICT4D projects since they have been financed by the short-term charity and haven't been self-sustaining financially. ICT4D projects have been criticized for their lack of socio-economic impact (Harris, 2016). For-profit companies are dependent on paying customers who are able to meet the price point. The purchasing power of the people vary and the appropriate price for the product in developing markets is most likely lower than in the West. Over 50% of the purchasing power in developing countries consists of the Bottom of the Pyramid (BOP) segment, people with annual income less than US$3,000 (Guesalaga & Marshall, 2008). The usual misconception of for-profit companies is that the huge BOP segment includes homogenous consumers, often labeled as "blue-collar" or "working class". However, many sub-segments may exist which means that the consumers and their needs differ (Cui and Liu, 2000; D'Andrea et al., 2004 as cited in Guesalaga & Marshall, 2008).

2.3 User-centered design in developing context

When developing products for low-income countries various aspects need consideration as discussed above. Understanding the regional characteristics, ranging from technology to culture, affect the success of the project or product. Political, economic and sociocultural differences between regions increase complexity and uncertainty (Liu & Vrontis, 2017). User-centered design activities have been suggested as a solution by researchers when developing software products to developing areas. For example, Jones et al. (2017), Ramachandran et al. (2007), and Stanley et al. (2015) have found user-centered design methods beneficial in discovering cultural and contextual matters affecting the use of ICT. This chapter delves deeper into the user-centered design process. First, the user-centered design will be introduced on a general and conceptual level. Finally, user-centered design in developing context will be discussed and the framework by Backhaus et al. (2014) will be presented.

2.3.1 User-centered design process

User-centered design (UCD) focuses on designing highly usable systems sometimes also referred to as human-centered design. According to Abras et. al (2004) user-centered design is a term for philosophy and methods that revolve around designing for users and involving them in the process. The ISO-9241-210 (2019) standard defines **human-centered design** as follows: an *approach to systems design and development that aims to make interactive systems more usable by focusing on the use of the system and applying human factors/ergonomics and usability knowledge and techniques* (SFS-EN ISO 9241-210, 2019, p. 2). The definition ties human-centered design and usability tightly together.

There is no single agreed definition for usability (Van Welie, Van Der Veer, & Eliëns, 1999). The ISO-9241-210 Standard (2019) defines **usability** as follows: the "*extent to which a system, product or service can be used by specified users to achieve specified goals with **effectiveness**, **efficiency** and **satisfaction** in a specified context of use*" (SFS-EN ISO 9241-210, 2019, p. 3). Nielsen (1994) breaks the usability down to more specific elements: **learnability**, **efficiency**, **memorability**, **errors** or **safety**, and **satisfaction**. On the other hand, Hertzum (2010) has divided usability to six different images: **universal**, **situational**, **perceived**, **hedonic**, **organizational**, and **cultural** usability. Universal usability aims at anyone being able to use easily the system regardless of the background. Cultural usability, however, suggests that the cultural background of the user should be taken into account when designing the system. Despite the exact definitions of usability that may vary, the usability of ICT refers essentially to the ease of use and the effectiveness of the systems from the viewpoint of the given user (Shackel, 2009).

According to the ISO-9241-210 standard (2019) the user-centered approach can provide various benefits. Highly usable systems are usually more successful commercially and technically and can provide valuable economic and social benefits for the users. User-centered design improves user satisfaction, accessibility, human well-being, efficiency and effectiveness. On the other hand, the major downside of user-centered design is that it can be quite expensive. The process requires both financial and human resources and gaining understanding and data from the users and their environment takes time. (Abras et al., 2004.)

Usability and user-centered design take also into account the **context of use**, i.e "*the specified users, having specified goals, performing specified tasks in a specified environment*" (SFS-EN ISO 9241-210, 2019, p. 6). For example, the appropriate user interface of an instant messaging service could be very different for tech-savvy young users than for illiterate users.

According to SFS-EN ISO 9241-210 (2019) standard, user experience (UX) doesn't concern only the system and the interaction, but it's also a result of the user's previous experiences, skills, habits, attitudes, and personality. Therefore, when considering which functions should be performed by the users or alternatively by the machine, the user's strengths, limitations, expectations, and preferences should be taken into account. This requires special skills from the product development team. Abras et al. (2004) conclude that a user-centered design team benefits from a multidisciplinary and diverse team. Psychologists, sociologists, and anthropologists can be especially valuable since their role is to understand the user needs and communicate them to the technical side of the team. In addition to the required skills, the team should include people who are able to represent the perspectives of users and other stakeholder groups (SFS-EN ISO 9241-210, 2019).

Human- or user-centered design process is an iterative process that can include various different methods and steps. Figure 2 shows one version of the process introduced by the SFS-EN ISO 9241-210 standard (2019). The design process can start from any step depending on the project and typically finding the most appropriate design requires multiple iterations during which the requirements, specifications, and prototypes are reviewed when new information is gained. Iteration and incorporating feedback from the users mitigate risks related to the design.

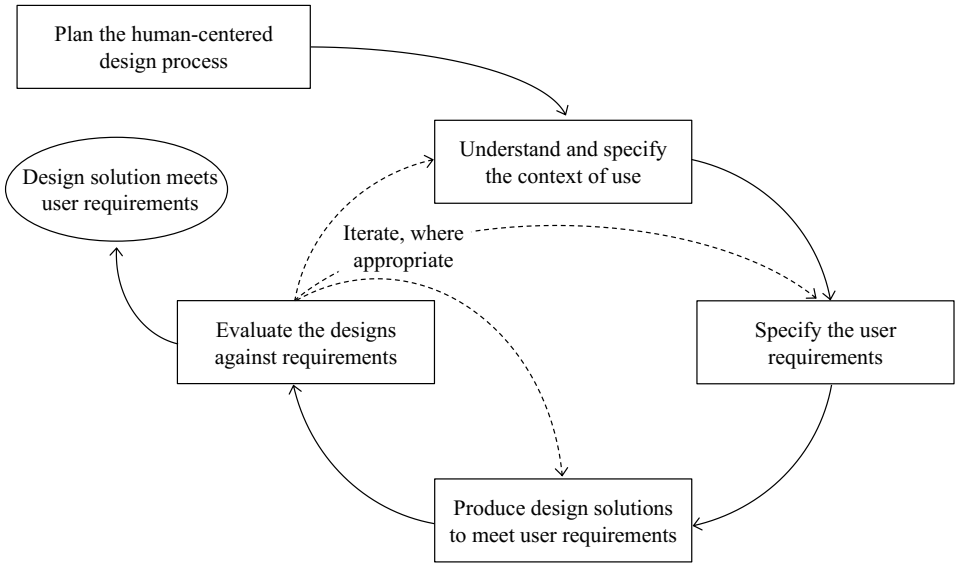

Figure 2 The human-centered design process (SFS-EN ISO 9241-210, 2019, p. 29).

According to the SFS-EN ISO 9241-21(2019) standard the human-centered design process starts with **planning**. The human-centered focus should be integrated into all stages of the product life cycle from conception to disposal, and it needs to be part of the overall project plan. The planning includes, for example, identifying suitable methods for the activities stated in Figure 2, identifying people or organizations in charge of UCD activities, agreeing on milestones, timetable, and resources to human-centered activities.

Once the decision of implementing user-centered design into the development process of a product, system or service has been made, the SFS-EN ISO 9241-210 (2019) standard describes four different activities that shall take place during the process:

1. understanding and specifying the context of use
2. specifying the user requirements
3. producing design solutions
4. evaluating the design (SFS-EN ISO 9241-210, 2019, p. 10).

SFS-EN ISO 9241-21 standard (2019) defines the **context of use**, the first activity on the list, by the characteristics of the users, tasks and technical, organizational and physical environment in which the system is used. Therefore, it's useful to gather and analyze information of the existing and similar systems and their context. This can reveal needs, problems, and constraints that need to be met by the system. Context-of-use includes the users and other stakeholders, the characteristics of the users, the goals and tasks of the users and the environment(s) of the system including technical, physical, social and cultural environments affecting the system.

According to the SFS-EN ISO 9241-21 standard (2019) identifying user needs is a major part of design projects. In human-centered design, forming explicit statements of **user requirements** taking into account the context of use and the business objectives of the system is an important part of the design process. User requirements form the foundation of the design and enable testing and evaluation of the product against user needs. On the basis of the context of use and user requirements, **design solutions are produced**. This should include designing user tasks and user interface, making the design solutions more concrete through prototypes or mock-ups, altering the design solutions in response to feedback and evaluation, and finally, communicating the design solutions to the ones responsible for implementation. The whole iterative process takes usability and user experience into account.

User-centered evaluation is a crucial and required part of human-centered design. SFS-EN ISO 9241-21 (2019) states that design **concepts should be evaluated** even in the early stages of the project but also in the later stages. Evaluation can be used to collect information about user needs, collect feedback on the design solution from the user's perspective, assess if the user requirements have been fulfilled, or to make comparisons between different design solutions. Finally, when the design solution meets the user requirements the design is ready to be implemented according to the Figure 2 and the SFS-EN ISO 9241-21 (2019) standard.

2.3.2 Environment-Sensitive Framework for User-Centered Design

The user needs and technical requirements are different in developing countries than in the Western world. Therefore, transferring existing products straight from developed countries to developing ones haven't seemed to work (Brewer et al., 2005). If companies want to succeed in the emerging markets they need to adapt the product designs to the environmental context (Freudenthaler, 2015). When developing software products to developing context, applying user-centered design methods can be particularly important since these products have traditionally been developed from a Western perspective. The target group, their contextual setting are especially important when considering the UX in the product development process (Backhaus et al., 2014). Since most of the existing theories and frameworks for product development originate from the West, they should be critically examined and if needed, modified, when the context of use changes (eg. Liu & Vrontis, 2017; Backhaus et al., 2014.

Consequently, Backhaus, Brandenburg, and Trapp (2014) propose an **Environment-Sensitive Framework for User-Centered Design** that *"enables engineers and interaction designers to develop products that help users to fulfill their interaction needs in this special [developing] environment"* (Backhaus et al., 2014, p. 400). Backhaus et al. (2014) argues that in order to make the Western user-centered design process (of which one version is introduced in Figure 2) to work in developing context, it needs to be extended by a human-centered view. Therefore, they integrate the UCD process with a socio-technical systems approach to enable building UX-sensitive technology for developing countries, especially their rural areas. Next, the framework of socio-technical systems will be presented following the Environment-Sensitive Framework for User-Centered Design.

The socio-technical systems approach has a holistic perspective on human-machine interaction (HMI), where *"human and machine work together (they interact) to solve a task in a goal-oriented way"* in their respective contexts (Timpe et al. 2002 as referred by Backhaus et al., 2014, p. 403)HMI emphasizes the specific time and place of the action resulting in a narrow definition of the socio-technical system, the local environment (Figure 3). (Backhaus et al. 2014) However, the socio-technical system is affected by the global environment as well, resulting in a broad definition of the socio-technical system which includes the tangible and intangible environment (Figure 3). Many of these contextual factors can be invisible at first but have a major effect on the system, both the human and the machine. Intangible factors include cultural and societal issues such as the economy, politics, and education. Tangible factors, however, are directly observable such as infrastructure, weather, and geography. Both affect the HMI implicitly but still in such a clear way that it needs to be taken into account in product development (Backhaus et al., 2014).

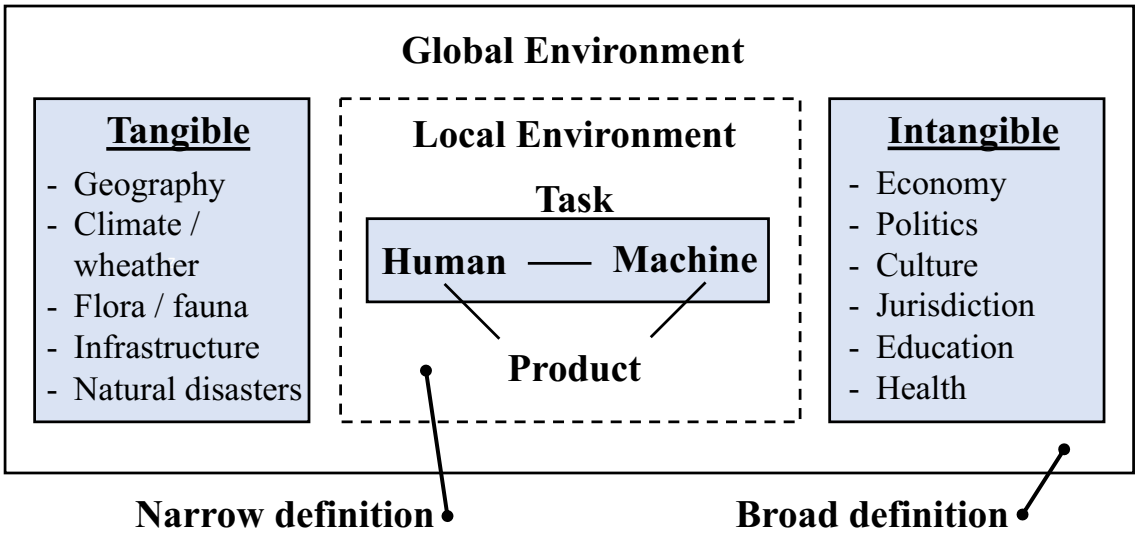

Figure 3 Framework of socio-technical systems (Backhaus et al., 2014, p. 404).

Often product designers develop products for users coming from similar contexts, and therefore they mostly share the tangible and intangible environment. In that case, the global environment of the socio-technical system is rather irrelevant. But according to Backhaus et al. ***"as soon as engineers adopt their products and product development processes in culturally different backgrounds, the global environment turns out to be vital and must be taken into account"*** (Backhaus et al., 2014, p. 404). This requires an understanding of the key factors and characteristics of the special socio-technical system of developing countries.

This is supported by London & Hart (2004) who argue that identifying the contextual factors that represent the market and effect product design is the key task.

The designers, engineers, and product development processes originate mostly from the Western world. Therefore, when they build a technical product, incorporating HMI, they need to become culturally thoughtful and sensitive to the global environment of the socio-technical system. The user-centered design process takes into account the human and the machine including their immediate context and surroundings. It doesn't highlight the global environment. Therefore, Backhaus et al. (2014) have incorporated the framework of socio-technical systems and the user-centered design process resulting in the **Environment-sensitive user-centered design framework** presented in Figure 4. The objective of the framework is to help engineers and designers to better manage the specific characteristics of developing areas. (Backhaus et al., 2014) This notion is supported by Freudenthaler (2015) who argues that contextual information needs to be gathered and design-related contextual factors need to be integrated in the product design process taking into account the characteristics of emerging markets.

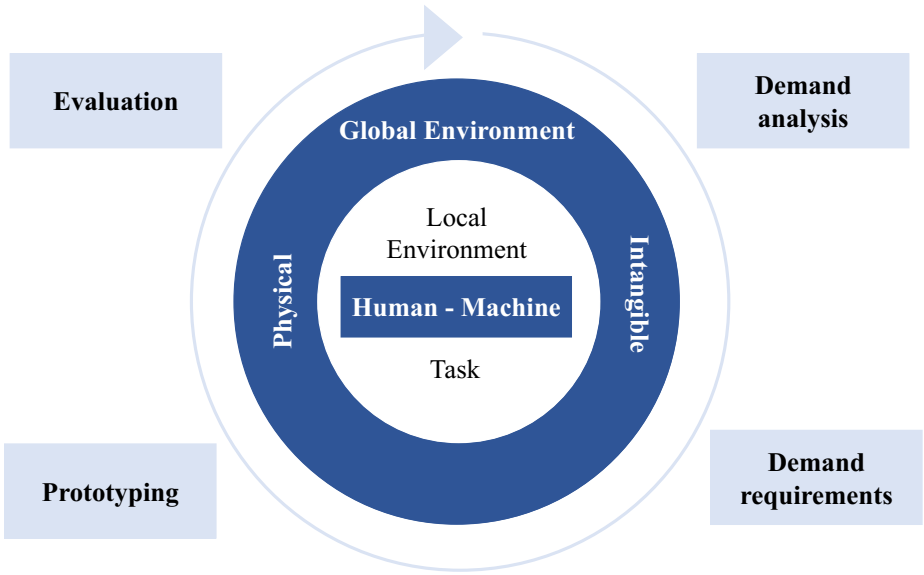

Figure 4 An environment-sensitive framework for user-centered design (Backhaus et al., 2014, p. 406).

It is a theoretical framework that locates the interaction of the user and technical artifact in the center of the model. Unlike the user-centered design process, the framework proposes that the user and her local environment are located in the global environment, and therefore strongly affected by it. This means that the interaction between humans and machines is not just affected by the immediate surroundings but by the larger tangible and intangible factors. The broad tangible and intangible factors constrain the local environment and set limits for the user and her possibilities to fulfill her needs with the technical artifact. For that reason, the user-centered design process should be sensitive to both the local and global environment when designing for users from developing context. (Backhaus et al., 2014) Hence, simply put, Backhaus et al. have taken the iteration-based user-centered design process and highlight the significance of the global environment in the human-machine interaction which is in the core of the model.

As already discussed in the user-centered design section, the process is flexible and can include various different methods and steps. Backhaus et al. (2014) note that the limits and requirements of the global environment don't only affect the end product or service, but also the applicable methods. Usually, the user-centered design process requires communications and testing with the actual users. When, for example, testing prototypes with users it's important to consider the availability of internet connections and electricity. On the other hand, gender roles can affect recruiting and communications with the interviewees. There might be underlying political or cultural factors that prohibit interviewees to answer questions for discreet reasons. The different user-centered design methods are beyond the scope of this study.

It needs to be noted that the environment-sensitive user-centered design framework (Backhaus et al., 2014) is a theoretical framework and it lacks empirical evidence. Further studies are needed in order to validate the model. There is evidence of the benefits of implementing the user-centered design process when designing for developing context (Jones et al., 2017; Ramachandran et al., 2007; Stanley et al., 2015), but there is less research done on how to iterate the model to better suit the developing context. Therefore, this study provides an opportunity to compare the results of this study to the framework.

3 Research methodology

The main objective of this thesis is to identify the challenges that Finnish startups face when developing mobile service products for East Africa. Eight key members from three startups were interviewed. In addition, the lessons learned and interviewees' advice for other startups targeting the same market are identified. Also, the effect of the interviewee's' background and previous experiences on the challenges are studied. This chapter delved deeper into the research methodologies used in this study.

3.1 Multiple case study as a research approach

A qualitative methodology was chosen as the basis for data collection for this thesis. According to Silverman (2005) when compared to quantitative research, qualitative research is better for small-scale studies providing an in-depth look at the issue to be studied. The focus of qualitative research is on the subjects, such as people's understanding, values, interactions with each other, environment, and reality in general. Selecting the research methodology should be done in relation to the knowledge gathered, the personal preferences of the researcher, and the resources available (Silverman, 2005). Since the topic of this thesis is an under-researched area, there is a clear need for a deeper understanding of the experiences of Finnish mobile-service startups in emerging markets. Moreover, the resources and timetable of this thesis were very limited, so a large-scale analysis was not possible. Therefore, qualitative methodology was seen as the most suitable methodology.

A multiple case study approach was chosen as the main research method for this thesis (Yin 1981; Eisenhardt 1989). The selected method enables investigation within a certain context, the chance to test existing theory, and the possibility to build theory (Eisenhardt, 1989). According to Eisenhardt (1989), this method is especially suitable for testing or generating new theories or providing a description. As Yin argues (1981), the case study can be seen as a research strategy that examines "*contemporary phenomenon in its real-life context*" (Yin, 1981, p. 59). Since the aim of this study is to examine the challenges and lessons learned from Finnish mobile-service startups targeting emerging markets and gather their advice, it made sense to conduct the study by interviewing selected case companies on the above-mentioned experiences. Choosing the method was based on the above-mentioned reasoning (Yin 1981; Eisenhardt 1989).

Based on Eisenhardt (1989), the case study method consists of single or multiple cases including qualitative or quantitative data or both. Case studies provide many benefits, for example, examining single cases in-depth or comparing multiple cases, which can produce valuable insights into the emergent theory. It doesn't require a strict theoretical background and the research questions can evolve during the study relying on the iterative manner of data collection and theory building. (Eisenhardt 1989)

However, Eisenhardt (1989) notes that drawing generalizations from typically a small number of cases can be hard, if not even impossible. The richness of the qualitative data can also lead to complex theories. Glaser and Strauss argue (1967, cited in Eisenhardt 1989) that real-life experiences need to be assessed against previous literature in order to build a valid theory. Nevertheless, the case study method is recommendable when the research topic requires a new perspective or when the topic area is new and the resultant theory is often novel, empirically valid, and testable. (Eisenhardt 1989)

Eisenhardt (1989) introduced a framework for building theory from case studies. The most important steps of the method are: selecting cases, entering the field, analyzing within-case data, searching for cross-case patterns, shaping hypotheses, enfolding literature, and reaching closure (Eisenhardt, 1989, p. 533). The process is highly iterative and tightly linked to the data which makes the research approach especially appropriate in new topic areas. This case study has followed the process in an iterative manner.

3.2 Research subjects

Empirical findings were gathered by studying three case companies and interviewing between two to four people from each of the companies. According to Eisenhardt (1989: 536), the *"selection of cases is an important aspect of building theory from case studies."* The case companies were selected based on the scope of this thesis discussed earlier. The companies should target East Africa as their first market with their mobile service product and have a Finnish background. All of the companies should have a product and at least some initial traction and therefore idea-level startups wouldn't be suitable for this study. The companies also should have some physical experience from the market.

Careful selection of the suitable population limits the extraneous variation of the results and helps to set boundaries for generalization of the findings (Eisenhardt 1989: 567). The goal of theoretical sampling is to select cases that are likely to extend or replicate the emergent theory. The three case companies were identified and selected together with the company advisor, Niti Bhan. All of the contacted companies and interviewees replied positively to the request to participate in this study. The author got an introduction to all the companies through the company advisor or through other personal connections which made reaching out to the companies more natural.

Eight people were interviewed in total, of which seven were co-founders. These eight were selected because they had a key role in market exploration and/or early product development process and therefore could provide valuable insights for this thesis. This limited the number of suitable interviewees since the startup teams are typically very small in the early days. All interviewees except for one are still in an operational role in these companies. Most interviewees had positions such as CEO, COO or CTO. The majority were males with a Master of Science (Tech) degree. All are European citizens and six are Finnish. All three companies have at least one Finnish co-founder. Even though not all the companies are based in Finland, they have a strong connection to Finland and therefore can be referred to as Finnish startups. All had a mobile-first product which increases the comparability even though the use cases, industries, and technical implementations vary.

