THEY HAVE NOT FAILED, THEY HAVE JUST FOUND WAYS THAT WON'T WORK.

A STUDY OF FACTORS THAT INFLUENCE THE FAILURE PROCESS OF STARTUPS

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Summary

Startups contribute to economic development and are important initiators of innovation. The literature that identifies factors which stimulate the development of startups, is fragmented and controversial. In addition, the absence of sufficient studies into factors leading to startup failure is of particular concern. This is remarkable, considering the high failure rate of startups. To contribute to the understanding of startup failure, this thesis studies failure factors and its influence on the failure process of startups located in The Netherlands.

In order to study this, an integrative framework with failure factors is established based on literature, which addressed the fragmentation and the controversial literature. A database that of the Dutch Chamber of Commerce that includes factors that explain cessation was used to search for failure factors beyond the factors included in the integrative framework. No additional factors were found, but some of the factors in the framework were confirmed by the database. The main research consisted of 21 interviews with founders which resulted in insights in the frequency of failure factors, what can trigger failure factors and how failure factors can lead to failure of startups. This brought more understanding to the failure process. To provide additional information and context to these results, five startup experts have been interviewed.

The 25 failure factors that have resulted from this study, have been clustered into the categories product, market, financial resources, strategy, founder(s)/team, culture in sector and external influences. Different failure factors contributed to different extents to the failure process. Failure factors in the category founder(s)/team occurred most and had the strongest impact on the failure process. On average the failure process was influenced by seven failure factors, the factors varied per case. The factors are interwoven and influence each other. Patterns and causality among factors are diverse and most factors are not bound to a certain phase of development of the startup. The high number of factors contributing per case and the diversity of these factors, results in a high variety of sets of factors contributing to failure, which shows the high amount of paths to failure. This shows the high complexity of the failure process of startups.

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1 Introduction

"There are more entrepreneurs operating today than at any previous time in history" (Ries, 2011, p.16)

Countries aim to stimulate the creation of startups (Mandakovic, Cohen, & Amorós, 2015), because startups are a main driver of economic growth and development (Arasti et al., 2014; Cusumano, 2013; Richter et al., 2018; Song et al., 2008). Startups can be defined as newly established businesses that play a key role in innovation (Richter et al., 2018; Spender, Corvello, Grimaldi, & Rippa, 2017). They positively contribute to employment and engender the production and commercialization of high-quality innovations (Kane, 2010; Van Praag & Versloot, 2007).

The significant role of new firms in economic and social development has led practitioners and researchers to search for the factors that affect performance of these new firms (Li, 2001). Therefore, researchers devoted a great amount of studies to firm survival in general (e.g. Audretsch & Mahmood, 1995; Cefis & Marsili, 2005; Mas-Verdú, Ribeiro-Soriano, & Roig-Tierno, 2015) and specifically to startup survival (e.g. Coleman, Cotei, & Farhat, 2010; George, Zahra, & Wood, 2002; Kim & Heshmati, 2010; Shrader & Siegel, 2007; Utterback & Suárez, 1993; Zahra & Bogner, 2000). The results of the literature studying success factors of startups, are still controversial and fragmented (Song et al., 2008). This controversial aspect can be illustrated by innovativeness of young firms which is perceived as an essential contribution to firm survival in some cases (e.g. Colombelli, Krafft, & Quatraro, 2013) while others question the positive effect of innovativeness for young firms (Hyytinen, Pajarinen, & Rouvinen, 2015). The fragmentation is shown in research focusing on one aspect of startup success or a limited amount of factors (e.g. Chamanski & Waagø, 2001; Li, 2001). The controversial and fragmented research shows no scientific consensus has been reached yet, therefore research suggests it is important to gain more insights in firm survival (Krishna, Agrawal, & Choudhary, 2016; Song et al., 2008).

Of particular concern is the fact that most studies only include startups that have survived while leaving out failed firms (Giardino, Wang, & Abrahamsson, 2014; McGrath, 1999). This leads to a survivor bias with the implication that factors influencing success and failure of startups can be substantially different and factors that seem to deliver the best performance can be misleading (Song et al., 2008). The absence of sufficient studies into the factors leading to startup failure is striking, since a better understanding of these factors could help prevent mistakes and thus improve the chances of startup survival (Gong, Baker, & Miner, 2009; Kim & Miner, 2005). The urging nature of this research is highlighted by the high failure rates of new firms (Baum et al., 2000; Bruno & Leidecker, 1988; Cooper et al., 1994; Dahl & Reichstein, 2007; Salamzadeh & Kawamorita Kesim, 2015; Song et al., 2008; Zacharakis et al., 1999). This is confirmed by Bruno & Leidecker (1988) and Giardino et al. (2014) who state that research focusing on failure is at least as important as research focusing on success. Another reason why it is important to study causes of failure is the difference that exists between success and failure. Some literature perceives failure as the opposite of success (Roure & Keeley, 1990). However, more recent studies emphasize this is incorrect and failure should be seen as a sibling of success, where failure and success coexists (Danner & Coopersmith, 2015). Meaning, a startup that is not equipped with success factors, does not necessarily fail

as well as the possibility exists startups fail that are equipped with success factors. This shows success and failure are not inversely proportional, which increases the lack of knowledge how to circumvent failure. This increases the relevance of gaining insight into failure of startups.