The very small number of Finnish startups targeting emerging markets, especially Africa, limited the number of case companies. Due to personal connections and the company advisor's Ph.D. focus, East Africa and mobile service startups were selected as the scope of this thesis which increased the comparability of the results. For example, the challenges of companies with physical products could be quite different due to distribution channels and retailers. Even though the number of customers and employees in the companies varied, **all the companies are still developing the product and looking for product-market-fit.**

Since the anonymity of the case companies and the interviewees are protected further details will be provided only when it's important for the analysis or interpretation of the results.

3.3 Semi-structured interviews

The case companies were studied with the semi-structured interview method. Eskola and Suonranta (2008:86) defined the key characteristics of semi-structured interview method as follows: the list of predefined questions is the same for all the interviewees, but there are no predefined answer options and the interviewee herself can decide how to answer. This is in line with Silverman (2005), who argues that when the sample size of cases is small and empirical findings are gathered through interviews, open-ended questions should be used.

A semi-structured interview method can elicit unexpected types of information in addition to the information foreseen (Seaman 1999). Since the experiences of Finnish startups in emerging markets is an under-researched topic and the researcher doesn't have personal experience from the field, it was important that the utilized interview method supports finding unexpected information. Moreover, semi-structured interviews are well-suited for studies where interviewees' experiences and opinions on complex or even sensitive issues are explored (Louise and Alison 1994). This is in line with the objectives of this study since the experiences and challenges perceived by the participants can be complex and even sensitive by nature. Therefore, it is clear that the choice of this method was best suited for the research goals.

The data collection was conducted through video calls and, whenever possible, through face-to-face interviews. Four out of the eight interviews were done face to face, and four by utilizing communication technology like Skype or WhatsApp calls. The author conducted all the interviews alone. All interviews were audio-recorded after permission from the participants and later transcribed for data analysis. Five of the interviewees were conducted in Finnish which was the native language of both the interviewer and the participants. Two interviewees didn't share the same native language as the interviewer, so these were done in English. This may affect how well the interviewees were able to express their thoughts. However, English was their main working language, therefore the effect can be considered insignificant for the purpose of this thesis. The anonymity of the participants of this study has been protected by following the practices of Aalto University and the General Data Protection Regulation. This was emphasized for all the interviewees so that they could feel confident during the interview and talk freely about their experiences.

The question set was divided into six thematic sections in order to get a good outline of the experiences throughout the participants' journey in emerging markets:

(i) Personal and company background
(ii) Assumptions
(iii) Getting to know the market
(iv) Collaboration
(v) Learnings and best practices
(vi) Additional information

The first section is for the researcher to get an overview of the interviewee's background as well as the company background. In addition, the goal of these basic questions is to warm up the interviewee before moving to the more demanding questions related to personal experiences. The second section examines the assumptions and expectations of the interviewee about the target market(s) and the validity of these are discussed. In the third section, the actual learning methods are discussed both on the personal and company level. Following

up with the fourth section, where the closer collaboration with the locals is discussed. The fifth section answers the research question of the thesis: biggest challenges, lessons learned and advice for other startups. Finally, the interviewees are given a chance to add anything they would like to add or if there is something, they haven't had a chance to discuss yet. The full interview structure and questions are available in Appendix 1.

The aim of the question set was to provide a holistic picture of each interviewee's experiences from operating in emerging markets and to gain an understanding of their major challenges and experiences along the way. This predefined structure helped to focus the discussion on relevant topics regarding the study (Eisenhardt 1989) and improved the comparability of the interview data. The same interview scheme was used in all the interviews and it was tested beforehand with the company advisor in order to prevent later changes. Despite the structure, additional questions were presented during the interviews whenever needed in order to deepen the discussion and gain additional insights. Since the interviewees' experiences are different this enabled deeper exploration of specific topics emerging during the interviews.

3.4 Data analysis

Data analysis is the key to building theory from case studies. Still, at the same time, it's the most difficult and the least codified part of the research process according to Eisenhardt (1989). She described how the lack of discussion of the analysis process creates a gap between the data and how conclusions were reached. This makes it difficult to evaluate the research, compare it to previous studies and conduct similar studies in the future (Braun and Clarke 2006). According to Patton (1990), in an ideal situation, the analytic process advances from the **description**, where the data has been organized and summarized to show patterns, to **interpretation,** where the significance and broader meanings and implications of the patterns are theorized and often discussed in relation to previous literature. The results section of this thesis consists of a description of the data and the patterns and the discussion section delves deeper into the interpretations.

In this thesis, data analysis was conducted by following a semantic-level thematic analysis method described by Braun and Clarke (2006). Thematic analysis, which searches for themes and patterns, is an accessible and theoretically flexible approach for analyzing qualitative data and provides a detailed and rich review of data. The thematic analysis does not require detailed theoretical knowledge of approaches, such as grounded theory, and therefore it offers a more accessible form of analysis for people new to qualitative research, such as Master's level students in Engineering.

According to Braun and Clarke (2006), thematic analysis can be used as an essentialist or realist method reporting experiences and the reality of the interviewees. Thematic analysis aims at developing a rich description of the whole data set rather than focusing on one specific aspect. The identified, coded and analyzed themes need to reflect the accurate content of the entire data set. Even though some complexity and depth is lost in thematic analysis, it is a useful method when an under-researched area is investigated or if participants' views on the topic are unknown. (Braun and Clarke 2006) Due to these reasons, it was seen as an appropriate data analysis method for the purpose of this study.

The data were analyzed in an inductive manner which means that the identified themes are strongly linked to the data (Patton 1990). Inductive analysis is a process of coding the data

without an attempt to fit it into a pre-existing frame or the researcher's own presumptions and therefore a data-driven form of thematic analysis (Braun and Clarke 2006). Therefore, the coding process was done independently from the framework proposed by Backhaus et al. (2014). It needs to be noted that though this is a data-driven approach, a researcher can never be fully objective. The inductive approach also enables the evolution of specific research questions through the coding and analysis process. (Braun and Clarke 2006).

Braun and Clarke (2006) also provide a guideline for conducting thematic analysis consisting of six phases (Table 1). They emphasize that despite the structure of the phases, analysis is not a linear process but rather a recursive process that includes constantly moving back and forth between the complete data set, the coded extracts and the analysis of the data. The analysis of this study followed the process introduced in Table 1 in an iterative manner.

Table 1 Phases of thematic analysis by Braun and Clarke (2006, p. 87).

Phase		Description of the process
1	Familiarizinq yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2	Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3	Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4	Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5	Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6	Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

First, all the eight interviews were transcribed word for word in the original language of the interview. Two interviews were in English and the rest in Finnish. Ideally, given that the interviews were in both Finnish and English language, it makes sense to do the analysis in the language of the interview. However, the Finnish language interviews needed to be translated for the English-speaking company advisor instructing the work, who would use the same data set for her doctoral research. She would be conducting more interviews in English as well. Therefore, it made more sense for these 6 interviews to be translated and analyzed as part of the larger data set which is all in English since other target companies are from Africa. During the analysis phase, the Finnish transcripts were checked always when in doubt of the original meaning or emphasis. Since the author was familiar with the content and meanings of the Finnish interviews, the effect of using the translated transcripts is considered small for the reliability of this study.

After the transcripts and translations were done, these were reviewed in detail together with the company advisor in order to find high-level patterns. An insight generation workshop was conducted over 3 days. The insight sorting was following the method by Vijay Kumar (2012:141-142) where insights are manually sorted to find clusters and hierarchies. Insight

statements were written on sticky notes after which they were clustered into similar topics through which pattern and themes were identified. This method helps to give a high-level understanding of the research material and provides rough insights quicker than digital coding. It was also a good way to agree with the company advisor on the clustering logic behind the categorizations (Eisenhardt, 1989) since the interviews are part of her Ph.D. research. This also can decrease the bias in the interpretation of the transcripts since two individuals have participated in and discussed the clustering.

The workshop highlighted the rough cross-case themes and helped to **generate initial codes.** Coding was also an iterative process and the used codes evolved throughout the process. Therefore, the data set was reread multiple times which enabled cross-case harmonization of the coding and for example, merging very similar codes. Silverman (2000) describes methods for analyzing qualitative data, including computer-assisted analysis and tools. Atlas.ti, a program mentioned by Silverman, was used for coding the transcribed interviews. All in all, 99 different codes were identified that were mentioned between one to twenty-four times. It's important to note that the amount of mentions of certain codes doesn't necessarily reflect the significance of the code (Braun and Clarke 2006) since the same interviewee could have mentioned the code multiple times. Whenever the number of participants mentioning a certain topic is either very small or large it will be highlighted in the results section. Also, if the same exact topic has been mentioned multiple times by the same particpan it has been counted as one mention. On the other hand, the same interviewee can still mention the same code multiple times. For example, mentions of the language barrier and differences in the work culture would be counted as two different mentions under the "culture" code.

After the first round of coding was done, the codes were clustered into **potential themes**. Through the previous insight sorting there was initial understanding of the potential themes, but the coding provided a more comprehensive understanding of the data and the patterns and their importance and generality. Based on this a thematic map was outlined. The codes were divided into five different main categories: context, resources, holistic understanding, product development and user research, and presence and building relationships. These categories were further divided into subcategories, such as culture, technology and economy. All of these categories were studied through the research questions and they were divided into mentions as the **biggest challenge**, **challenge**, **lessons learned**, **advice** and **other mentions**. The amount of these mentions by main category are presented in the Table 2 below. All in all, 298 mentions were identified, and we will delve deeper into the findings in the next chapter.

The challenges are segmented into two groups: **the biggest challenges** and **other challenges**. All the interviewees were asked: *What has been the biggest challenge your company has faced on the market? What about personally?* Only the explicit answers to this question have been counted as the biggest challenges. This enabled the author to assess the gravity of the challenge without the need to make large assumptions about the interviewees' experiences. Most of the interviewees didn't make a clear distinction between the personal and company-level problems or considered the problems the same. Therefore, these challenges are grouped under broader themes and not divided into personal and company-level categories. Other challenges include topics that interviewees described with words such as it is "challenging", "difficult", "hard", "a problem" or "a struggle". In addition, answers to the

questions where people were asked to describe challenges have also been counted as other challenges.

Along with the challenges, so called **other mentions** will be reviewed briefly. Other mentions include mentions that are not challenges, advice or lessons learned but, instead describe the topic or actions taken. The quantity of other mentions highlights how much a particular topic was discussed in general compared to the number of challenges. Other mentions can be negative or positive, for example: *"The benefit of, let's say, [two African countries] is that pretty much everybody speaks English there. So that also makes it a little easier to enter into these areas."* Also, so-called indirect challenges are counted as other mentions. Indirect challenges are challenges described by the interviewees that other people may have encountered or topics that could potentially be a challenge. Those are based on observations or assumptions but not actual personal experience and therefore can't be counted directly as a challenge.

Table 2 All mentions by main category and mention type.

Category	Number of mentions
Context	**79**
Biggest challenge	10
Challenge	13
Advice	5
Lessons learned	1
Other mentions	50
Resources	**65**
Biggest challenge	7
Challenge	12
Advice	22
Lessons learned	2
Other mentions	22
Holistic understanding	**80**
Biggest challenge	4
Challenge	14
Advice	7
Lessons learned	5
Other mentions	50
PD and user research	**50**
Biggest challenge	0
Challenge	4
Advice	8
Lessons learned	4
Other mentions	34
Presence and building relationships	**23**
Biggest challenge	0
Challenge	0
Advice	10
Lessons learned	4
Other mentions	9
Others	**1**
Biggest challenge	1
Total number of mentions	**298**

All interviewees were asked a question: *What kind of advice you would give to any other Finnish startup entering the same market?* This gave the interviewees a chance to elaborate on their experiences and learnings and highlight key **advice**. All answers to these questions have been counted as **advice**. In addition, all mentions of phrases such as "it's crucial to" or "you really need to do something" have been coded as advice.

In addition to challenges and advice for other startups, interviewees also described **lessons learned**. Lessons learned include mentioned learnings, mistakes and changes in action that followed phrases such as "we have realized", "I made the mistake" and "one of the key things I have learned". The lessons learned responded to the following two questions: *Is there something you would do differently if you were learning about the market for the first time now? Would you say the methods you have discussed above have been effective or is there something you would change?*

Finally, after thorough coding and identifying themes, Atlas.ti provided different tools for **reviewing the themes** and making sure that the themes match the coding. For example, Atlas.ti made it easy to compare how many times the codes occur and in how many interviews. The coding was used to find patterns between the interviews. This was done both on a case company and interviewee level. Since comparing the individual interviews despite the case company revealed the most patterns this has been used as the main form of the comparison. Still, if company level patterns were found, they are mentioned in the results and discussion sections.

Defining and naming the themes was an ongoing process while writing the results and gaining a better understanding of the storyline and different themes. The deeper analysis of the data continued all the way to the discussion section were results where the results were discussed through deeper meaning and in the light of existing literature.

4 Results

This chapter focuses on the main results of the empirical study presented in the order of the research questions. First, we delve deeper into the results related to the main research question RQ, continuing with research sub questions RQ1 and RQ2. Finally, the impact of the interviewees' personal backgrounds on the results will be reviewed. The results are supported by quotes and tables reflecting the frequency of the findings. Quotes highlight the relationship between the original transcriptions and the results (Weiss, 1995), and therefore provide evidence to support the latter.

The anonymity of the case companies and participants is protected as agreed. This enabled the participants to address more sensitive subjects, such as their challenges and failures. In order to support the anonymity, some quotes may be edited, and all the modifications are marked clearly. The use of [...] represents words that have been cut out and [word] represents replaced words.

4.1 Overview of the data

The conducted interviews focused on interviewees' experiences, challenges, and lessons learned from developing and introducing mobile-based services in emerging markets, mainly East Africa. As presented in Appendix 1, the topics covered in the interviews ranged from initial assumptions of the market to interviewees' methods of learning about the market and users, all the way to collaboration with locals and overall learnings and best practices. Even though every interviewee's experiences were very subjective, and the interview questions provided an opportunity to highlight different topics, clear themes and patterns emerged across all the eight interviews. The analysis of the results was done independently from the framework, but the clustering of the results follows the Environment-Sensitive User-Centered Design Framework by Backhaus et. al (2014) wherever applicable.

In the data analysis phase, five main categories common to challenges, lessons learned, and advice were identified: **context**, **resources**, **holistic understanding**, **product development and user research**, and **presence and building relationships**. The amount of mentions for each category is shown in Table 2 (Chapter 3.4 Data Analysis) highlighting the frequency of the mentions per category. The categories were further divided into subcategories emerging from the data. The categories and their subcategories are presented in the Figure 5 below.

Context includes tangible and intangible socio-technical factors as per Backhaus et al. (2014). The tangible environment includes factors such as geography, climate, and infrastructure. The intangible environment focuses on the human side including factors such as culture, politics, and economy. **Resources** accounts for both human and monetary resources, such as team, hiring or expenses. **Holistic understanding** clusters together the deeper understanding influenced by contextual factors such as user and market understanding. Finally, the last two categories are **product development and user research** and **presence and building relationships**, that include various mentions related to methods, challenges and best practices related to these topics.

The results will be discussed by following these five main categories (Figure 5) and their subcategories, also acting as subchapters.

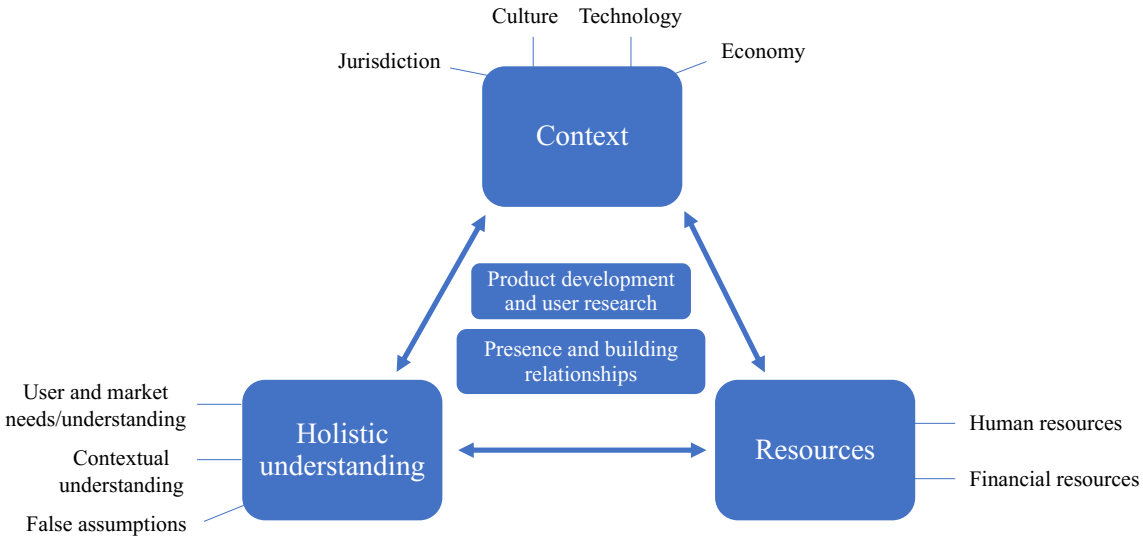

Figure 5 The identified categories and their subcategories.

The findings will be outlined with supporting tables. In the tables challenges and other mentions (and later lessons learned and advice) are clustered based on the main categories and their subcategories, but also the coded sentence or section is narrated with brief description. Similar coded sentences have been grouped together, even they wouldn't be exactly the same, in order to clarify the tables. If the same exact challenge has been mentioned multiple times by the same interviewee, it will be counted as one challenge. If the same interviewee has mentioned the same subcategory multiple times but is mentioning multiple separate challenges, all these challenges are counted individually even they are related to the same broader theme or subcategory. This pattern has been followed throughout the results.

Some themes may fit into two categories and so it has been coded twice. For example, this sentence would be coded both as other mention under **contextual understanding** and **user understanding** since both themes were mentioned: *"Well, it's not possible for a startup to do what's really useful, the very basic context and user understanding phase in the beginning."*

4.2 Challenges

This section focuses on the challenges perceived by the interviewees and studies the main research question RQ: *What kind of challenges do the key decision-makers of Finnish early-stage startups encounter when developing mobile service products for emerging markets, particularly East Africa?* The challenges are segmented into two groups: **the biggest challenges** and **other challenges**. Along with the challenges, so called **other mentions** will be reviewed. Other mentions are general mentions of the topic that highlight how much the topic was discussed and weather the tone was positive, negative or neutral. The detailed definition of these groups was discussed in the Section 3.4.

All in all, the 8 interviewees mentioned 1-4 biggest challenges per person and 22 biggest challenges in total. Other challenges were mentioned 44 times, between 2 and 11 times per person. The Figure 6 below, highlight the number of challenges and mentions per category. Based on the Figure 6, context was the most commonly mentioned as the biggest challenge, but resources and holistic understanding were also a common cause of other challenges.

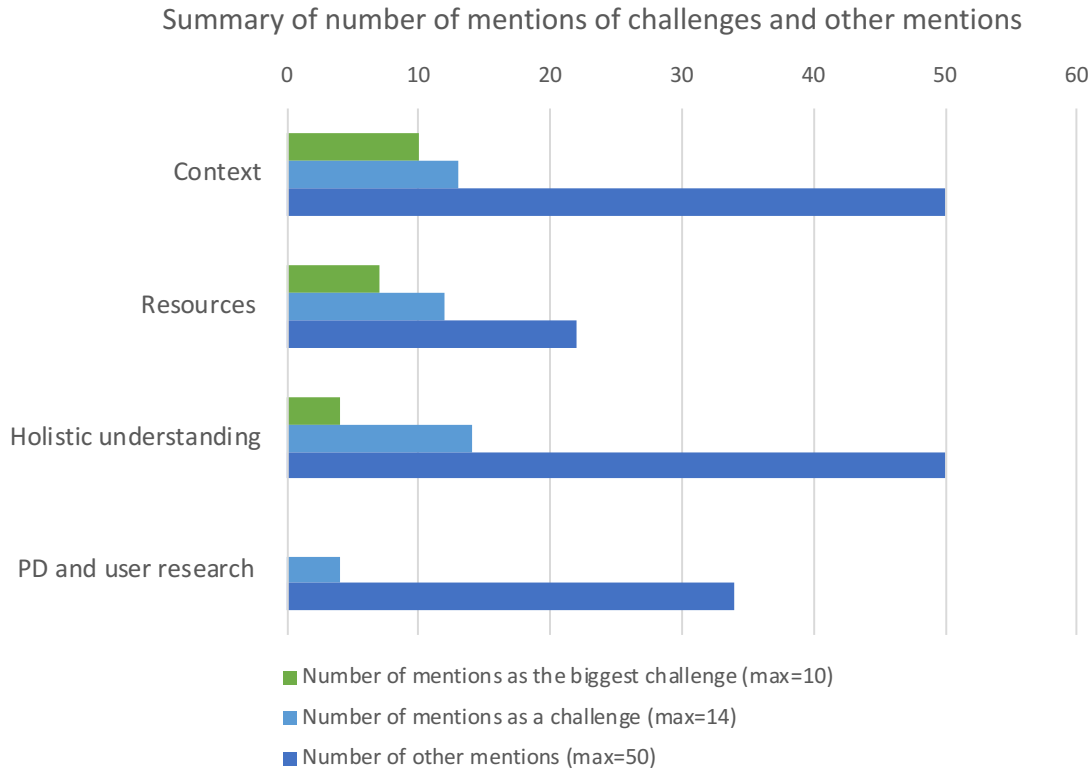

Figure 6 Summary of number of mentions of challenges and other mentions.

Next, we delve deeper into these categories and the challenges experienced by the participants. The results will be reviewed in the order of the number of biggest challenges starting from the category or subcategory with most mentions as the biggest challenge.

4.2.1 Context

First, the category most frequently mentioned as the biggest challenge, **context**, will be discussed including subcategories; **jurisdiction**, **culture**, **technology**, and **economy**.

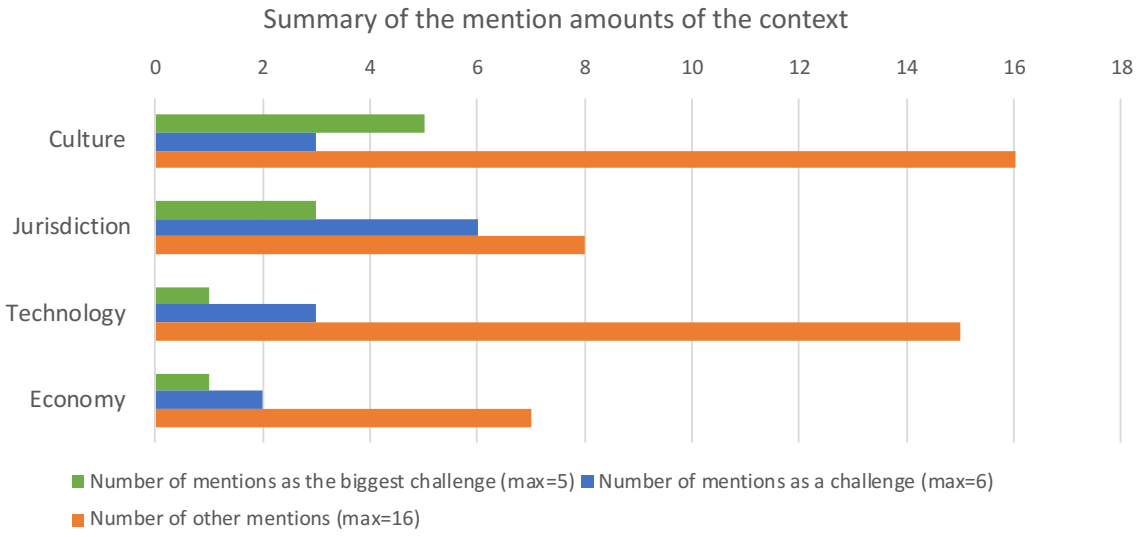

Figure 7 Summary of the number of challenges in a particular context and other mentions of the context.

As can be seen from Figure 7 above, **culture** was the subcategory with most mentions as the biggest challenge following by jurisdiction. On the other hand, **jurisdiction** was most mentioned as other challenge following with **culture** and **technology**.

4.2.1.1 Culture

Culture was the most common subcategory among the biggest challenges with five mentions by four interviewees. However, culture was mentioned only three times as a challenge. On the other hand, culture wad the most other mentions (n=19) when compared to technology (n=18), jurisdiction (n=14) and economy (n=9) as we can see from the Figure 7. All the interviewees mentioned culture at least once.

Table 3 Culture and mention amounts.

Challenge	Number of mentions
Biggest challenge	**5**
Lack of directness	2
Low level of trust	1
Hierarchy	1
Slowness	1
Challenges	**3**
Different business and work cultures	2
Culture gap	1
Other mentions	**16**
General mentions of culture	**6**
Mentions of culture gap	2
People are very polite and don't want to offend	2
People don't trust systems	1
Culture is different in different African countries	1
Language	**4**
Hundreds of different languages	2
Good English skills	1
Language and cultural barriers affect communication	1
Work and business culture	**3**
Doing own business while working for a company	1
Verbal agreement doesn't mean anything	1
Business is done with people you know	1
Time	**3**
Time is a relative concept	3
Total amount of mentions	**24**

The type of mentions and the mention amounts are presented in Table 3 above. Two interviewees stated the lack of directness of the locals as their biggest challenge:

> *"So in the very early stages, when we didn't have the actual product yet, we faced the African culture when people do not necessarily say outright that things aren't going to move forward. "*

In addition, **slowness**, **hierarchy** and **lower trust level** were all mentioned once as the biggest challenge. The hierarchy between different social classes and the lower trust level are phenomena that can be hard to identify and understand coming from Finnish context. If you lose your wallet in Finland you are likely to get it back, but it doesn't work like that everywhere.

The three other cultural challenges were very general and vague: there is a culture gap, and the work and business culture are different. The 16 other mentions can be further grouped under **culture**, **language**, **work and business culture**, and **time** as can be seen in the Table 3. They can affect companies on different levels. The product development process could be affected by people's lower trust level on systems and collecting feedback can be hard due to people's need to please you and other personal reasons, for example;

> *"So you need to make those interviews and pilots terribly carefully, and then there are a lot of topics people don't want to answer for discreet reasons, which are about expenses and, of course, people are reluctant to tell about their lives if they are unemployed and have low income and challenges. It's completely understandable."*

People's lack of directness was mentioned twice as the "biggest challenge" and how that complicates collaboration with customers, but it seems that it also affects giving feedback on the product or prototypes. The level of English skills affects doing business, and the wide variety of languages used in these countries affects the culture and therefore also user understanding:

> *"... Africa is culturally very fragmented, there are hundreds of languages in use, and there are several main languages. In many countries, 20-25% of people speak that official language, others do not.... In other words, it leads to the fact that there are indeed many realities."*

Differences in work and business culture affect hiring and business collaborations. Business is done with people you know so you need to reserve time to get to know your business partners on a deeper level than in Finland. Moreover, at least three interviewees mentioned that time is a more relative concept in Africa:

> *"The fact that everything happens very slowly. Usually, nothing happens if you are not there personally and there is a separate saying, "Africa time", which means that things are done at some point when they are done"*

Some interviewees clearly had a more negative attitude towards cultural differences and saw the cultural differences mainly as a challenge. At the same time one interviewee's attitude was far more positive:

> *"Those cultural differences aren't so big that you should be scared or excited somehow. And in my opinion, you don't even need to be particularly prepared as long as you are aware and careful. The basic and really important thing is to be polite [...]"*

Based on the results culture is a very broad concept and it's evident that there are clear cultural differences between Finland and East African countries. This can affect both doing business and product development. Differences in the culture can make understanding the user and the market harder but at the same time, it can be difficult to specify and understand how these differences actually should be taken into account.

4.2.1.2 Jurisdiction

Three subcategories related to jurisdictional themes were brought up in the interviews: **regulations**; **authorities**; and **corruption**. All in all, this theme was mentioned 17 times by 7

of the 8 interviewees, 3 times as the biggest challenge and 6 times as a challenge. These mentions and the number of the mentions are presented in the Table 4.

Table 4 Jurisdiction and mention amounts.

	Challenge	Number of mentions
Regulatory	**Biggest challenge**	**2**
	Regulatory challenges	2
	Challenges	**3**
	Employment	1
	Setting up a company	1
	General mention	1
	Other mentions	**4**
	Contract practice	2
	Employment legislation and different practices	1
	General mention	1
Authorities	**Biggest challenge**	**1**
	Lack of support from the local government	1
	Challenges	**2**
	Collaboration with the local state	1
	Collaboration with the local banks (slowness)	1
	Other mentions	**2**
	Courts function differently than in Finland	2
Corruption	**Challenges**	**1**
	Detecting corruption	1
	Other mentions	**2**
	Mentions of existence of corruption	2
	Total number of mentions	**17**

Regulations were mentioned by six of the interviewees coming from all three companies and it was the subcategory with most challenges and other mentions. Two interviewees mentioned the legal side as the biggest challenge:

> *"There's for sure huge issues with, let's say, dealing as an international company in those jurisdictions [...] company registration, taxes, or even getting, for example, an e-visa to Kenya is a nightmare. So that is part of the challenge there that some things simply don't work."*

On the other hand, another said that regulatory challenges aren't only an Africa specific problem since their industry is poorly regulated globally. According to the interviewees, also hiring and setting up a local office in an African country is challenging and time-consuming. The one interviewee just generally concluded that *"the juristic or policy side is also challenging."*

Other mentions of regulatory matters include both positive and negative comments. Two interviewees from the same company who both had some prior legal experience described differences in contract practices but concluded that it's not particularly unusual. On the other hand, an interviewee from a different company was rather negative. The interviewee shared an example of an extreme employment legislation case of an employee steeling from a company. Even though the case wasn't related to their company the comment reflected potential mistrust regarding the local system and employees.

In addition to **regulations** being challenging, time-consuming and different, the collaboration with **authorities**, such as state and banks, also caused issues. Nonetheless, authorities were mentioned only by three interviewees, five times in total. As the biggest challenge, one interviewee said that lack of support from local government has been a surprise for them. They had assumed, coming from Finland, that "*the local government, would be gracious for innovative solutions that help their people",* but they had been left alone. The same issue was mentioned also by another interviewee:

> *"Cooperation with the state in these contexts is very challenging, and there is also one angle that most Finns get wrong. So, when we go to those countries, usually with the support of the Ministry of Foreign Affairs or someone else [...] the problem is that the states are usually the wrong starting point for collaboration."*

Two participants also highlighted that courts function differently than in Finland which in turn affects how regulations will be followed. **Corruption** was brought up by only two of the interviewees despite the common stereotypes of Africa and corruption. Even though it's known that corruption might exist, detecting it is not always easy because you don't know how it looks like.

All of this paint a picture of East Africa as a place where both regulations and authorities function differently than in Finland. This can make legal matters concerning startups, such as employment and company registration, and collaboration with local officials challenging and time-consuming. Detecting these differences and corruption can be difficult.

4.2.1.3 Technology

Technology was mentioned only once as the biggest challenge and three times as a challenge (Table 5). Interestingly, traditional infrastructure, such as buildings, was mentioned only once. On the other hand, **technical infrastructure** was mentioned multiple times, especially the technical differences between Finland and the target market. Therefore, this section focuses on the tangible side of the technology: technical differences and the intangible side: **technical skills of people**, especially the customers.

Six of the interviewees mentioned technical differences or skills during the interviews. Four of the interviewees mentioned it as a challenge. If we look closer at the technical differences (Table 5), it was mentioned only once as a challenge just like in the biggest challenges section. One interviewee named **technical differences** as the biggest challenge for their product even though this person wasn't working on the technical side:

> *"Well, of course, one thing is that how the product works there and, for example, what kind of phones do people have since not everyone has similar kinds of phones as we have here [...] And we are thinking that how could we make this thing work since our product basically requires a smartphone [...]."*

Telephone lines and internet connections are less robust which causes challenges, especially when collaborating with locals over Skype, for example. This was also mentioned once in the other mentions section. Many of the other mentions refer topics that must be taken into account in product development such as different phone models and lack of credit cards. Subscription models and weaker connections impact how and when phones are used and it's also common that people share phones. These mentions were all neutral but could possibly

cause challenges if not taken into account at the product development stage. Despite older technical infrastructure three interviewees described how some African countries were very advanced in mobile telephony, for example, mobile payments are far more advanced and more widely used than in Finland.

Table 5 Technical differences & skills and mention amounts.

	Challenge	Number of mentions
Technical differences	**Biggest challenge**	**1**
	Different phone models	1
	Challenges	**1**
	Weak connections	1
	Other mentions	**11**
	Africa is advanced on the mobile side	3
	Different phones and/or data subscription models	3
	Lack of credit cards	2
	Weak connections	1
	Africa has very little technology development of its own	1
	Phones are shared	1
Technical skills	**Challenges**	**2**
	B2B customers' technology know how and resourcing is thin	1
	Local talent lacks experience in building products	1
	Other mentions	**4**
	End users technology know how is thin	2
	B2B customers have challenges adopting new techologies	1
	People don't read maps	1
	Total number of mentions	**19**

The technical skills were mentioned only six times compared to the 12 mentions of technical differences. Differences in technical skills had caused challenges for both interviewees their customers. One interviewee mentioned their B2B customers' thin technology know-how and limited resources as a challenge, similar to another interviewee from the same company in the biggest challenges section. Technical skills of locals don't only affect the usage of products but also can make hiring locals more challenging as one interviewee stated:

> *"So, it is difficult for you to find a team that has such a global experience... The understanding that comes through experience of developing products, services, and concepts doesn't exist [there] because they have never been made there [...]. There are really good coders in [African country], but there are fewer people who have made big data models and big architectures."*

All the other mentions on how the lack of or differences in technical skills have caused challenges for users, customers or other companies can be partly influenced by the differences in regional IT history:

> *"Our own service is quite complex and it's not really surprising that it can be challenging for the end-user at times [...] In Finland, we are somehow used to developing a service, and customers know how to use it and they will. There is so much previous history from the IT world that they just learn it, but for that end-user in [African country] this may be the first more technical service they have used…"*

An interesting notion was that people are not used to processing visual information in the same form as in Finland. For instance, people are not as used to reading maps that affect how services like Uber are used in Africa. All in all, most of the challenges and mentions related to technology were caused by differences in technical know-how of customers (4 mentions out of 6) and variations in used technology, such as older phone models or the different payment methods (7 mentions out of 11).

4.2.1.4 Economy

The third category, **economy**, was pinpointed by six interviewees with 10 mentions (Table 6). Only one of them stated it as the biggest challenge. Their market has been growing a lot slower than they expected.

Table 6 Economy and mention amounts.

Challenge	Number of mentions
Biggest challenge	**1**
The slow speed of market growth	1
Challenges	**2**
Customers' lack of money or willingness to pay	1
Difficult to do profitable business	1
Other mentions	**7**
Informal economy	3
Lack of money or willingness to pay	2
Need for dynamic business model	1
General mention	1
Total number of mentions	**10**

One interviewee stated that doing profitable business in Africa is still hard:

> "*We operate in an extremely complex context where it is still extremely difficult to do profitable business. It's just a fact."*

The reason for this could be the customer's lack of money or willingness to pay which was mentioned both as a challenge and as another mention:

> *"Partly the reason, of course, is that people have so little money to spend and are very sparing. But people have also got used to the fact that everything on the internet is free."*

The opportunity and market need are big, but differences in the economy don't only affect the profitability or customers willing to pay but also the business model and even product architecture:

> *"[business model] can be dynamic too depending on the context… It's a big risk out there that you make the model be too monolith type. You expect everything to work the same way everywhere. And then you won't be able to flexibly change the payment channels or the pricing logic or anything else, because it's very sensitive to that local context again."*

Despite the big market needs, the differences in local economy, such as people's ability to pay and the significant role of the informal economy, affect the startups' business and their target audience. This, in turn, affects the profitability and therefore the resources of the startup.

4.2.2 Resources

The second biggest challenge category after context was **resources**, including both human and financial aspects (Figure 8). Human resources were mentioned one time more than the financial resources as the biggest challenge, but multiple times more as other mentions. In this section, the Finnish team, local team and external professional help will all be discussed, in addition to expenses and investors.

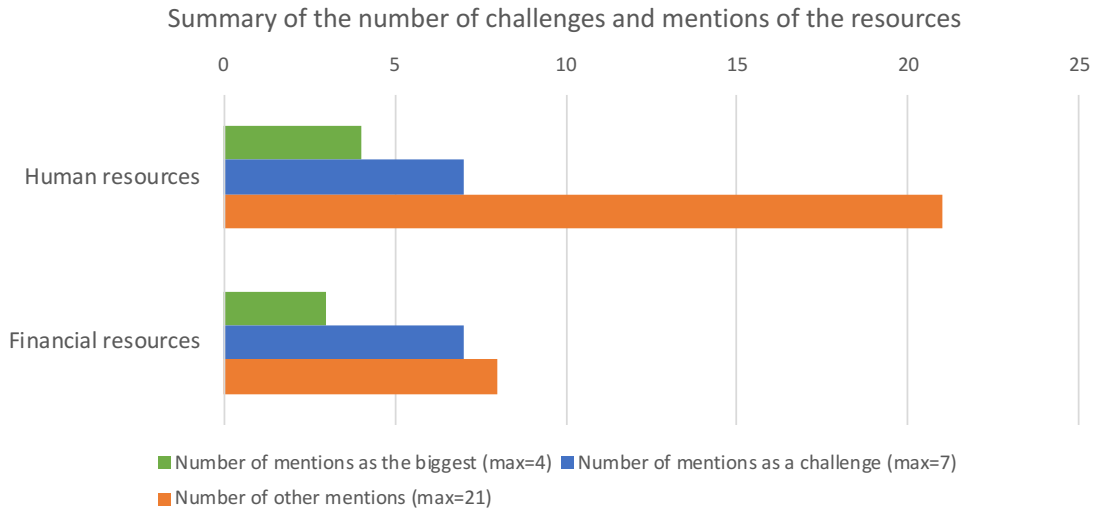

Figure 8 Summary of the number of challenges and mentions of the resources.

4.2.2.1 Human resources

Human resources were mentioned 32 times in total (Table 7). These mentions can be further grouped to Finnish and local HR. Local HR in this context refers to the talent and employment matters that take place in Africa. The Finnish HR refers to the team that is based outside of Africa, regardless of whether they are Finnish or not. Human resources were mentioned by all the interviewees which also highlights the importance of the topic.

Finnish HR was mentioned twice as the biggest challenge. Two interviewees described the lack of market experience, either their own or the team's, as their biggest challenge. One of the two interviewees had never visited their target market which makes participation harder, especially in the product development process. The second interviewee described how the lack of market experience of the product development team creates challenges when the reality of the market and customers' skills is not fully understood. Lack of team members' general Africa experience was mentioned twice as other challenges.

Otherwise, the Finnish team was mentioned only 7 times, and these were about describing information-sharing among the company, explaining roles or educational backgrounds. This suggests that the Finnish team was not seen as a big challenge except for their lack of market experience which affects their holistic understanding and product development capabilities.

Table 7 Human resources and mention amounts.

	Challenge	Number of mentions
Finnish HR	**Biggest challenge**	**2**
	Tean members lack market experience	2
	Challenges	**2**
	Team members lack market experience	2
	Other mentions	**7**
	Information sharing	4
	Explaining roles	2
	Educational background	1
Local HR	**Biggest challenge**	**2**
	Interaction of local and global team	1
	Hiring locals	1
	Challenges	**5**
	Local talent	**4**
	Challenges with local employees or talent	4
	Employment	**1**
	Employment is difficult	1
	Other mentions	**14**
	Local talent	**7**
	Positive mentions	5
	Lack of business understanding	1
	Lack of presence without a local person	1
	Local team	**5**
	Mentions of having local team members	2
	Local team member would help	1
	Context mismatch of local team members	1
	Local team members are an advantage	1
	Employment	**2**
	Mentions of hiring and employment	2
	Total amount of mentions	**32**

The local HR was mentioned more frequently and also twice as the biggest challenge. Hiring locals was mentioned once as the biggest challenge, but the interviewee didn't elaborate on the topic. Also having a team on two continents brings up its own big challenges:

> *"Then there is the next step which is the local vs the global team and getting it to work together. The constant interaction, getting to know each other, and working side by side. Otherwise, it will be difficult if they never see each other and don't understand the context."*

In addition, to the two biggest challenges, local HR was mentioned five times as a challenge. Two interviewees had had some bad experiences with local talent and employees which affected their perceived challenges. Employment regulations had caused challenges for one interviewee. Another found that lack of global experience of local talent as a challenge since their history of developing mobile products is shorter. Also, different skill levels were mentioned as a challenge impacted by the different regulatory environment:

> *"Also, there's huge lack of business understanding in many people, like just an example of non-competes and non-disclosure agreements and so on because there's no real consequence if you breach those. So, you kind of just need to adapt to this kind of market."*

On the other hand, the same person talked very highly about the local talent and was even positively surprised. This was supported by four other interviewees:

"I am reasonably positively surprised by the generation of young technology entrepreneurs out there in Africa so far […] you can see that they are like, working very dynamically, working long hours and thinking in a modern way and being ambitious. So it's not like what is the usual belief of Africa generally that things happen very slowly and calmly, maybe bit sluggish. I don't think that is the case at all."

One interviewee described that recruiting was at the same time very laborious but also very easy because there are so many really talented people. Even though there can be challenges with hiring locals, they concluded that local team members are an advantage and would help. It still needs to be kept in mind that due to the heterogeneity and vast income gaps of the population, being local doesn't mean you can understand people from other social classes or backgrounds without proper research:

"...being local doesn't mean that you understand the context which is a little inconsistent with what I said before. You absolutely need the local perspective in thinking and doing, but at the same time, you have to remember that the human psyche works in such a way that when you get away from something… People forget their past."

Challenges with local talent were also influenced by differences in the work culture, context, and history. Despite these interviewees' attitudes towards local talent varied from very positive to even rather negative which could have affected the willingness to adapt to the new environment.

4.2.2.2 Financial resources

Financial resources were mentioned by six interviewees, 18 times in total. The mentions can be further divided into mentions related to **expenses** and **investors** as presented in the Table 8 below. Expenses were mentioned as the biggest challenge by three interviewees. Two of them referred to the expenses due to geographical distance as a challenge, which in turn affects the ability to be present in the market:

"I mean one challenge is the distance, so it takes extra effort to meet customers. I should be more there, I should be more present and meet more customers face to face. I just can't afford traveling."

The third interviewee mentioned the costs related to hiring a multidisciplinary team as one of the biggest challenges for them:

"... you need a multidisciplinary team that really has the talent from different fields and through that speeds up the overall process from the perspective of product development… Of course, it's really challenging for a startup. It's really hard for you to build a coder team, service designers, psychologists, anthropologists, data analysts, and so on with a small cost structure, it's a pretty big challenge. You don't succeed easily."

Other mentions of expenses mostly described the limited resources of a startup and how that affects hiring, user research, and software development. Entering emerging markets may require more resources due to the geographical distance but also because the learning takes more time:

"...one of the typical ways of how startups work is that they kind of start on a shoestring budget. It takes a little more investment to get into a foreign market because you really need to study it."

Table 8 Financial resources and mention amounts.

	Challenge	Number of mentions
Expenses	**Biggest challenge**	**3**
	Expenses due to distance	2
	Expenses of a multidisciplinary team	1
	Other mentions	**6**
	Entering emerging markets requires more time and resources	1
	You can't train users with small budget	1
	Mentions of small resources	4
Investors	**Challenges**	**7**
	It's challenging to get funding	3
	Investors do not understand Africa	2
	Investors are not interested in Africa	1
	Finnish companies are too Finnish for impact investors	1
	Other mentions	**2**
	Need to convince investors that this is a good agenda	1
	Investors do not understand Africa	1
	Total number of mentions	**18**

Investor money is an important source of funding for startups but at least three interviewees described getting investments being a challenge due to the target market. This is influenced by investors' lack of Africa knowledge and interest:

"But then again, investors do not know Africa and when people have no idea about Africa or it is even wrong, then it is terribly difficult to sell to an investor […] It is a challenge for all startup entrepreneurs in Africa today that the market has a lot potential and is very promising, but investors are not aware of it."

There are impact investors, but Finnish-only companies are not on their focus group:

"Then there are these impact investors, for whom Finnish companies are far too Finnish. [...] So that's why it's best to find that local person as early as possible, take him on the management team, put local people on the Board and set up a local profit center or research unit there. Then you really have the foot on two continents."

Even though early-stage funding is lacking, successful examples can help to change this in the future.

4.2.3 Holistic understanding

Next, we delve deeper into a broader topic: **holistic understanding** which includes **user needs**, **market needs** and **understanding** of both, in addition to **contextual understanding**. Moreover, **heterogeneity** of the market and **false assumptions** are included since they are closely related to the holistic understanding. As we can see from the Figure 9 below the number of mentioned challenges varied between 1-3 but the range of the other mentions was

a lot higher. Since contextual understanding isn't part of the vocabulary of most of the interviewees, we first take a look at the user and market understanding, and finally contextual understanding.

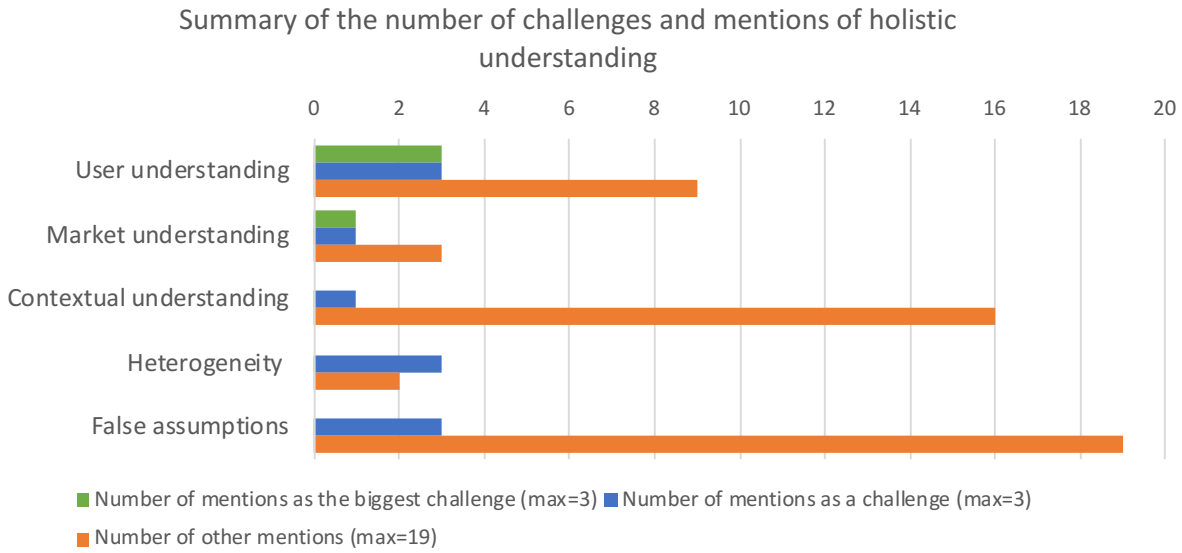

Figure 9 Summary of amount of mentions of the holistic understanding.

4.2.3.1 User and market needs and understanding

User and market needs and understanding were mentioned by seven interviewees, 20 times in total. Understanding the users and the market are topics known by all product developers. Only the challenges and mentions that are explicitly about user/market needs or understanding are discussed in this section. More vague mentions are grouped under the broader contextual understanding category that will be discussed in the next subchapter.

Two people mentioned the diversity of user needs as a challenge:

> *"...how do you build a service that takes into account the needs of this highly fragmented user base and their needs. Where can you find the core that is common to all, but then there is something that is personalized for everyone..."*

The same interviewee discusses user understanding and brings up context mismatch:

> *"...maybe the biggest thing comes from the context mismatch, meaning how to really understand that kind of consumers and users or customers you don't really understand, and you can't claim to understand them. So how to produce service to them in a way that it works and brings concrete added value to them."*

In the **other mentions**, three interviewees from the same company stated that it's still unverified if their solution fit the end-user needs. This matches with the "biggest challenges" well. This company had just on boarded the first end-users. On the other hand, one of these three interviewees said that understanding customer needs is easy, even though they hadn't verified them still. It was also said that competitors don't necessarily understand user needs either, even corporations, so copying strategies is not wise. One interviewee stated that your hunch can go wrong so you shouldn't rely on your own assumptions about users.

Table 9 User needs and understanding and mention amounts.

	Challenge	Number of mentions
Users	**Biggest challenge**	**3**
	User needs and validation	3
	Challenges	**3**
	User needs	**2**
	Highly fragmented user needs	2
	User understanding	**1**
	Understanding users you can't understand	1
	Other mentions	**9**
	User needs	**6**
	Unverified if fitting customer needs	3
	Competitors might not understand the user needs either	1
	Easy to understand customer needs	1
	General mention	1
	User understanding	**3**
	Understanding the users drivers and thinking	1
	Your hunch goes wrong	1
	Not possible for a startup to do the user understanding phase in the beginning	1
Market	**Biggest challenge**	**1**
	Market understanding	1
	Direct challenge	**1**
	Market understanding	**1**
	Understanding the market is always a struggle	1
	Other mentions	**3**
	Market needs	**2**
	Solution seems to fit market needs	1
	Big market need in Africa	1
	Market understanding	**1**
	Own challenges benefit the market and customer understanding	1
	Total number of mentions	**20**

These mentions of **user needs** and **user understanding** start to reflect the complexity of the user base and challenges in understanding them. Limited resources of the early stage startups might also limit their ability to conduct a proper user understanding study in the beginning as was described by one interviewee.

Market understanding was mentioned once as the biggest challenge. In addition to understanding the user needs higher-level market understanding is needed but building it on factual information can be a challenge:

> *"So understanding that this market has actually been the biggest challenge because the media in the West typically don't talk about the amazing things that actually do happen there."*

Market understanding was mentioned once as another challenge briefly: *"And this understanding of the market is in any case or for any company always a struggle".* Also, the other mentions were quite general and didn't reflect major challenges. This suggests that user understanding was perceived to be more challenging that understanding the bigger picture, the market.

4.2.3.2 Contextual understanding

While user understanding and market understanding are part of our basic vocabulary, **contextual understanding** is not. Only two interviewees from the same company used the

word: one interviewee mentioned context or contextual understanding 25 times and another one only once. The first one also introduced the term context-mismatch "*meaning how to really understand the kind of consumers and users or customers you don't really understand, and you can't claim to understand them".* The **contextual understanding** category gathers all the direct mentions of contextual understanding and also more general mentions of holistic understanding that didn't fit under user understanding or market understanding. **Contextual understanding** was mentioned only once as a challenge although there were 15 other mentions. It wasn't mentioned as biggest challenge at all. But still, when looking at Table 10 below many of the other mentions can be said to be challenging by nature.

Table 10 Contextual understanding and mention amounts.

	Challenge	Number of mentions
Contextual understanding	**Challenges**	**1**
	Team members lack contextual understanding	1
	Other mentions	**16**
	Context mismatch of locals	4
	Previous experience doesn't help	2
	Knowing the unknowns	2
	Finns fail in contextual understanding	1
	Solving the wrong problem	1
	Learning and examining the context takes time	1
	Not possible for a startup to do the context understanding phase in the beginning	1
	General examples and mentions	4
	Total number of mentions	**16**

Lack of contextual understanding of team members can be a major problem. This can affect sharing of experiences and findings from the market, as well as product development needs. Four interviewees brought up **contextual mismatch** of the locals influenced by the diversity of population already mentioned in the Local HR section. Though, one interviewee did say: *"Surely, [our B2B customers] have a good touch on what their end users need."*. This interviewee had never visited Africa which suggests that identifying or understanding the existence of a context mismatch can be hard if you haven't witnessed it yourself. If even locals have challenges with contextual understanding, surely also Finns do. One interviewee said how even experienced businesspeople from Finland have challenges operating in this market and another gave an example from his own background of how even time spent in the field doesn't help:

> *"So there are people who live in the same world, in the same paradigm, live a little similar life, they read the same type of news as you, the context is the same. But if your goal is to actually build a real service that serves vast mass, you don't understand anything about their lives, their world, and their thoughts, and even if you would have spent 15 years there like I have, I still don't understand."*

This lack of proper understanding can lead to issues like solving the wrong problem when you don't understand the big picture or the root causes of the challenges. Two interviewees described these unknowns:

"...to be honest the thing we know the best is that we don't know. There are so many layers to this that it's a little bit like that what we are doing is designing a drilling machine to get into this stuff. I'm not sure if we will hit the rock at some point".

It was also brought up that **contextual understanding** is something Finns often have challenges with:

"This is where Finns typically fail because Finns are way too arrogant and believe that we understand something and we don't really understand. And because we come from such a homogeneous context and then we approach this type of R&D as a too engineering-like exercise."

Although contextual understanding was mentioned only once as a challenge, based on the number of other mentions it's clear that understanding the context is a complicated issue that can potentially raise a wide variety of issues.

4.2.3.3 False assumptions

Lack of holistic understanding can lead to **false assumptions** and vice versa. Unvalidated assumptions can act as a barrier to holistic understanding. False assumptions were mentioned 21 times by 7 of the interviewees, but 0 times as the biggest challenge (Table 11). Interviewees mentioned 1-5 different false assumptions. Many of the false assumptions were double coded and belong to some other themes as well.

Table 11 False assumptions and mention amounts.

	Challenge	Number of mentions
False assumptions	**Challenges**	**3**
	False assumptions of customers technology resourcing	1
	False assumptions of team members who don't have market experience	1
	Market has been more difficult than expected	1
	Other mentions	**19**
	Example of own false assumption (market, people's skills, own skills, entrepreneurship, context mismatch of locals)	10
	Examples of usual false assumptions (bias, market numbers, contextual factors, saviour syndrome)	5
	Example of false assumptions in the West (stereotypes)	3
	Trips and feedback shape the false assumptions	1
	Total amount of mentions	**22**

False assumptions related to customers' thin technology resourcing and the challenge of team members who lack market experience have already been discussed. Both of these affect the product development process negatively. One interviewee concluded that the market has generally been more difficult than expected.

Participants gave examples of both their own false assumptions and also mentioned the usual false assumptions caused by Western stereotypes. Interviewees' own false assumptions were related to the market, locals and own skills. False expectations of the market were such that interviewees were positively surprised, and the dynamic market had exceeded expectations. Two people described how they discovered false assumptions about their own skills. One thought that having a long history through living in Africa would be enough, and the other was surprised by how hard being an entrepreneur is:

"...we were employees before at [corporation]. I was first on the technical side and business side, and I thought I know something about business, but being an entrepreneur is still a different thing

One interviewee gave multiple examples of the usual false assumptions that many Finns have when entering Africa. These were related to bias in the interpretation, market numbers, different contextual factors, and even savior syndrome was mentioned:

"Let's go to the market level quickly, so one of the key mistakes, going back to where I started meaning our bias. Finns usually make the mistake that once they visit an African city, Nairobi for example, and see the rising skyscrapers, LandRovers on the road and there is poverty and there is wealth, and it looks rather green and quite nice… You generate this kind of automatic linking in your head, "hey people here are just like me and there's a lot of them"

Some false assumptions might occur due to the image that the Western media promotes about Africa:

"...here in the West, we have this understanding that Africa is like children sitting with flies around them. Sure, there are flies but you should try to take a look at what happens around them instead. Which is where you realize it's full of fiber connections, mobile connections, 4G, people have smartphones, even iPhones"

4.2.4 Product development and user research

A new challenge category that emerged without mention as "biggest challenge", **product development and user research**. Even though user research can be seen as a part of the product development process, they have been divided for reasons of clarity. Though the topic was infrequently mentioned as a challenge, it was brought up often enough that it is worth discussing here (Figure 10).

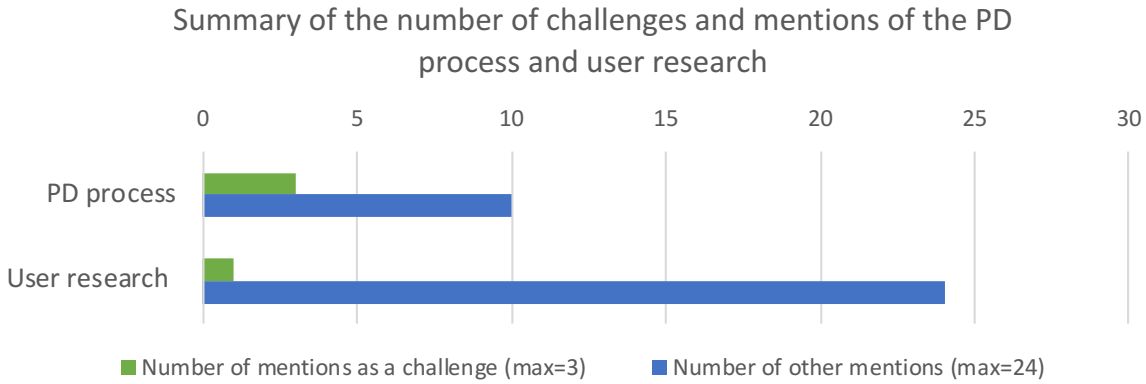

Figure 10 Summary of amount of mentions of the product development process and user research.

Product development process was mentioned three times as a challenge by three interviewees. These challenges were quite general PD challenges and can be issues regardless of market focus. An interviewee said that the agile approach is a constant struggle, especially the concept of a minimum viable product and not taking the prototype too far. Another talked about the balance between having enough processes but at the same avoiding all the too rigid

processes. The third interviewee faced struggle with resources and time requirements when developing new technology.

In other mentions an interviewee described how it can be hard in general to admit to oneself when the product or prototype doesn't work:

> *"...and the hardest part is maybe admitting to yourself that this doesn't work. That I have just been thinking wrongly. Because then you start to understand those communities a little and start to get attached to that market in a certain way. That energy is somehow attracting many people. People are really nice, really nice and terribly friendly, sincere and somehow it feels like we will still get this working somehow."*

Table 12 Product development process, user research and mention amounts.

	Challenge	Number of mentions
Product development process	**Challenges**	**3**
	Agile approach and MVP	1
	Finding balance in the processes	1
	Estimating the development time and resources	1
	Other mentions	**10**
	Describing PD methods and processes	8
	Admitting the prototype/product doesn't work	1
	Place for social scientist in PD world	1
User research	**Challenges**	**1**
	Can feel hard to go and talk to people	1
	Other mentions	**24**
	Collecting feedback	**2**
	Physical presence required when collecting feedback	1
	Hard to get honest feedback on prototypes	1
	Professionals	**2**
	Using professional user researchers	6
	Would be hard to find personas without professional help	1
	Acknowledging need for professional user researchers	1
	Analysis	**2**
	Bias in the interpretation and analysis	1
	Not trusting the user research	1
	Other mentions	**18**
	Describing the methods	14
	Acknowledging the importance of user research	4
	Total number of mentions	**38**

In addition to the challenges, the interviewees mostly describe their product development processes that will be discussed in more detail in the section 5.3.3.

User research was mentioned only once as a challenge. It can feel sometimes hard to go and talk to people, but that's what you need to do. Other mentions related to three themes: **collecting feedback**, **external professionals**, and **analysis**. When collecting feedback, physical presence is required which can be hard when the market is far away:

> *"Well, at some point we even tried to make calls from Finland. We hired a few local [African country] from Finland and they called our end users and tried to ask questions. It didn't work very well. Mostly they didn't even answer the phone at all and*

the information they got out from the calls was very little. So yes you need to be there physically and face-to-face when receiving feedback."

Also, getting honest feedback on prototypes can be difficult when people have a natural tendency to please. Two companies had used professional user researchers. This gave them the advantage of being able to tap into the professionals' networks. One interviewee emphasized the importance of experienced user researchers and how doing user research is a highly skilled competence in itself:

> *"Doing the user research is competence in itself and... for example, we did some user research that was lead by our [African] coder but he just doesn't understand the human psyche well enough so it really had no use at all. Sure, he got valuable feedback from there, but the same time could have been used for seeking a lot of deeper insights. This means that you have to have people working on things coming from the domain where they understand how the human mind works."*

Just like in product development, your own bias is present in the analysis and interpretation of user research results:

> *"But there is a lot of this kind of things, and it is especially related to validating and testing the design and inventing a process of how to get neutral and actually open feedback, how to carry it out. Because you always have that your own bias in the interpretation and you want to interpret it according to what you really want out of the thing, so you are neither neutral nor independent with your analysis. And that's a big deal."*

And if your own bias overrules the user research, it can lead to its own challenges:

> *"The basic problem with startups is actually that they believe in that vision so much that they don't believe in the facts that you produce yourself. You don't believe those numbers and you don't trust the user research, and then it fails. And you might continue the same grinding for years."*

The other mentions were mainly about describing the various user research methods. Even the methods were quite similar among the companies, there were differences especially on how much user research was emphasized. These will be discussed in section 5.3.3.

4.2.5 Summary

All in all, **context** was the biggest category of challenges faced with 10 mentions in total. On the other hand, if we look at all the subcategories emerging from the biggest challenges, they are quite evenly divided with 5-1 mentions (Figure 11). Also, 11 out of 16 individual challenges were mentioned only once. This suggests that even though most of the interviewees had challenges related to some aspect of the socio-technical system, their perceived challenges vary a lot.

As we can see from Figure 11 below, **context**, particularly differences in the context, was the biggest cause of "biggest challenge's" marked in green. **Context** had the most mentions of "other challenges" even the difference to **resources** was only one mentions. Therefore,

when summing up all the challenges, **context** was easily the biggest issue whereas **product development and user research** posed very few challenges to the interviewees.

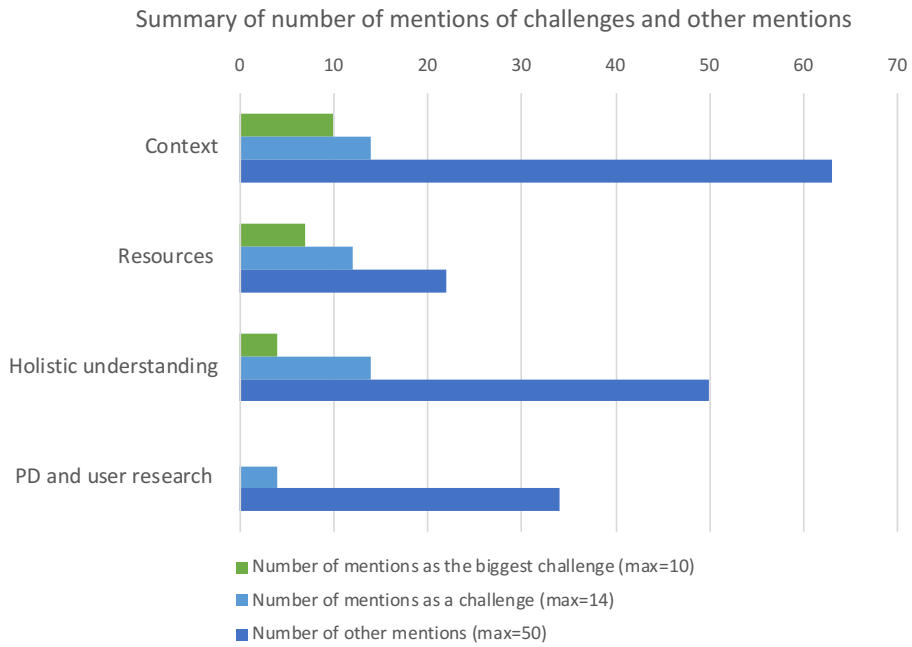

Figure 11 Summary of the number of mentions of challenges and other mentions.

When looking at subcategories, few themes emerge in particular. **Cultural** and **regulatory differences** caused most challenges related to the **context** which in turn affect hiring, business collaboration, and product development. Due to vast differences, **understanding user needs** and their validation was a challenge which is complicated by the highly fragmented user needs. In addition, **hiring locals** had caused challenges due to **cultural** and **regulatory** differences. The **difficulty of getting investments** especially due to investors' lack of interest and knowledge of Africa was the most frequently mentioned individual challenge. Challenge categories were highly interlinked and therefore many of the challenges were coded twice or even more. For example, cultural differences affect user understanding and work culture which in turn affects hiring locals and collaboration with them. The increased **diversity** intensifies cultural differences which in turn affect user needs and work culture at different levels.

4.3 Advice and lessons learned

In addition to challenges, interviewees also offered advice for other startups seeking to enter the same market and shared their lessons learned. In this section, we delve deeper into these matters in order to answer the RQ1: *What kind of lessons learned can be identified from the experiences of these startups?* and RQ2: *What kind of guidance do these key decision-makers offer other startups seeking to enter the same market?* Even though lessons learned often originate from experienced challenges, they were something the interviewees would do differently and therefore are closer to advice and therefore more comparable.

4.3.1 The interviewees' advice

All interviewees were asked a question: *What kind of advice you would give to any other Finnish startup entering the same market?* This gave the interviewees a chance to elaborate on their experiences and learnings and highlight key **advice**. All answers to these questions

have been counted as **advice**. In addition, all mentions of phrases such as "it's crucial to" or "you really need to do something" have been coded as advice. In total, 52 individual pieces of advice were identified.

What is of note is that most common category of advice given fell under the topic of **Resource Management** (Figure 12). **Context** was mentioned the least number of times even though it was the most common category in the challenges. In addition, a new topic, **presence and building relationships** emerged. These categories are discussed in the order of starting from the category with most mentions as advice.

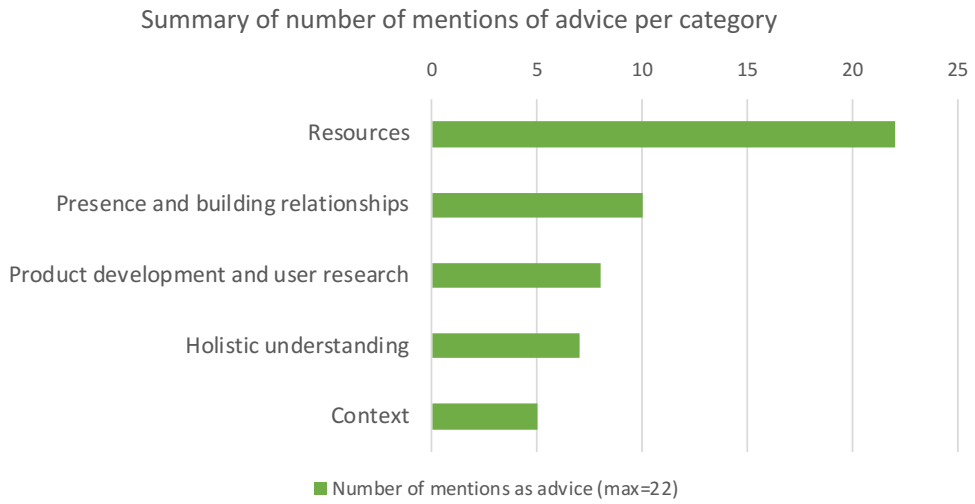

Figure 12 Summary of amount of advice per category.

4.3.1.1 Resources

Resources were by far the most common category of advice, specifically the Human Resources side. Seven interviewees gave advice related to resources, resulting in 22 varieties of advice in total (Table 13). These were related in particular to the local and global team but also the use of external professionals emerged for the first time.

Hiring locals was a common piece of advice and despite the HR challenges mentioned earlier in this thesis, working with locals can bring many advantages:

> *"And if you don't have a local person that understands the market and can be there all the time and build your story there then it's freaking hard. So if you can count, that you can travel every other month for a week or something, it's just not enough, it's just not enough for building a business and a market. You need to recognize it right away."*

Two interviewees emphasized the importance of hiring local team members as early as possible. Also, the importance of having locals as part of the core or founding team in management and product development, was highlighted:

> *"So that's why it's best to find that local person as early as possible, take him on the management team, take local people to the Board and set up a local profit center or research unit there. That you really have the foot on two continents."*

Table 13 Advice related to resources and mention amounts.

Advice	Number of mentions
Human resources	**21**
Local team	**6**
Hire locals	4
Have locals in the management and a local profit unit	1
Have local product development	1
Team in general	**6**
Multidisciplinarity	2
Hire lacking knowledge	1
Have someone in the founding team with user research interest	1
Crosspollination of the team members	1
Culture of discussion	1
Professionals	**9**
Use local professionals or partners	4
Use professional user researchers	2
It's fine to pay people	1
Get a good lawyer	1
Use middleman with authorities	1
Monetary resources	**1**
Have patient investors	1
Total number of mentions	**22**

In addition to the local knowledge, one interviewee stressed multidisciplinarity in the team, to benefit and speed up the product development:

> *"And in addition, the next step that you need the multidisciplinary team that really has the talent from different fields and that speeds up the overall process from the perspective of product development. This kind of multidisciplinary team is a big thing in that. Of course, it's really challenging for a startup. It's really hard for you to build a coder team, service designers, psychologists, anthropologists, data analysts, and so on with a small cost structure"*

The interviewee also brought up the cross-pollination of the distributed team and how it's crucial that they are able to visit each other. They also emphasized the need for user research interest in the founding team:

> *"And it also requires leaders to have the breadth and a real interest in their users and customers, otherwise it becomes impossible. It's not enough that you only have a few people in the team who are empathetic to the users. That empathy doesn't mean sobbing. Understanding is the essence. That's probably the big thing there."*

According to the interviewee, it's not enough to have only junior employees with user research interest because otherwise the founders are not still going to stress it in the decision making. In addition, an open communications culture is important where everyone gets heard equally despite the disciplines. Utilizing external professionals was a new resource related aspect emerging from this part of the interviews. Trustworthy local partners and other professionals can be utilized for user research, hiring, accounting or legal matters and their

established local network and knowledge can provide benefits. One interviewee emphasized using highly skilled user researchers who understand how the human mind works:

> *"So you can't do anything in that context unless you have really top-notch anthropologists and psychologists involved."*

Even though you would have some user research knowledge in the team the interviewee had found that using outside professionals worked better when doing larger research, internal people may be better off for small tests and iterations. Although expenses were mentioned three times as the biggest challenge, there was only one piece of advice related to financial resources: **to have patient investors.**

4.3.1.2 Presence and building relationships

A new category **presence** and **building relationships** emerged from the analysis which was mentioned ten times by seven of the interviewees (Table 14). It was the second largest category under advice. **Presence** in the local market is crucial both for business and for building understanding of the market:

> *"It's a good idea to be there because if you are not there then it is quite difficult for you to run a business in Africa from Helsinki if you do not understand what is going on there."*

Table 14 Advice related to the presence and building relationships and mention amounts.

Advice	Number of mentions
Presence	**3**
Be present	2
Perseverance attitude needed	1
Building relationships	**7**
Being equal partners	2
Engage people online	1
Keep continously contact	1
Network both with Finnish and local companies	1
Respect the customer	1
Building common background	1
Total number of mentions	**10**

One interviewee said that living in the market would be even better. Also, perseverance is needed due to the distance:

> *"Well, I would say that you need to have perseverance, and have the attitude that in a couple of years you can say that you have been to Africa twenty or thirty times. And none of these markets that I have visited have ever opened with one or two visits, they have required quite a few visits."*

Building relationships can be an important part of user research, customer acquisition, and collaboration with partners. Two interviewees described that it's crucial to be equal partners with the people you meet:

*"And already Kierkekaard has stated about helping that if you drift into a situation where there is a helper and there is one receiving help, actual helping cannot really happen. Y**ou have to be able to be on the same level.**"*

Due to physical distance, **relationship building and networking** can't always happen face-to-face but online platforms such as Twitter or other social media can be utilized. At the same time, it's important to keep in contact with the network even when not physically present. It can be also valuable to discuss with other Finnish companies in the market and utilize their knowledge:

"After all, it makes it easier when you can talk to them and bounce some ideas with them and ask for tips and more. So maybe the networking both with the Finnish companies there and with those who know the local market anyway. That's definitely one key thing."

There are also some cultural differences related to relationship building that need to be taken into account:

"You must have more time…In Kenya, you can get to the point immediately. In Tanzania, you get to the point maybe in the third meeting. You just have to be prepared for that, it's different, confidence is built by chatting and building that common background. You know things about each other's families and you sit down together for a few evenings and so on. You have to adapt to it. All you have to do is to allocate time for it that things happen more slowly. And then if you want to do business then you need even more."

All in all, presence on the market enables learning about the market and the users. That is also crucial for building relationships and mutual trust with both the users and partners. Even though **presence** and **relationship building** take extra effort due to distance and cultural differences, it still starts from basic courtesy and respect.

4.3.1.3 Product development and user research

Advice related to the **product development process and user research** was also given. Similar to the holistic understanding, product development and user research advice was also mentioned eight times (Table 15).

Product development advice related to **iterative processes** such as Agile, which can offer benefits in a new operating environment or context. One interviewee described the role of feedback and testing in product development:

"You must bring that insight collection and testing, tightly into that product development process. So thinking about [...] what feedback you need to collect and from whom and when, and what is their role in this process."

The concept of MVP was mentioned as a challenge earlier for which another interviewee gave the following advice:

"Well, first of all, the basic wisdom is that you shouldn't postpone piloting. No need to worry about having only a proto or it being "too" proto. Then smaller and more controlled pilots are made."

Table 15 Advice related to product development and user research and mention amounts.

Advice	Number of mentions
Product development process	**3**
Don't postpone piloting	1
Prefer iterative model	1
Insight collection and testing tightly connected to PD process	1
User research	**5**
Hiring locals and visiting	1
Large user communities and professional researchers	1
Be ready to dig information	1
Be ready for big pivots and trust the user research	1
Segmentation and demographics	1
Total number of mentions	**8**

Good methods for user research in addition to hiring professional user researchers, hiring locals, visiting the market, using large user communities, careful segmentation, and large demographics were mentioned resembling advice given in the previous section. Gathering information also takes times and you need to be able to interpret the results for which professional knowledge may be required:

"Then you have to bother to dig that information because people are terribly polite and kind. And unlike Finns, they don't want to offend [...] So you need to make those interviews and pilots terribly carefully, and then there are a lot of topics people don't want to answer for discreet reasons, which are about expenses and, of course, people are reluctant to tell about their lives if they are unemployed and have low income and challenges. It's completely understandable."

Trusting the results of user research can be hard if they are not favorable to your product or initial idea but startups need to be ready for pivots despite their love for the original vision:

"As fast as possible, some sort of proto or pilot. It can be a really light thingie, but you can get the right feedback. Then you're ready to do those pivots when your own study shows that this thing doesn't work. But you also must understand very well why it doesn't work, so if the sample size is too small, there are too few interviewees then the results aren't reliable. You really need to work hard on that research phase and be ready to resource it. But if you have a real engineering-driven boutique, you are usually not ready to resource it."

The advice and the methods mentioned are part of the basic product development processes and formal user research methods and they are useful in product development despite the foreign location. But the challenges and advice could suggest that the role of testing and proper user research is even more crucial when entering the East African market.

4.3.1.4 Holistic understanding

Advice related to holistic understanding was mentioned seven times by five of the interviewees (Table 16). Three people suggested studying the market properly in order to understand the market and users:

> *Of course, the general advice is, and that's common sense, you have to understand your market, your customers and then fill that customer need with a solution they are willing to pay for.*

Table 16 Advice related to holistic understanding and mention amounts.

Advice	Number of mentions
Market and user understanding	**3**
Undestand the market and fill the customer need	1
Research the market	1
Use enough time to realise the problem you are solving	1
Attitude	**3**
Go there as a business not as a charity	1
Focus on the opportunity	1
Go there with an idea that it's different and adapt	1
Heterogeneity	**1**
You need to understand the diversity	1
Total number of mentions	**7**

In addition, **one needs to be sure that the problem being solved is the correct problem.** According to one interviewee researching the market is something *"you can't have your secretary to do"* but it requires a passion for the market and the problem. A high-level market understanding is not enough:

> *"You need to understand the diversity of the people and the needs and others extensively. So it requires that you understand its language and cultural background and you have to think of every business model and that can be dynamic too depending on the context."*

This same attitude was also emphasized by three others. What easily can happen to people coming from a developed country is the natural tendency to focus on solving all the problems, eg. saviour syndrome:

> *"Overall, perhaps the most important observation is and I have told this to everyone, that you can't focus on the problems [...] You need to use the things that connect you. And instead of focusing on those problems, you should try to focus on those opportunities. This sounds like an awful cliché. But the opportunities and the resources available determine whether or not that innovation will ever become anything and can it scale."*

Another interviewee emphasized essentially the same savior syndrome:

> *"I think it basically comes down to, don't try to go in there for savior go there for cold-hearted business. Because if it's a good business it might also mean that you*

are actually really impacting in a way. So focus on the business, it's still enough to change things."

Also, going into new markets requires a flexible attitude since you need to adapt to the differences. This advice emphasizes user and market understanding and the importance of researching the market properly. This is in line with the challenges related to the user, market and context understanding, even though context wasn't explicitly mentioned in the advice. Also, the importance of one's attitude was brought up for the first time by the interviewees.

4.3.1.5 Context

Four interviewees gave advice related to **contextual** topics: **authorities**, **regulatory**, and **economy** (Table 17). Interestingly, **technology** and **culture** weren't mentioned even though culture was the challenge with most references as the biggest challenge. Context was the biggest category under the biggest challenges, so compared to that the number of mentions is very low this time.

Table 17 Advice related to context and mention amounts.

Advice	Number of mentions
Jurisdiction	**4**
Authorities	**2**
Keep distance to authorities	1
Have common goals with public entities	1
Regulatory	**2**
Be careful if establishing a company is the best option	2
Economy	**1**
Consider the right subscription price	1
Total number of mentions	**5**

One interviewee discussed the complicated collaboration with authorities. His advice was to keep your distance unless you really need something from them:

"These regulators and others are the kinds of actors that you have to deal with, but quite often it makes sense to keep some distance so don't get too close. Only when you have the mass and the ability to have that conversation with them then you can do it. [...] That benefit is quite small, but of course, if you have some bigger regulatory stuff you need from them, then it's another matter. Then you need to do it, and then in most cases, you might want to use some middleman in between."

If you need to collaborate with authorities then having common goals that benefit both of the parties was recommended. Also, establishing a presence can be a time-consuming challenge and therefore two interviewees recommend to carefully consider the benefits despite the advice of Finnish officials to incorporate locally:

"Perhaps one advice is that if someone wants to go to [African country] and set up their own company or affiliate there, then it's worth spending a lot of time and money to make sure it's done right. That it is really challenging and time-consuming."

We know people's capability or willingness to pay for services can vary so, the subscription price and model need to be considered carefully, and most Western price ranges are too high. The advice was balanced between the **jurisdictional** and **economical** challenges identified earlier but **overlooked the cultural side completely**.

4.3.2 Lessons learned

In addition to challenges and advice for other startups, interviewees also described **lessons learned**. Lessons learned include mentioned learnings, mistakes and changes in action that followed phrases such as "we have realized", "I made the mistake" and "one of the key things I have learned". The lessons learned responded to the following two questions: *Is there something you would do differently if you were learning about the market for the first time now? Would you say the methods you have discussed above have been effective or is there something you would change?*

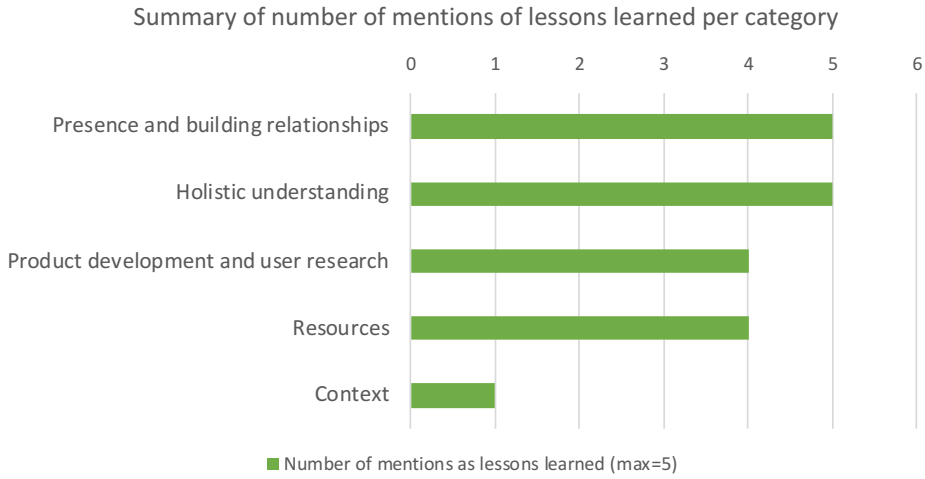

Figure 13 Summary of mentions amounts of lessons learned per category

All interviewees mentioned between 1 to 4 lessons learned with three being the most common number of lessons learned. Twenty-one lessons learned were mentioned in total from all the categories (Figure 13). **Holistic understanding**, **presence** and **building relationships** were the most common categories with 5 mentions each and context was the least common category with only one mention (Table 18).

Despite context being the cause of most of the challenges the only lessons learned were related to language and understanding barriers when you are interacting with the user coming from a very different background with differences in education for instance. Resources, particularly the HR side, were mentioned four times. One interviewee described how employment in Africa was a learning experience. The other participant described how the employees who lack African experience learn:

> *"By learning from mistakes. The organization learns when you notice that it didn't work that way. It's one harsh method really."*

Using external help, though a popular advice, should still be thoughtfully used:

> *"...perhaps it would be worthwhile to think carefully that what you need and at what stage. So that you don't use this kind of external help too early or too late. But of*

course, one could say that maybe we were too early for the market in 2016, but the information we gathered at that time is useful at the moment, so it didn't go to waste either."

Table 18 Lessons learned and mention amounts.

Lessons learned	Number of mentions
Holistic understanding	**5**
Understanding the big picture correctly	2
More systematic mapping of the needs in the beginning	1
Engineer oriented thinking	1
Companies don't necessarily know their customers	1
Presence and building relationships	**5**
Visiting more often and or/ for longer times	3
You need to go there and talk to people	1
We are in wrong country	1
Resources	**4**
Team members without Africa experience learn from the mistakes	1
Emloyment was a learning curve	1
Think carefully what you need and what stage	1
Use local professional to handle bureucracy	1
Product development and user research	**4**
Lighter first proto	1
Lack of customer focus in the beginning	1
Feedback collection needs to happen face to face	1
Own bias in the interpretations	1
Context	**1**
Language and understanding barriers	1
General mentions of mistakes and learnings	**2**
Total number of mentions	**21**

Looking back, one of the startups would use local help to handle all the bureaucracy since it would have saved a lot of time and resources from the beginning. Lack of holistic understanding had caused various challenges and therefore also multiple learnings. Two interviewees described how they had failed in understanding the big picture properly which can lead to solving the wrong problem or targeting the wrong market segment:

"So in a way, this is coming to the size of the market, to understanding the demographics, who is the target audience, how do I do it for them, how to maximize it, is it enough for me as a business, and I made the same mistake myself many times."

One interviewee described how it would have paid off to map the customer needs more systematically in the beginning and stick persistently to it. Engineering oriented systems thinking can also lead to making false assumptions of customer needs:

"So, the idea of having this kind of [...] platform very easily leads to, which happened to us as well, leads to having this kind of engineering-oriented systems thinking kind of thinking, that a person needs this kind of thing and now we need to provide him with this kind of thing. So that's how it goes 100% wrong."

There were also things interviewees would change in their product development or user research processes. As was mentioned in the challenges section, MVP can be a challenge:

"Now if I would start again the first proto would be a hell of a lot lighter. We did it too ready and way too heavy. Because we were very arrogantly thinking that we know this and we know how this works since we had been working with these same topics really much. And it never goes like that."

One interviewee would be more customer-focused in the beginning if they would start now. Even though you would do proper testing and feedback collection it might still be that the users don't behave according to expectation:

"The openness and our design idea, what we, of course, had prototyped and tested, did not lead at all to the behavior, in the end, we had thought of...But there are a lot of these kinds of things, and it is especially related to validating and testing the design and inventing the process of how to get neutral and actually open feedback, how to carry it out. Because you always have that own bias in the interpretation and you want to interpret it according to what you really want out of the thing, so you are neither neutral nor independent with your analysis. And that's a big deal."

Three interviewees from the same company had a similar kind of realization about the importance of being present at the market:

"But what I would do differently. I'm not that sure but one thing for sure is that it has been proven much better to be there on a regular basis and for a longer time. Because especially business in those areas they don't happen unless you are there in person."

Regular visits help to gain market understanding and longer visits enable people to get used to the location when traveling across continents. **The importance of testing early, doing proper user research, and being present on the market was in line with the advice.**

4.3.3 Summary

Altogether fifty-two pieces of individual advice and twenty-one lessons learned were identified from the interview data. Even though interviewees shared significantly more advice than lessons learned the subcategories and topics emerging were similar in both (Figure 14).

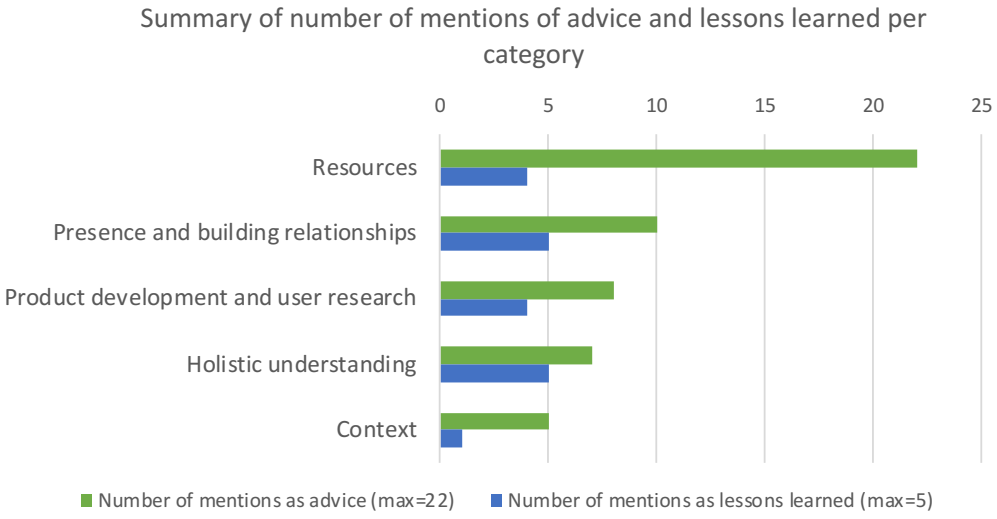

Figure 14 Summary of the number of mentions of advice and lessons learned.

The biggest exception was while **resources** were clearly the most common advice, they were mentioned only four times as lessons learned. If we compare to challenges, **context** was the biggest challenge category but, it had the least pieces of advice and lessons learned. The importance of utilizing local and professional knowledge, doing proper user research and testing to support user understanding and importance of presence was highlighted all trough in the advice and lessons learned. All these support learning and understanding the context and therefore increase the ability to successfully operate in the operating environment.

Resources, especially expenses and investors, had caused challenges to the interviewees, but advice and lessons learned focused on **human resources**. It could be that many of the challenges emerge from startups having to manage with scarce resources. Due to the fact that most early-stage startups struggle with financial resources, the success of the startup is highly affected by the factors you can affect more easily, talent of the team. This could explain the HR focus in advice and lessons learned.

Both advice and lessons learned emphasized the importance of **understanding the market** and **the big picture**, **user research**, and **testing early on**. Professional help and hiring locals help to balance the lack of knowledge and even speed up processes. Local employees can also be present on the market all the time but personal presence is crucial for both relationship building and gaining understanding. Still, only one interviewee mentioned that living in the market could be an option.

4.4 Implications of a person's own experience level on the results of this thesis

Until so far, the results have been discussed on a general, thematic, level. Next, it will be reviewed how interviewee's previous experiences affect the experienced challenges and advice given. In general, the findings suggest that the challenges are very personal experience. People with similar roles or even from the same company experienced different challenges and no strong correlation could be found. On the other hand, one's history of living in a developing country and user-centered design experience prior to founding the company had a clear effect on the challenges and advice mentioned. Due to the very small number of lessons learned no clear patterns could be found and therefore, the lessons learned will not be reviewed in this section.

For the purpose of the comparison, the interviewees have been divided according to the level of UCD experience (yes/no) and the history of living in a developing country or in Africa (yes/no). 3 interviewees out of 8 had previous UCD experience. 2 interviewees had lived in Africa and 3 in some other emerging area outside Africa. 2 interviewees had no previous experience from emerging markets. The Figure 15 summarizes the number of interviewees with specific background. Due to the small sample size, the correlation of results and the number of years of experience wasn't clear. If the interviewee had a known background in UCD, user research or participatory design, they were categorized to have UCD experience. People who didn't mention any UCD studies or other relevant background were categorized with no UCD experience. Participants who had lived either in Africa or another emerging country were categorized accordingly. The one's without living experience from emerging markets were grouped under "No EM experience" since they had visited emerging markets a maximum of few times before founding the company.

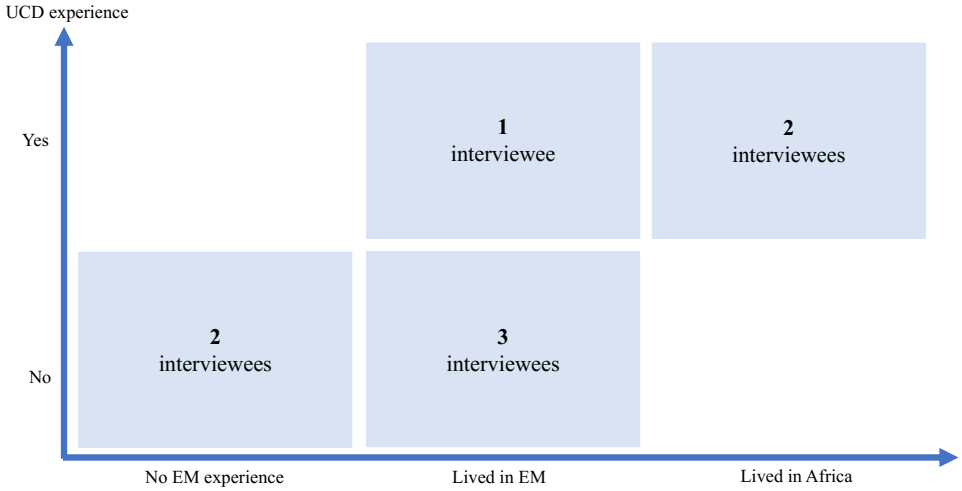

Figure 15 Number of interviewees in relation to different backgrounds.

4.4.1 Implications of UCD and Africa experience

First, we delve deeper into the implications of interviewees' UCD and Africa experience on the results. There were a lot of similarities between the challenges and advice mentioned by the participants with UCD experience and on the contrary, between the ones without UCD experience. The UCD experience seemed to affect the results more than the history of living in other emerging countries. There was some deviation in the answers inside of these groups but, nevertheless, **it seems that UCD experience could increase one's expertise level even when you lack straight Africa experience.**

Table 19 Interviewees experience and number of mentions of challenges and advice.

	Interviewees experience					
	UCD experience YES	EM Experience YES	UCD experience NO	EM Experience YES	UCD experience NO	EM Experience YES
Number of interviewees	3		3		2	
Number of challenges mentioned	3-13		5-7		9-11	
Total number of challenges mentioned / group	28		17		20	
Pieces of advice mentioned	9-14		4		2-3	
Pieces of advice mentioned in total / group	36		8		8	
Number of indirect challenges	7-18		0-2		2-3	
Total number of indirect challenges / group	34		2		5	

In the Table 19 visualizes the number of mentions of challenges and advice divided by the interviewees experience level. The biggest challenges and other challenges have been summed in order to study correlations on a more general level. All the people with UCD experience has been grouped together and both previous experiences from Africa and other emerging areas has been included under EM experience. This was done to protect the privacy of the one interviewee with both UCD and general emerging market experience (not Africa). When we look at the number of mentions of challenges and advice, an interesting finding can be made. Both the people with the most UCD experience and the ones without emerging market experience mentioned the most challenges (3-13 challenges, 28 and 20 in total). The

participants with no UCD experience but with emerging market experience mentioned less (5-7, 17 in total) challenges. An interesting and big exception to this pattern is one interviewee with both UCD and Africa experience who mentions only three challenges, all related to external factors such as investors or the speed of market growth. This interviewee is the only one with a design background which might affect how the person perceives challenges but with this sample size, it's impossible to make that kind of conclusion.

The interviewees with UCD experience also mention the most advice. They give 9-14 pieces of advice, 36 in total, and they also gave advice proactively. The ones without UCD experience give a maximum of 4 pieces of advice per person so the difference was big. The interviewees' who had previous UCD experience, their tone of voice was more knowing and confident in general, which was highlighted by the usage of phrases such as *"you really need to do something"*. These three interviewees were also the only ones mentioning so-called "indirect challenges" more frequently (7-18 mentions). Other interviewees mentioned indirect challenges only 0-3 times. These indirect challenges have been grouped under other mentions in other sections since they are describing potential issues or issues other people have had. These are second-hand challenges based on one's observations but not necessarily direct experience. Based on the advice and indirect challenges, the participants with UCD experience seemed to have an "expert attitude" and their interviews and answers were generally longer and more in-depth. Even though they described a lot of challenges they also were able to give concrete suggestions on how to tackle them which supports the expertise.

4.4.2 Challenge and advice themes

When we look at mentioned challenge subcategories many of them overlapped regardless of experience level (10/28 subcategories) and many of the challenges were mentioned by only one interviewee (7/28 subcategories). Comparative analysis of the challenge and advice categories offered a few clear patterns. Interviewees with UCD experience didn't mention cultural differences as a challenge. At the same time, all the interviewees without UCD experience except for one mentioned cultural differences as a challenge. This person had never visited Africa after joining the company. The interviewees mentioned cultural challenges 1-3 times per person. **Therefore, it seems that UCD experience prepares one to encounter cultural differences in Africa.** One could expect that living in another emerging country would help to encounter the cultural differences elsewhere, but this wasn't fully supported by the results.

Heterogeneity, and **market** were mentioned as a challenge by two interviewees with UCD experience, both 3 times in total. This could imply that the people with UCD experience are able to look beneath the cultural differences and they see a deeper holistic understanding as a challenge. On the other hand, two interviewees without UCD experience but with emerging market experience mention **false assumptions** as a challenge. The lack of team members Africa experience had resulted in some false assumptions and challenges. Cultural challenges were the only category that was mentioned by both of the interviewees without UCD and emerging market experience.

On the advice side, the number of mentions was smaller especially with the interviewees without UCD experience. The interviewees with UCD experience gave three pieces of advice that suggested people to focus on the opportunity in Africa, rather than seeing just the challenges. This is yet again, a good example of how the interviewees with UCD experience were able to see beyond the obvious. Two interviewees without UCD and emerging market

experience gave advice related to **regulations** and how should think carefully if it makes sense to incorporate in Africa. The interviewees without UCD experience but with emerging market experience gave so little advice that clear patterns of advice couldn't be found.

Even though there were similarities between the participants with UCD background the ones with vast Africa experience were still clearly more knowledgeable when it comes to topics such as context mismatch, heterogeneity, demographics, and UCD methods. They were the only ones, for example, mentioning context. Combined UCD and Africa experience give the best readiness to encounter and analyze the market. But on the other hand, the findings give evidence that a UCD background could be a valuable asset that could compensate for lacking market-specific experience. On the other hand, with a small sample size, it's hard to make clear conclusions.

The general emerging market experience didn't affect strongly the perceived challenges or advice given. On the other hand, emerging market experience certainly affected one's attitude, and that will be discussed in the following subchapter.

4.4.3 Implications of emerging market experience and attitude

General emerging market experience from other regions, not just Africa, also lowered the number of perceived challenges. It has also a clear effect on the **attitude** reflecting on the answers, such as **positivity**, **negativity,** and **trust level**. People who have lived in any emerging country, regardless of region were generally more positive with their answers compared to the participants with no emerging market experience prior to founding the company.

The participants with no emerging market experiences had encountered many **negative** surprises whereas the others were only **positively** surprised about the market and the local talent. Africa had even exceeded their expectations. The participant with extensive Africa experience didn't have such surprises since they were very familiar with the market, but their attitude towards locals was still **positive**. The participants with no emerging market experience had faced troubles with local employees and found employment challenging. One even said that hiring locals is effective, but the problem is that they need to be locals which leads to different work cultures. Even though some others had had some issues related to local employees or hiring, the challenges weren't about cultural differences, but more such challenges that you face generally when employing new employees, such as hiring is laborious.

The participants without emerging market experience also emphasized **trust** when talking about local employees or partners. Only one of the participants with emerging market experience mentioned trust in a similar way, but this participant lacked Africa experience completely. It seems that living in emerging markets helps to build trust in people even though the culture and habits are different. But at the same time findings suggest that lack of emerging market experience can lead to mistrust.

The interviewees with emerging market experience seemed to be generally more **adaptive** and **accepting** in the new market. Being different doesn't mean that it's wrong, you just need to adapt. Emerging market experience seems to prepare you well to encountered other emerging countries with flexible attitude:

> *"So there are always different practices in different markets, but I wouldn't say that it is somehow more special than what you're used to seeing elsewhere."*

People with no emerging market experience seemed **reluctant to adapt** to the new business culture which also affects how the product is developed according to user needs:

> *"Our own service is quite complex and it's not really surprising that it can be challenging for the end-user at times. Yeah, so maybe breaking through with the service would require training those people more. In Finland, we are somehow used to developing a service, and customers know how to use it and they will."*

They also were more reluctant to take other people's advice or adapt their operations accordingly even they knew that the advice would be correct and needed. Whereas more internationally experienced seemed to be humbler when receiving feedback and adapting their processes and product accordingly. In addition, the interviewees with emerging market experience had used professional user researchers, even anthropologists, and psychologists, in the product development process. **This suggests that they took the vast differences in the market seriously in terms of how it affects user understanding and therefore product development.**

An interesting finding was that the companies with previous emerging market experience had chosen the emerging market focus themselves after opportunity recognition and their mission is driving the passion towards entrepreneurship and startups. The third company with no emerging market experience had ended up with the focus due to external factors. It's an interesting question whether the founding story or the emerging market experience affects the attitude and adaptivity.

All in all, previous extensive emerging market experience through living in any emerging country seemed to make participant's attitudes more positive in general and increase adaptivity into new situations and cultures.

4.4.4 Methods used by the companies

Although, most of the participants and therefore their companies had clear challenges with context and holistic understanding they lacked methods to solve these challenges. The company where all the founders had UCD experience had clearly used the most professional methods compared to the other companies and had invested resources in user research. All the companies with at least one founder with UCD experience had used professional user researchers help.

Two of the companies described how they use iteration or agile as their product development method. The user research methods described by these two companies was "sitting down with people and figuring out their needs". One of them had used a professional user researcher but they still couldn't name the used method. Interviewees from both companies mentioned the lack of customer feedback or user understanding. They also couldn't name a clear decision-making process behind the chosen method other than knowing that it's important to talk to users.

The third company had taken the user research or user-centered design the most seriously. The founders were most experienced with user research and they were the only company with a designer as a founder, with vast experience from Africa. They had used, for example,

professional anthropologists and psychologists, interviews across a wide range of demographics and design thinking tools. Also, the importance of having a user-focused founder was emphasized. They were also the only company with mostly local African employees and truly located on two continents. This is how the one co-founder described the process:

> *"It's the sacred connection between user research, rapid prototyping, getting feedback and bringing it into that design process… it's equally important in both places, but it's even harder [in Africa] due to the heterogeneity."*

On the other hand, interviewees were generally happy with the chosen method and didn't question the suitability of these widely used methods in emerging market contexts. In addition to the process, the teams' characteristics weren't adapted to the distant market either. All the founders are Europeans, multidisciplinarity is weak and none of the founders live full time in their target market. This suggests that the startups are using the same methods they would use when developing products for western markets, but lack tools and understanding how to adapt to the emerging market context.

4.4.5 Decision-making and resource allocation

Although the participants' UCD and emerging market experience varied, resulting in differences in their answers; despite the level of experience, all the participants had had false assumptions or hadn't followed their own or others' advice. Many interviewees said that they knew something is important, such as hiring locals early or being more present on the market, but they decided not to do it. Most often the reason seemed to be affected by one's own false assumptions of their skills or due to their limited resources. **This raises an interesting question for future research on how to maintain the quality of decision making in an unfamiliar complex context.**

If the effect of the different contexts is not taken into account, it leads the founders to run the company as they would be running a company in Finland for familiar users. An interviewee gave examples of how Finns often have made wrong extrapolations of the market due to the visible similarities such as the presence of smartphones or skyscrapers and therefore failed to take into account the heterogeneity and real market numbers. There were also examples given on how the results of user research were not followed and interpreted to best fit the founder's vision. Unidentified bias and conventional habits of thinking can hinder learning and adaptability. Therefore, it's vital to understand the key role that false assumptions might play in the decision-making process.

Decision making and its quality is also tightly linked to resource allocation which is highly important in the case of resource-scarce startups. This raises the question of whether these startups used their scarce resources in an inefficient way? In the interviews, there were examples where the companies had prioritized, product developers, for example, over hiring first local employees, which according to them, slowed down their progress later. The decision-making processes and resource allocation will be discussed further in the discussion section.

4.4.6 Summary

All in all, the findings suggest that the challenges are a very personal experience and correlation between, for example, challenge perceived by the CEOs or CTOs weren't identified. On the other hand, the persons previous user-centered design experience and history of living

in Africa or other emerging areas affected the advice and challenges and the number of mentions (Figure 16). Interviewees with UCD experience didn't see cultural differences as a challenge which suggests that they were better prepared to encounter and interact with people coming from different culture. They mentioned challenges related to the market and heterogeneity. Interviewees with UCD experience gave a lot advice and mentioned multiple indirect challenges. On the other hand, the interviewees without UCD experience gave very little advice. The results suggest, that UCD experience increase one's expertise-level even if the person lack straight experience from Africa

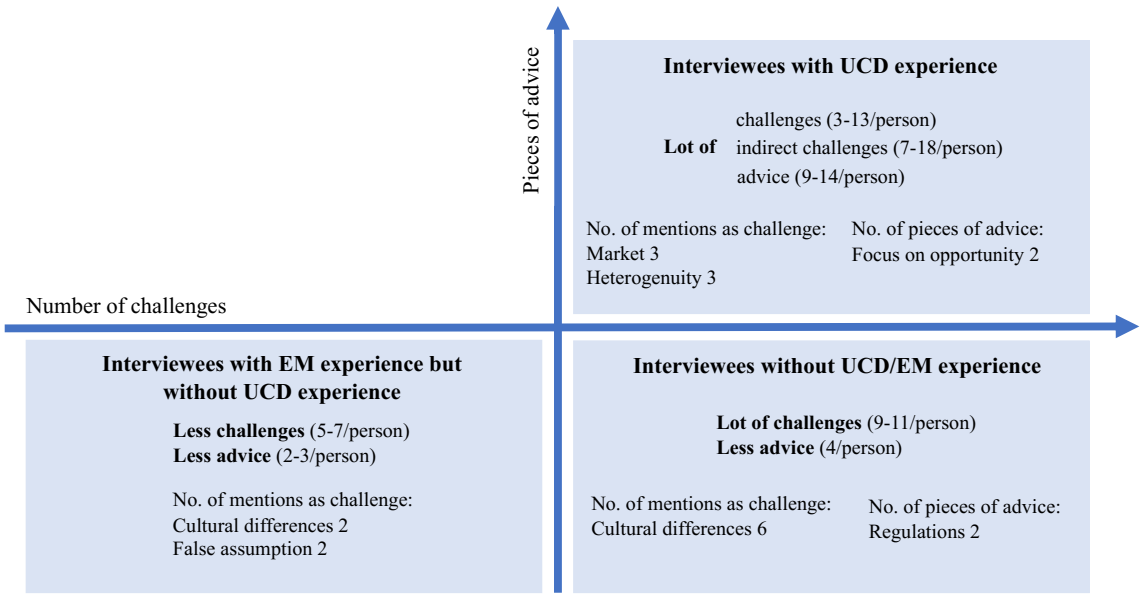

Figure 16 Interviewees experience, challenges and advice.

Having previous experiences from living in Africa or emerging markets, made the interviewees more positive and they didn't have issues with trust. They seemed more adaptive and accepting compared to the interviewees who hadn't lived in developing countries.

The companies who had at least one founder with UCD experience, had also utilised professional user researchers, suggesting that they took the differences between the home and target market more seriously. Despite the previous experiences or background, all of the interviewees mentioned having false assumptions about the market and many of them mentioned how they hadn't followed their own advice, such as hiring locals earlier. This raises on interesting question of how lack of contextual understanding of the target market affects decision making and resource allocation. Answering that question thoroughly is outside of the scope of this thesis but provides and interesting topic for future research.

5 Discussion

In this chapter, we delve deeper into the implications of the results in accordance with the research questions. A more thorough evaluation and analysis of the results is achieved by combining the empirical results and previous theories. The results were analyzed without an attempt to fit them into the framework by Backhaus, Brandenburg, and Trapp (2014). Instead, the validity of the framework is evaluated and revised in accordance with the results.

First, the challenges and lessons learned of the participants are discussed as well as their advice for other startups in similar situations. Furthermore, implications on both theoretical and practical levels are provided. Finally, the chapter concludes by deliberating the validity and limitations of this study, accompanied by ethical considerations, and suggestions for future research. In a more practical view, this thesis should provide early-stage startups and future founders an overview of the possible challenges and advice to be considered.

5.1 Identified challenges, lessons learned and advice

The eight interviewees mentioned a wide variety of challenges, sixty-six in total. Twenty-two of these were nominated as the biggest challenge by the interviewees. The pre-eminent category was **context**, following with **holistic understanding** and **resources**. The fourth challenge category **product development and user research** had only few mentions. The most commonly mentioned subcategories under the biggest challenge were **culture**, **team**, **jurisdiction**, **expenses** and **user understanding**. The mentions of other challenges were more evenly distributed between **context**, **holistic understanding**, and **resources**. **Jurisdiction**, **local employees and talent**, and **investors** were the subcategories with most mentions.

All in all, twenty-one lessons learned, and fifty-two pieces of advice were identified. Advice related to **resources** were by far the most common category with twenty-two mentions most of which were related to the **team**. Lessons learned were more evenly divided between **holistic understanding**, **presence and building relationships**, **resources**, and **product development and user research**. Thus, context, the biggest factor causing challenges, was barely mentioned as advice and lessons learned. Next we delve deeper into these findings.

5.1.1 Big picture perspective

The biggest challenge category, **context**, included issues related to the different aspects of the socio-technical system. Understanding and operating among the different **culture** and **jurisdictions** were particularly causing challenges to the interviewees. The challenges were caused by differences in the work and business culture, such as lack of directness and lower trust level. This is also related to the jurisdictional challenges, since regulations and authorities work differently than in Finland.

The contextual challenges are closely related to holistic understanding, including for example **user** and **market understanding**. Understanding and validating users' needs of a very heterogenous user base can be hard which in turn affects the product development process. The differences in the socio-technical environment, such as culture, educational background and financial status, affects how users behave and think, and how business is usually done in that context. Lack of proper understanding of the target market and its characteristics, can also lead to false assumptions and relying on stereotypic assumptions of the market. Context and the user can be combined together as the **global environment** introduced by Backhaus et al. (2014) which not only includes the user-machine interaction but the whole surrounding environment, society and location where the action takes place. Understanding the global environment and how the different socio-technical aspects affect each other, enables holistic understanding of the big picture, including both users and the market.

The contextual challenges are in line with the findings of Meyer et al. (2011) who suggest that contextual variation can be particularly relevant for West European or North American businesses entering emerging markets, due to large physical, cultural and economic distance. Also, Arvila et al. (2018) argue that *"the socio-cultural factors within a certain social setting*

require to be carefully considered before a newly introduced technology has the potential to successfully deliver benefits to the users." This requires proper understanding of the social setting of the users. Due to similar reasons, Backhaus et al. (2014) argue that the Western user-centered design process needs to be extended by a human-centered view in order to make it work in an emerging context. This is supported by the identified challenges, most of which related to the human side of the socio-technical system, user understanding or team and talent. On the contrary to Backhaus et al.'s framework (2014), it was noted that the lack of contextual knowledge and holistic understanding doesn't only affect the product development process but also creates challenges related to navigating in the different business and operating environment, ranging from collaboration with local partners to hiring. Interestingly many of the interviewees were surprised on how different the market is or they had identified false assumptions, which suggests that they had failed to take the differences in the market seriously enough.

What is common to all these challenges is that they are all at the intersection of product-market fit and therefore solving them is **crucial for the success of a startup.** According to Thomas R. Eisenmann, quoted by Carmen Nobel (2011), most startups fail because they waste too many resources, both time and money, building the wrong product for the market. Context and holistic understanding are tightly related to the ability to meet the market and customer needs with the right product but also being able to operate successfully in a different business environment. Building this understanding is constrained by the limited resources of a startup.

Even though there were very few pieces of advice or lessons related to the context itself, the importance of **understanding the big picture**, **the user needs** and **the market** was emphasized. **And how this could be achieved based on the interviews, is to be more present on the market, build relationships with the locals and utilize professional user researchers.** Many interviewees lacking Africa experience mentioned as lessons learned that they should be more regularly present on the market and for longer times. Still they hadn't considered on relocating on the market. Also, product development lessons learned, such as quicker iteration loops, feedback collection and lighter protos were suggested. But at the same time, many of the interviewees hadn't followed their own advice. Most of the interviewees had also identified the need and value of professional user researchers, but at the same time doing proper and very thorough user research requires time and resources that startups usually don't have therefore user research was rarely prioritized over the technical development. The results related to limited resources will be discussed next.

5.1.1.1 Egg chicken problem of resources and decision-making

Human resources were the dominant theme as advice. Using professionals (eg. user researchers) and hiring locals earlier was the most common individual advice. **This suggests that HR is seen as an important method to overcome the biggest challenges related to context and holistic understanding** by balancing the lack of own knowledge and skills with employees or external help. Presence in the market and building relationships with the users, and locals helps in gaining contextual understanding, but as one of the interviewees concluded:

> *"...even if you would have spent 15 years there like I have, I still don't understand."*

This suggests that gaining proper contextual understanding is really challenging and time-consuming and therefore usually not even possible. Therefore, having local people in the team from the beginning is advisable. At the same time, the total outsourcing of contextual understanding to employees and externals could be dangerous for founders since they are the major decision-makers in the startup which then affects the product and business development in turn. Therefore, having a local cofounder on board from the very beginning could help to tackle this challenge.

The advantage of employees with local knowledge has also been noted in the literature. McHenry and Welch (2018) studied Western immigrants in Vietnam. They observed that local expatriates can act as an external cultural intermediary, given the membership in local networks and depth of local knowledge, such as social habits and business practices. Therefore, using local agents can be an attractive solution especially for small and medium-sized companies, such as startups, with limited resources (Griffith & Zhao, 2015; Petersen, Welch, & Welch, 2000). In addition to cultural knowledge, many interviewees mentioned the presence of local employees on the market as a big trait that would speed up the business development process in particular. Even hiring locals was the most common advice, HR and especially the African HR had also caused challenges. Some interviewees had had bad experiences with local talent or employment regulations, and even there's lot of great talent available many people lack global experience of building scalable services. At the same time, one needs to keep in mind that due to the vast heterogeneity locals don't necessarily understand other locals coming from different backgrounds, so caution and proper processes are still needed.

Local talent was seen as the best way to tackle the challenges of the different market, very few people had followed their own advice. Even though people knew that hiring locals is important, they hired too late and weren't ready to prioritize user research. The reason for this was the constrained resources or the false assumptions of own skills. Startups usually operate under financial scarcity which affects the decision making and available resources. According to Abras et al. (2014) the major downside of user-centered design is that it can be quite expensive. The process requires both financial and human resources and gaining understanding and data from the users and their environment takes time. Even though you know that user research or traveling more to the market would be very valuable, you need to prioritize getting the product ready quickly. This comes to the egg chicken problem of the resources. On the other hand, hiring was seen as a major solution for challenges, but at the same time the startups weren't ready to prioritize local employees in the resource allocation. Resources can be seen as a solution, but the nature of startups is to operate under resource scarcity.

Decision making and its quality is also tightly linked to resource allocation which is highly important in the case of resource-scarce startups. Blank and Dorf (2012) have noted that the lack of structured processes can lead to a variety of uncertainties, such as the allocation of scarce resources without evaluating the potential markets properly (market size, needs, growth rate). This raises the question of whether these startups used their scarce resources in an inefficient way? In the interviews, there were examples where the companies had prioritized, product developers, for example, over hiring first local employees initially, which slowed down their progress later. **A decision that saves resources in the short run might lead to bigger expenses, longer product development cycles or even failure in the**

long run. For example, saving costs from user research, in the beginning, could lead to solving the wrong problem.

Although the participants' UCD and emerging market experience varied, resulting in differences in their answers; despite the level of experience, all the participants had had false assumptions or hadn't followed their own or others' advice. Many interviewees said that they knew something is important, such as hiring locals early or being more present on the market, but they decided not to do it. Most often the reason seemed to be affected by one's own false assumptions of their skills or due to their limited resources. **This raises an interesting question for future research on how to maintain the quality of decision making in an unfamiliar complex context.**

York and Danes (2014) refer to Daniel Kahneman's work (2011) that entrepreneurs tend to rely on intuitive decision making and thinking. They often lack important information about the decision or fail to recognize available information and are pressured by time and cost constraints. The intuitive decision making has weaknesses and is prone to significant errors in judgment. **According to Kahnemann (2011), an expert's intuition works best in a regular and predictable environment where the expert has had enough time to learn the regularities. This is not accomplished in a new environment, such as Africa, and therefore intuitive decision making accompanied by biases can lead to questionable decisions.** Also, the overconfidence of own skills is a common bias of entrepreneurs (eg. York & Danes, 2014; Busenitz & Barney 1994). Even though intuition and quick decision making is a much-needed capability in startups, it's questionable whether it brings more positive or negative consequences when the context is unfamiliar. If the effect of the different contexts is not taken into account it leads the founders to run the company as they would be running a company in Finland for familiar users.

When entering a new market where you lack contextual understanding, the decision-making process could be supported by false assumptions, and one's own, most likely implicit or tacit, biases. These thoughts are supported by the study of Day et al. (2016) regarding companies and their adaptability in fast-changing environments. According to the study, prevailing bias and habits of thinking are important due to the human tendency to seek the most favorable conclusion and finding evidence to support that bias. This notion is also supported by York and Danes (2014). An interviewee gave examples of how Finns often have made wrong extrapolations of the market due to the visible similarities such as the presence of smartphones or skyscrapers and therefore failed to take into account the heterogeneity and real market numbers. There were also examples given on how the results of user research were not followed and interpreted to best fit the founder's vision. Unidentified bias and conventional habits of thinking can hinder learning and adaptability. Therefore it's vital to understand the key role that false assumptions might play in the decision-making process and therefore also in the resource allocation.

All in all, many interviewees mentioned that the market works slower, things take more time and also customer relationships require multiple meetings. Also, learning about the market and the manners takes time. Once you are not operating in the home market and the customer base is different than what you are used to, also product development might take more time. For startups, time is an important resource, but time also means more costs usually. Therefore, it needs to be noted that based on the interviews, targeting an unfamiliar market might require more resources than targeting a familiar home market. Slower progress, learning by

mistakes, hiring locals, conducting user research and travelling require all financial resources. This is good for the founders to note before starting the company and should be taken into account when calculation runways. Since hiring local people was one of the key advice, it should also be considered if having local expert on the founder level would be a suitable option.

5.1.1.2 Nature of the differences

A frequently used word by the interviewees was **different**, which describes the nature of most of the challenges well. According to Backhaus et al. (2014), the target group and their contextual setting change dramatically when designing for emerging markets. In addition, the complexity increases due to the vast differences between the home and the target countries which is supported by previous studies (Liu & Vrontis, 2017; Meyer et al., 2011). The latter argues that multinational enterprises (MNEs) face increasing challenges when entering emerging markets due to the complexity of interactions and the heterogeneous context. According to Liu and Vrontis (2017) political, economic and sociocultural differences between regions increase complexity and uncertainty. This seems to be well in line with the findings of this thesis even though the studied companies were startups.

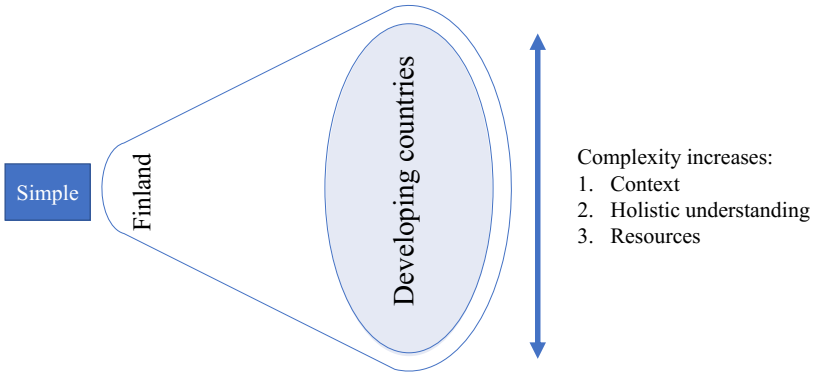

Figure 17 The main challenges perceived by the participants

Even though the complexity and heterogeneity were mentioned explicitly only by the interviewees with extensive Africa experience, the challenges perceived by the other interviewees reflected the complexity and diversity of the market. It seems that since Finns come from a very homogenous background there can be challenges in noting and operating in a heterogeneous environment where the variation of the socio-technical environment is greater affecting the holistic understanding and for example hiring and collaborating with local people. This change in the environment along with the main challenges is visualized simplistically in Figure 17.

If we take a closer look at the nature of the challenges perceived by the interviewees, most of the challenges were **intangible** (eg. culture) and very few **tangible** (eg. infrastructure). This could be related to the rather intangible nature of mobile-services. Iyer, LaPlaca, and Sharma (2006) studied new product introductions by Western companies in emerging markets, especially in India, and they divide the market and environmental factors affecting the success of product development into **controllable and uncontrollable factors**. For example, the choice of product development strategy is a controllable decision whereas the target market's consumer culture and infrastructure are both uncontrollable factors that the company can't change. Since most of the challenges perceived by the participants were related

to the intangible environment, dividing the challenges into controllable and uncontrollable can help cluster the challenges better.

In order to highlight the changes in the operating environment the challenges are mapped on a position map with the socio-technical system (context) as the y-axis and uncontrollable and controllable as the x-axis both from the Finnish (Figure 18) and East African (Figure 19) perspective. The clustering of the features is based on the interviewees' comments and authors judgement on the differences between operational environments. The purpose of the graphs is to highlight and visualize the approximate differences.

Figure 18 was graphed by grouping the challenges based on the characteristics of the Finnish socio-technical system. The Finnish context can feel controllable both due to the characteristics and familiarity of the market. Laws are followed and courts function well. User and contextual understanding are a lot easier when you are used to the surrounding socio-technical system and you are familiar with the work culture. Investors are used to Finnish teams developing products for Western markets and even getting investments can be hard there are a lot of options. As we can see that all of the major challenges are located at the upper right corner of the graph, controllable socio-challenges (Figure 18).

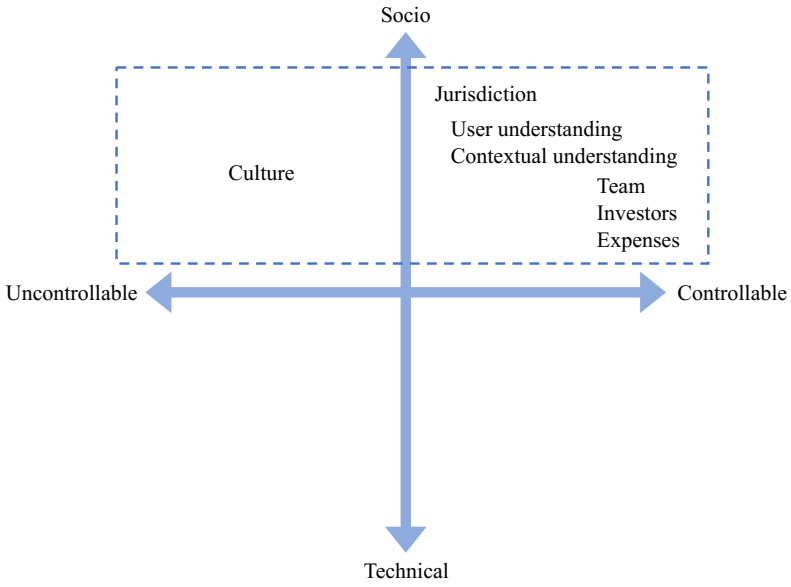

Figure 18 Major challenges on a position map according to the intangible and tangible socio-technical system of Finland

But when emerging markets become the target market the figure changes drastically (Figure 19). The focus shifts to upper left corner, uncontrollable socio-challenges. Suddenly regulations are not always followed even though they exist just like in Finland and contract practice is more flexible. HR becomes more challenging and uncontrollable when the work cultures are different. Investors lack emerging market knowledge and interested in investing however good team you have. At the same time, the complexity of culture and holistic understanding increases due to the heterogeneity of the user population. This dramatic change in context is supported by Backhaus et. al. (2014) and the interviewees.

When looking at Figures 18 and 19, it's understandable why these interviewees coming from a flat homogenous society like Finland had various challenges relating to the context and

reaching a holistic understanding. Clustering the challenges according to controllable and uncontrollable nature highlights the vast difference between the markets on multiple different levels and how the level of your own control decreases and the ambiguity increases.

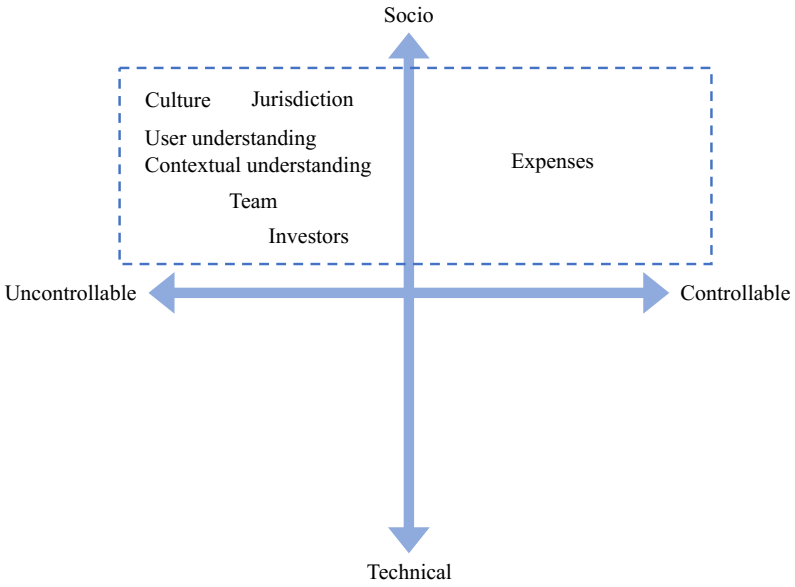

Figure 19 Major challenges graphed according to the intangible and tangible socio-technical system of East-Africa.

Interestingly technical challenges were rarely mentioned, suggesting that interviewees were more confident in solving technical problems. This is understandable when looking at the educational background of the founders. 7 out of 8 have an engineering degree. These challenges might occur due to the vast differences between the home and target market but also the educational background might affect it. Overcoming the uncontrollable socio-challenges require soft skills rather than hard technical skills (Figure 20). This finding could suggest that these engineering heavy teams have lacked the required skills or processes to encounter these soft challenges or to understand their significance.

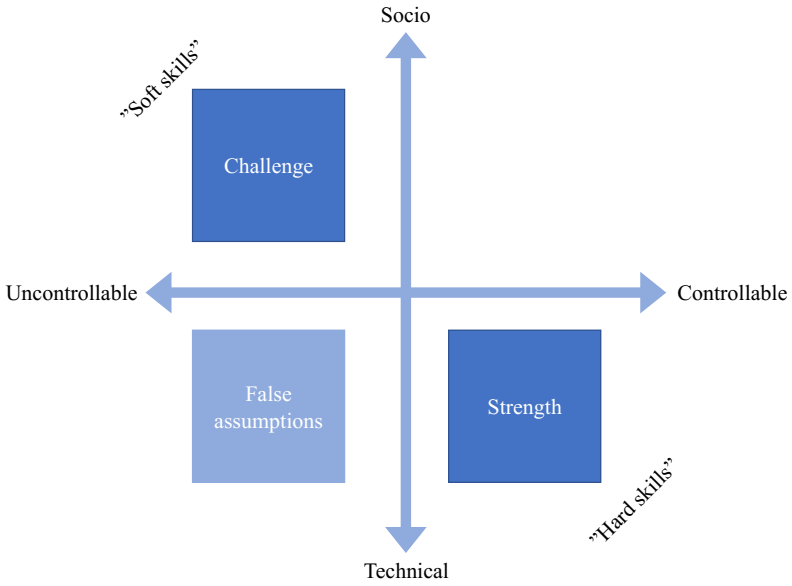

Figure 20 Challenges and strengths graphed according to the controllable and uncontrollable socio-technical system of East-Africa.

The lack of engineers' soft skills have been noted in the literature (Del Vitto, 2008; Lohmann, Rollins, & Joseph Hoey, 2006; Riemer, 2001, 2007). For example, Riemer (2007) emphasizes intercultural skills and emotional intelligence as part of the modern engineers' skill set in the age of globalization. Figure 20 shows how the focus shifts from tangible technical challenges, the comfort zone, to soft intangible challenges that could partly explain the pattern of challenges we're seeing. Even though literature supports the lack of engineers' soft skills empirical evidence is still needed in this particular case. Due to the small sample size, which was very engineering heavy, it's hard to make such conclusions confidently enough.

5.1.2. Founders matter

It has been noted that SMEs are especially influenced by the founders' personal experience and capabilities (Bloodgood, Sapienza, & Almeida, 1996) and therefore it's important to understand how the founder background could affect the specific scope of Finnish startups entering emerging markets. Therefore, the results and the research questions are studied with a lens of how interviewees experience level affected the results.

All the interviewees come from Finnish or European context and they had mostly background in engineering. Most of the interviewees and all the founders were males. The findings suggested that the experienced challenges are a very personal experience and the people from the same company or with similar roles (CEO, CTO etc.) experienced very different challenges. However, the participant prior experience from Africa and/or from user centered design correlated with the results.

Figure 21 below sums up the finding on how the interviewees' UCD and emerging market experience affected the results. It seems that UCD experience could increase one's expertise level even when the person lack straight Africa experience. The interviewees with UCD experience mentioned the most advice and had an "expert attitude". They also didn't mention cultural differences as a challenge, which could suggest that UCD related experience gives

tools for encountering new and even complex environments empathically. Hudson (2009) has identified that one of the biggest issues with people with no HCI or usability experience is the lack of appreciation of how users think and act. The same study found that men with a technical role had significantly lower empathizing scores (EQ) compared to women which helps to explain the self-as-user outlook and lower capability for empathic analysis. Luckily by acknowledging this challenge different UCD methods and active participation in such methods can reduce the challenge.

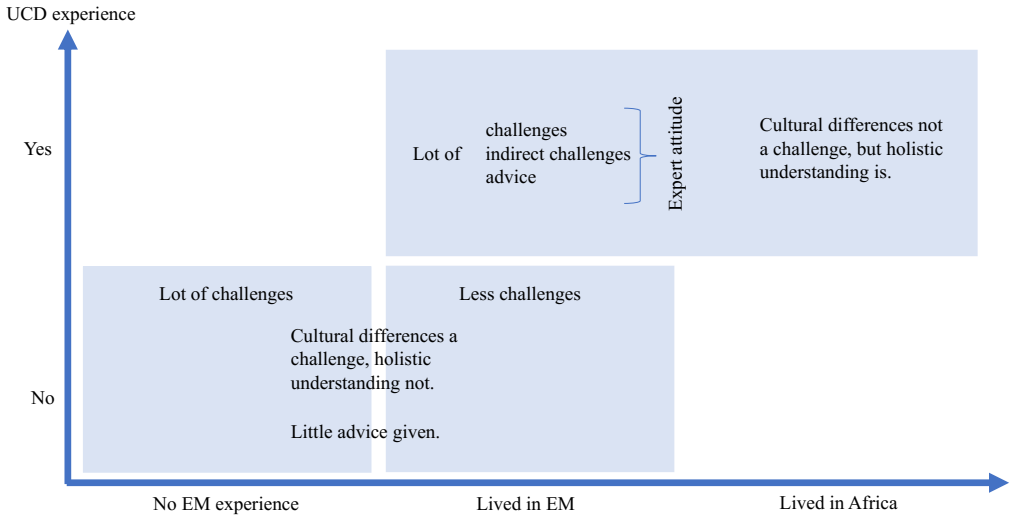

Figure 21 Similarities between the challenges and advice between the participants with different UCD and emerging market backgrounds.

Combined UCD and Africa experience give the best readiness to encounter and analyze the market. This notion is supported by (Johanson & Vahlne, 2009) who state that learning by experience makes developing foreign operations possible and therefore, market-specific knowledge is the most important type of knowledge, in this case, Africa experience. But on the other hand, the findings give evidence that a UCD background could be a valuable asset too that could compensate for lacking market-specific experience. On the other hand, with a small sample size, it's hard to make clear conclusions. Even though there is evidence that international work experience correlates positively with the internationalization of the new venture (Bloodgood et al., 1996) the general emerging market experience didn't affect strongly the perceived challenges or advice given.

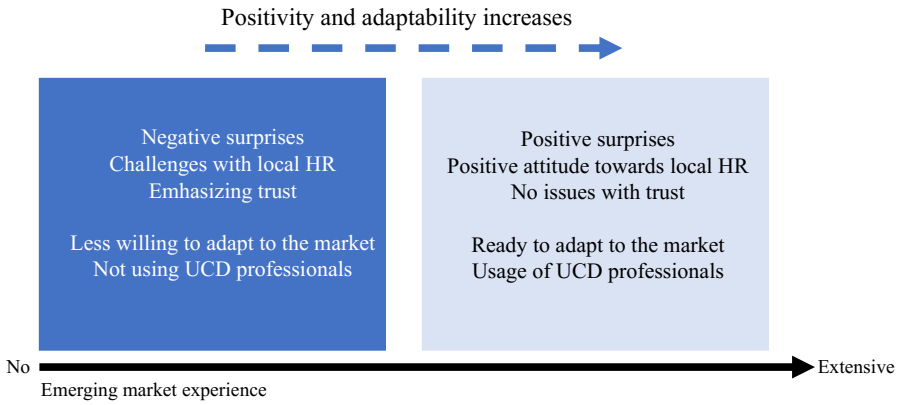

Figure 22 Implications of previous emerging market presence on positivity and adaptability.

General emerging market experience from other regions, not just Africa, also lowered the number of perceived challenges. It has also a clear effect on the **attitude** reflecting on the answers, such as **positivity**, **negativity,** and **trust level**. People who have lived in any emerging country, regardless of region were generally more positive with their answers compared to the participants with no emerging market experience prior to founding the company. Trust is, of course, important between the parties and the personal relationship with the local agent can determine the effectiveness of the collaboration (Griffith & Zhao, 2015; Petersen, Welch, & Welch, 2000). Trust can also substitute for knowledge when letting a trusted middleman to run the local business (Johanson & Vahlne, 2009). Based on the work of Nahapiet and Ghoshal (1998), Granovetter (1985, 1992), Madhok (1995) and others, Johanson concludes that trust is an important factor for successful learning. But at the same time findings suggest that lack of emerging market experience can lead to mistrust.

This suggests that prior experience from other emerging markets, helps to see the differences with more **empathy** and the interviewees seemed more **adaptive** and **accepting.** Being different doesn't mean that it's wrong, you just need to adapt. This is understandable since the emerging markets share various common characteristics (Backhaus et al. 2014). The attitude and adaptivity are important when being a startup and encountering the usual struggles of a startup, such as limited resources and finding product-market-fit. According to Ghemawat (2007) embedding in and the knowledge of the local context is a key success factor. But it might play an even bigger role when the struggles of a startup are taken into a completely new market where the context is very different.

An interesting finding was that the companies with previous emerging market experience had chosen the emerging market focus themselves after opportunity recognition and their mission is driving the passion towards entrepreneurship and startups. This is supported by (Bhave, 1994). His study found that the creation of a new venture doesn't need to start with opportunity recognition but the decision to start a venture may as well proceed the opportunity recognition. The third company with no emerging market experience had ended up with the focus due to external factors. It's an interesting question whether the founding story or the emerging market experience affects the attitude and adaptivity. Bloodgood, Sapienza, & Almeida (1996) suggest that the founder's background, such as international living experience, and capabilities correlate positively with the internationalization of the new venture.

All in all, previous extensive emerging market experience through living in any emerging country seemed to make participant's attitudes more positive in general and increase adaptivity into new situations and cultures (Figure 22). The attitude and adaptivity are important when being a startup and encountering the usual struggles of a startup, such as limited resources and finding product-market-fit. According to Ghemawat (2007) embedding in and the knowledge of the local context is a key success factor. But it might play an even bigger role when the struggles of a startup are taken into a completely new market where the context is very different.

Although, most of the participants and therefore their companies had clear challenges with context and holistic understanding they lacked methods to solve these challenges. Two of the companies described how they use iteration or agile as their product development method. This change from product-centric processes to agile and iteration-based processes has been noted in the literature. The challenge is that the models answer the question "how"

to build products faster but not to the question "which" product to build (Bosch, Holmström Olsson, Björk, & Ljungblad, 2013) that is highly affected the context of use. This leads back to a variety of non-technical, soft, challenges as the needs of the potential customers might not be well understood (Eisenmann, Ries, & Dillard, 2012). The company where all the founders had UCD experience had clearly used the most professional methods compared to the other companies. They also had prior experience from the market which increased their understanding of complexity of the market and, therefore possibly lead to take the user understanding more seriously. All the companies with at least one founder with UCD experience had used professional user researchers help.

According to Ropohl quoted by Backhaus et al. (2014), engineers and system designers tend to focus only on the humans or the machine in product development. This is easily supported by the existing product development processes where customer input is a checkpoint in the process but doesn't drive it (Blank, 2013). This can lead to focusing on the activities that happen inside the company's own building. This notion is supported by many of the comments of the interviewees without UCD experience where coding, for example, was prioritized over user research. On the other hand, interviewees were generally happy with the chosen method and didn't question the suitability of these widely used methods in emerging market contexts. It was also acknowledged, that all the interviewees had had false assumption about the market or the users, and these assumptions can guide their decision making and resource allocation. The results suggest that the founders prior experience have a strong effect on their **capabilities, attitude**, **and decision making**, which affects how the company is lead, what decisions are made and what is prioritized. These factors are all crucial for the success of startups.

In addition to the process, the teams' characteristics weren't adapted to the distant market either. All the founders are Europeans, multidisciplinarity is weak and none of the founders live full time in their target market. Even though all the interviewees mentioned the usage of professional help or hiring local employees, the ones with most Africa experience took the advice further. For example, having a local co-founder, local board members, and establishing a local profit center early was mentioned only by them. Multidisciplinarity was mentioned by the same interviewees since a very vast skill set is needed to support user understanding, ranging from psychology to data science. The importance of diversity in the teams has been noted in the literature. Abras et al. (2004) conclude that a user-centered design team benefits from a multidisciplinary and diverse team. Psychologists, sociologists, and anthropologists can be especially valuable since their role is to understand the user needs and communicate them to the technical side of the team. In addition to the required skills, the team should include people who are able to represent the perspectives of users and other stakeholder groups (SFS-EN ISO 9241-210, 2019).

The findings suggest that the composition of the founders matters and should be thought through before founding the company. Since hiring all the knowledge needed can be hard for a startup, therefore, considering the needed skills and diversity on the founder level could be advisable. At the same time, the companies had balanced the lack of skills or local understanding by hiring and using professional help. This is a good way to do it and hiring is crucial for the growth of the company. But at the same time outsourcing the whole local knowledge to employees can be troubling since the decisions and resource allocation is done of founder level on early-stage startups.

5.2 Theoretical implications

This thesis studied the challenges perceived by three Finnish mobile-service startups developing products for the East African market and what kind of advice would they give for other startups in similar situations. It was analyzed how differences in the backgrounds and experience levels of the participants affected the results.

The motivation for this study was the lack of literature examining startups with western origins developing products for emerging markets. The developing countries with a youthful population and fast-growing middle-class will drive economic growth in the future (PWC, 2017) which emphasizes the importance of this research direction. There has been lots of research on multinational corporations (MNCs) and emerging markets (Khanna et al., 2005; London & Hart, 2004; Meyer, 2004; Ramamurti, 2004). Even though many of the results of this study are in line with the previous studies regarding MNCs and entrepreneurship, it's evident that startups encounter special challenges due to their nature, and this line of research has been missing. This thesis contributes to this research gap and gives new insights into the way western startups focusing on emerging markets are studied.

A lot of studies suggest that existing theories and frameworks mostly deriving from the west need to be examined critically and modified if needed when the context of use changes (eg. Backhaus et al., 2014; Liu & Vrontis, 2017). Backhaus et al. (2014) have proposed this kind of change in the UCD process when developing products for emerging contexts. This Environment sensitive user-centered design framework by Backhaus et al. (2014) was used as an underlying theory in this thesis. In the next section, the validity of the framework will be reviewed based on the results and conclusions of the thesis. Finally, a revision for the framework is suggested based on the conclusions.

5.2.1 Results in accordance with the framework

The main challenges emerging in this study relate to the socio-technical context and the lack of a holistic understanding of the operating environment. The most common iteration-based product development processes answer the question "how" to build products faster but not to the question "which" product to build (Bosch et al., 2013) that is highly affected by the context of use. Even though the user-centered design process emphasizes the involvement of the user in all the stages of the process but neglects the wider context surrounding the user (Backhaus et al., 2014). Still, the product development process had caused only a very few challenges to the interviewees and none of them questioned the suitability of the used process. This suggests that there is a lack of understanding of alternative processes more suitable for emerging markets and in addition, lack of understanding of how profoundly the different context affects the NPD process, user understanding and doing business abroad.

When we look at the main challenges: **context**; **holistic understanding;** and **resources**, the framework by Backhaus et al. (2014) touches the first two. Context is equivalent to the global environment in the model and the iterative UCD process emphasizes gaining contextual understanding. The framework itself doesn't explicitly tell how to gain good contextual and holistic understanding, but there are multiple UCD processes that one can follow. It is noted in the literature that successful companies have superior skills in customer understanding (Blank, 2013; Day & Schoemaker, 2016), and the framework places the user in the center of the process without forgetting the context. A tight connection with the users and quick iterations should be favored when you are unfamiliar with the context and special characteristics, such as homogeneity, are present.

When looking at the results and the framework on a closer level, both similarities and differences can be found. The socio-technical factors of the framework were present in the challenges: culture; jurisdiction; technology; and economy. The tangible or physical world is only mentioned with technical infrastructure, which suggests that when developing mobile services, the intangible world plays a bigger role. This is logical when thinking of the intangible nature of mobile services. This doesn't mean that a tangible environment could be neglected completely from the framework since geography, weather and infrastructure could influence the usage and function of mobile services as well. The tangible world could be more important for projects targeting primarily rural areas which were the original scope of the framework. Even though the startups in question didn't develop mobile services only for the rural population, it didn't seem to affect the usefulness of the framework otherwise.

Similar socio-technical factors are present in other frameworks in the literature, as well. Ghemawat (2007) has introduced a CAGE Distance Framework for business managers in order to evaluate the differences with home and possible target market. The framework encourages us to identify cultural, administrative, geographic, economic and infrastructural differences. On the other hand, their framework lacks mention of technological differences but it can be seen as a subcategory of infrastructure. By combining the results and frameworks such as the CAGE Distance Framework, we can conclude that the socio-technical environment needs to be emphasized and studied carefully.

The findings suggest that the Environment Sensitive User-centered Design Framework by Backhaus et al. (2014) could help the startups to be better prepared for the two main challenges identified in this study, the context and holistic understanding. On the other hand, the framework doesn't touch the third biggest challenge category, resources. However, it's not the purpose of a product development process to answer explicit questions related to HR and the usage of monetary resources. No process can combine all the aspects of being a startup but can provide a roadmap and assistance. Therefore, later in this thesis, practical implications are also discussed and recommendations for future startups and founders are given.

On the other hand, the results show how the different context doesn't affect only the PD process but the company as a whole. Many of the identified challenges were business challenges that affect collaboration with users, partners and even hiring. Due to the strong focus on the UCD process, **the discussion of the paper by Backhaus et al. (2014) neglects the business part.** But at the same time, since the framework highlights the socio-technical aspects it could be used similarly to the CAGE Distance Framework (Ghemawat, 2007): as a reminder to pay attention and explore the differences in the context and evaluate how they affect the business.

Even though Backhaus et al.'s framework matches the found challenges well, other methods were also studied. Shen et al. (2006) suggest using culture-centered design which focuses on the effect of different cultures, especially on interface design. Due to the main focus on interaction design, the perceived challenges didn't match with the more limited framework. The comparative study of HCI and cultural dimensions by Kamppuri et al. (2006), raised up the critique on the rather popular culture focused concepts due to their abstractness and emptiness. According to studies, the cultural dimensions can be more useful as post-hoc framework rather than as a model that informs design. Their meta-analysis also showed that such models easily lead to a superficial comparison of two cultures and the differences. Just as

the results of this thesis showed, they believe that understanding the interplay between culture and technology should be emphasized and the cultures need to be studied from within. This brings evidence to the socio-technical focus of the framework by Backhaus et al. (2014).

All in all, literature didn't provide a better framework than the Environment Sensitive User-Centered Design Framework by Backhaus et al. (2014). The results suggest that this framework could be seen as a viable option when developing products for emerging markets hence empirical evidence of the usage of the framework is needed.

5.2.2 Revised framework

Considering the controllable or uncontrollable nature of the challenges, it is possible to make a slightly revised framework. The companies have power over controllable factors such as the product development strategy but can't control uncontrollable factors such as consumer culture or internet connectivity. The revision seems to fit the results of this thesis and could possibly be used in other similar contexts (Figure 23). The revised framework aims to highlight the complexity of the challenges faced by the case companies in emerging markets.

There are a lot of differences in the socio-technical systems in emerging markets and Finland, such as many tangible and intangible factors, that can cause challenges and therefore need special attention when developing the product. By adding the controllable and uncontrollable factors to the figure, the aim is to emphasize the deeper understanding of the differences and how they affect not only the PD process, but also the other processes of the company such as business relationships and hiring.

A small iteration in the framework can help future startups to encounter developing markets with fewer challenges and support the future directions of similar research.

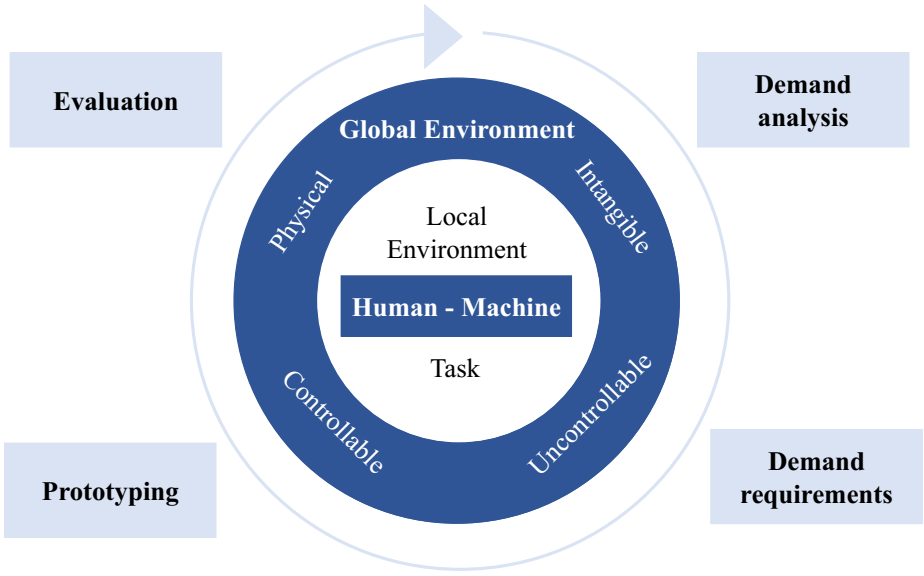

Figure 23 The revised framework based on the framework by Backhaus et al. (2014, p. 406).

5.3 Practical implications

The results of this thesis can benefit the Finnish startups, especially the founders and the management team, who are entering emerging markets as well as people interested in doing so in the future. Even investors of these companies can benefit from the results. Since the results are rather general, any startup entering a similar market in the same stage could profit from the results.

Understanding customers is crucial for the success of any startup (Blank, 2013). When the customer operates in a very different environment compared to the product developers, understanding customers becomes harder and therefore possibly even more crucial. The founders need to be aware of the vast changes in the socio-technical system and how that affects both the behavior of the customers and the business environment. These changes and their effect need to be taken seriously and enough time and resources need to be assigned for studying the market and conducting proper user research. **Since learning is slow, this causes special challenges for resource-scarce startups.** Due to the vast change in the context, conducting for example a desk study wouldn't be enough, and longer presence is needed that enables to observe all the different contextual factors and the needs of customers, partners and other stakeholders. Common product development processes don't take into account changes in the socio-technical system and therefore alternative methods should be considered, such as the Environment Sensitive User-Centered Design Process.

Even though changing the product development process and doing quality user research can help solve the context mismatch between the user and the designer, based on the results, this may not be enough. Hiring local employees early on and using professionals when the team lacks key skills, such as user research knowledge, is highly recommended. It has been noted that that the senior decision-makers, such as founders often fail to empower the junior employees to speak up on crucial information regarding the challenges that came by surprise for the company (Day & Schoemaker, 2016). The challenge of distributed information can be solved with frequent and wide communications and an open mindset from the leaders. This needs to be kept in mind when key skills, such as contextual understanding, are outsourced but at the same time can help to overcome the founders' own bias and habits of thinking. Otherwise, the founders might fail to emphasize these crucial aspects when making decisions which in turn affects resource allocation.

At the same time, the issues of diversity in the Finnish tech ecosystem have been discussed recently in the press. When developing products for a highly complex and new environment a diverse multidisciplinary team could be an asset. Hudson (2009) noted that many men with technical roles had low empathy scores which make user understanding more challenging. Even though systemizing skills are important in technical startups, diversity can affect empathy towards users and their challenges positively. It's questionable whether only engineering heavy founding teams without local expertise are the best composition to solve these rather soft challenges. SMEs are particularly influenced by the founders' personal experience and capabilities (Bloodgood et al., 1996). According to Ghemawat (2001) companies who have a large cadre of international managers, in this case, founders, are less affected by cultural differences. Moreover, Sheppard, Dominick, and Aronson (2003) explain that having empathy for others can help engineering leaders to navigate challenges related to different cultures and languages, and even virtual teams.

This suggests that in addition to hiring locals early, diversity of the founding team is something that should be considered already in the beginning. Due to the resource constraints hiring a multidisciplinary team can be hard for startups especially in the early stages and therefore the composition of founders' skills can balance this. The question of diversity also concerns advisors, board members, and even investors. Are you running a Finnish startup from Finland or are you truly an international company present in the target market?

Of course, the challenges raise the question of whether fully western teams lacking contextual understanding should even select emerging markets as the primary target. It's evident that being a startup is always a struggle but selecting a different, very homogeneous context, brings a whole new level of challenges. Therefore, the founders need to be ready to commit to the challenge and adapt to a different market. Learning also requires presence and therefore extensive travels or even relocation could be required.

Getting investments for such startups can be difficult since western investors lack understanding of emerging markets. This needs to be taken into account when planning for resources and financing. Luckily successful examples can slowly raise the interest of investors and also encourage more startups to consider emerging markets as a viable option. Through more cases, academic research also benefits which supports a deeper understanding of western startups in emerging markets.

5.4 Validity and limitations

The validity and reliability of this study has been increased by following the process of thematic interviews and theme-analysis and by making justified decisions during the process. The methods used in the empirical study have been discussed in Chapter 3 and also the method of coding was explained in detail. The author conducted the interviews alone and did the word-to-word transcripts herself. The thesis advisor was assisting in the analysis phase and initial coding categories were discussed together. This increases the reliability of the results and the bias of the author has been reduced (Eisenhardt, 1989).

Like any other study, this study also has its limitations regarding generalizability and validity. All of the case companies were focusing initially on East African countries. Even though there are a lot of similarities between the key characteristics of emerging countries, the emerging markets weren't truly represented in the study. Therefore, it can't be truly stated that the results of this study would be truly applicable to other regions. Backhaus et. al (2014) also stated that not all the characteristics of the socio-technical system apply for all developing countries.

The interviewed startups were focusing on three different industries even though all of them were mobile-based services. The founding teams were also very engineering heavy. The challenges of a company with physical products could be very different. Market type changes everything a startup does and therefore assuming that the strategies or tactics that worked for one startup would work for others is an error (Blank, 2013). Challenges seemed to be a very personal experience and one's own background can affect them a lot which should be kept in mind. Another limitation is that the data of this thesis consisted of retrospective experiences, which might affect the accuracy of the events. Also, some of the interviewees were more thorough and talkative which offered more insights.

In addition, the sample size of this thesis is rather small. The number of interviews was constrained by the limited resources but also there are very few Finnish mobile-service startups targeting emerging markets. By widening the scope, for example, to include other Nordic startups could have increased the significance of this study. On the other hand, the sample size in qualitative research is usually smaller compared to quantitative ones (reference).

Also, the author's lack of experience in conducting academic qualitative research might have affected the results. Some of the interviews were done face-to-face whereas others were conducted over Skype which could have affected the facilitation of the interview, the wording and the ease of communication. The question set used to facilitate the semi-structured interviews was tested beforehand with the thesis advisor which increased the comparability of the transcripts. Therefore, no major changes in the question set were needed between the interviews.

Since the challenges of Western companies in emerging markets have mainly been studied through large MNEs this limited the possibilities to compare and validate the results with similar existing literature. On the other hand, lack of previous research opens up many possible research directions for the future that are discussed in Chapter 5.8.

5.5 Ethical considerations

The interviews were conducted by following Aalto University's data processing principles and ethical guidelines. All of the interviewees gave consent for participation in the study and for the recording of the interviews. The data processing principles and anonymity were explained to all of the interviewees along with the goals and the purpose of the study.

All of the interviewees were familiar with research and had a connection with the thesis advisor Niti Bhan or the author's other personal connections which made approaching the participants more natural. The author did the best to ensure that the interviewees felt comfortable and secure during the interviews. It was emphasized to all the participants that they don't need to answer questions they don't feel comfortable answering, but there was no such situation.

The thesis has been written in a manner that protects the participants' and their companies' anonymity and therefore no detailed personal or company information has been shared in the thesis which could link the results to an individual person or a company. In addition, information not relevant to the thesis has not been shared.

5.6 Future research

The findings of this study propose that Finnish mobile-service startups face challenges on multiple different levels when developing products for emerging markets. This is in line with the research gap identified at the beginning of the study. Since western companies entering emerging markets have been studied mainly from the perspective of large MNE's or through individual development aid projects, these results provide a good base for further studies on western startups entering emerging markets.

Still, it must be noted that due to the time and resource limits further research is needed. Due to the constraints, only the challenges of the interviewees and their advice for other startups were studied in more detail. In addition, due to the small amount of Finnish mobile-service

startups in emerging markets, this study could be expanded with other Finnish or Nordic startups entering different parts of emerging markets. Also, startups from different industries should be studied in order to increase generalizability.

Many of the challenges were in line with the underlying framework by Backhaus et al. (2014) and therefore provide evidence for their framework. But since the framework is on a theoretical level and there is no actual evidence of companies using the framework and its real-life benefits, empirical evidence is needed. This is supported by Backhaus et al. (2014). The models that can help startups to meet the requirements of global markets need to be developed and validated empirically and developed through incorporating lessons learned from using them (Bailetti, 2012).

What was not done in this research and would benefit the future startups is to study the connection between contextual understanding and limited resources. How to do quality user research and find product-market-fit in a different context when you are constrained by human and monetary resources and time? In addition, the importance of diversity of the founding and core team would be a valuable future research direction. It's noted from the literature that diverse management teams provide various benefits (Cantwell, 2009; Ghemawat, 2007) but this topic hasn't been studied through the effect on western startups focusing on emerging markets. Both of these research directions would have valuable empirical value since the use of resources and the composition of the founding team is something that startups can actually affect through awareness and decision-making process.

Since the emerging markets are estimated to be the main source of economic growth in the future (PWC, 2017), western companies, despite their size, can't neglect these areas anymore. Therefore, the research topics around this theme are crucial in order to deepen the understanding of how changing the context affects the models and frameworks mostly deriving from a western context and therefore prepare both academia and business world to encounter the future changes in the economy.

5.7 Conclusions

Based on the interviews of eight key decision-makers, mostly co-founders, of early-stage Finnish startups, this thesis explored the experiences related to building mobile service products for the East African market. The focus was on the challenges and lessons learned of the interviewees as well as on the "advice" they shared. As a result, 66 challenges, 21 lessons learned, and 52 pieces of advice were identified from the interview data. The very different context of the target market, including for example cultural and regulatory differences, was the main source of challenges. The distinct socio-technical environment makes understanding users and the market harder, which poses challenges to holistic understanding and product development. The East African socio-technical environment is much more heterogeneous compared to Finland, which increases the complexity of the context. The key lessons learned, and advice was related to utilizing local talent and professional help earlier and being personally more present on the market. But at the same time, the limited resources of these startups are hindering hiring and travel.

Based on the analysis, the Environment-sensitive User-centered design framework by Backhaus et al. (2014) supported the identified challenges and could serve as a useful tool when developing products for the new-to-team environment. The framework focuses both on the intangible and tangible socio-technical environment, but the identified challenges were more

on the intangible side. Still, it doesn't mean that the tangible side, such as physical infrastructure could be neglected completely, but suggests that the interviewees had more challenges with the "soft" intangible side.

Furthermore, this thesis suggests that the team matters when designing products for a complex uncertain environment. The analysis suggests, that key team members' previous Africa and UCD experiences are beneficial and can provide tools to encounter the new market and its differences. Interviewees with experience from some emerging markets were generally more accepting and ready to adapt to the different markets. They were also more positive despite the challenges. Also, multidisciplinarity provides benefits and very professional user researchers should be used. On the other hand, the quality of decision making when all the founders come from a Western background and the validity of the common product development processes and practices were questioned in the study.

This thesis creates a strong foundation for future comparative studies and takes the first steps in understanding the challenges that small resource-scarce companies face when developing products for a new and different context, such as emerging markets. Thus, this thesis contributes to the gap identified in the literature and provides concrete suggestions for future startup founders targeting emerging markets.

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Appendix 1 Interview structure

The following structure was used in all the interviews to guide the conversation. In addition, further clarifying questions were asked whenever appropriate.

I. Personal and company background

- What is your background (education, work, etc.)
    - Year of birth?
    - Nationality?
- What is the story/background of the company in short?
    - Founding year of the company?
    - Number of employees and their location?

II. Assumptions

- What are the geographic regions the company is serving?
- How familiar were you with the market prior to founding or joining the company?
- Did the market meet your expectations? What about the customer needs?
- What would you do differently if you would be learning about the market now?

III. Getting to know the market

- How many times have you visited the market? At what stages?
- What kind of methods has the company used to learn about the market and the users? Describe.
    - How were these methods chosen?
    - Did the approach change at any point?
    - Who was responsible? Did you look for specialists?
    - Were you personally involved? Describe.
- Were the methods discussed above effective? Would you change something now?

IV. Collaboration

- Is the company collaborating with locals? What kind of stakeholders does the locals represent? Describe the collaboration.
- Do you personally collaborate with locals? Can you describe an example?
- How has the collaboration evolved?

V. Learnings and best practices

- What have been the biggest challenges the company has faced in the market? Can you describe an example.
- What has been the biggest challenge to you personally?
- How were these challenges tackled? Have you developed any best practices?
- What kind of advice would you give any other Finnish startup entering the same market?
- Is there something you would have wanted someone more experienced to tell you before starting the journey in the market?

VI. Additional information

- Is there anything else you would like to share with me from your experiences?