The limited amount of studies that do include failed startups mention several factors that can cause failure, such as wrong time-to-market, no customer feedback or an unclear business plan (Battistella, De Toni, & Pessot, 2017; Bruno & Leidecker, 1988). However, no consensus has been reached yet. Also, as (Bruno & Leidecker (1988) explain *"failure is a process that occurs over time; it is not a sudden death"* (p. 52). This means there is more to the story of failing startups, than identifying a single failure factor. The process of failure and the moment of impact of factors is not clearly mapped and lacks attention in current literature, while this process entails reasons why the factors lead to failure. Therefore, research suggests that the study of failure should increase and, specifically, studies addressing the process of failure (Bruno & Leidecker, 1988; Cope, 2011). This study seeks to address this gap by studying the influence of failure factors on the failure process. Therefore, the research question is as follows:

What are the failure factors and what is the influence of failure factors on the failure process of startups?

This research question is addressed using an explorative approach, starting with a preliminary research. This is based on an existing database of the Dutch Chamber of Commerce that includes factors that explain failure. Therefore, this part of the research focuses on the variety of failure factors. Thereafter, interviews are conducted to proceed the explorative search for in-depth insights in either confirmation of known failure factors or to identify new factors. The research focuses on The Netherlands. The government of the Netherlands aims to reach the top three beneficial startup climate of Europe (VNO-NCW, 2015). This makes The Netherlands an ambitious and interesting environment to study startups.

This research contributes to constructing an inventory of factors and studies how they contribute to failure process of startups. These insights are relevant for startups to be able to recognize and act upon problems in their business. For institutions who assist or advice startups this research can contribute to understanding the process of failure along with recognizing faults in an earlier stage, which enables them to steer the startup in the right direction. This could diminish the number of startups that fail, which is beneficial for the economy. Furthermore, this study contributes to an initial understanding of the startup failure process, which is of importance (Bruno & Leidecker, 1988; Cope, 2011; Song et al., 2008), and therefore contributes to the startup literature. This study can also be perceived as an enrichment for literature addressing the life cycle of organizations, considering the ending of a specific kind of organization is studied.

2 Theoretical foundation

The theoretical review starts with the definition of startup and explanation of the development phases of a startup. Followed by a section that discusses the failure process and explains what it entails in literature and in this research. Furthermore, the factors that influence the failure process are discussed. The theoretical foundation ends with a section which provides a summary of the factors addressed.

2.1 Startup

Startups can be defined as ventures that are in the early stages of their development (Hyytinen et al., 2015). In literature, no consequent maximum age is maintained for a startup. While Hyytinen et al. (2015) study startups at the age of three, most studies perceive ventures not as a startup anymore at six or eight years old (Song et al., 2008). However, in some sectors such as pharmaceuticals it takes up to ten to fifteen years to get a product on the market (Holgersson, Se, Phan, & Hedner, 2016). Therefore, no maximum age is determined for this research, except for the venture being in its early stages of development. Furthermore, a large segment of literature builds on the notion that startups are based on a novel business idea. A novel business idea can be seen as an innovative product or service (Dahlqvist & Wiklund, 2012). Based on this input the following definition of startup is used in this research: '*a new venture in its early stages of development which is based on an innovative product, service or process*'.

Since, the development process of a startup costs time, the early stages of development consist of several phases. The focus of the startup differs per phase. Three phases have been established using input from literature (Cai, Chen, Chen, & Bruton, 2017; Fisher, Kotha, & Lahiri, 2016; Gegenhuber & Dobusch, 2017; Nuscheler, 2016);

1) Conceptualization phase; Focus lies on development of the emerging product and resolving critical technical problems.
2) Commercialization phase; Focus on lowering the market risk.
3) Growth phase; Seek a broader base of financial resource providers, to expand organization.

2.2 Failure process

"I have not failed. I've just found 10,000 ways that won't work". – Thomas A. Edison

Business failure and business success both have a high diversity of conceptualizations in literature. Business failure is sometimes described using broad definitions of failure, namely; giving up, a lost opportunity or outcomes you neither expected or hoped for (Danner & Coopersmith, 2015). Or one uses definitions describing an event that is perceived as a failure, among them; bankruptcy, organizational death, merger and not meeting the responsibilities to stakeholders (Bruno & Leidecker, 1988). The same holds for measuring success, a high diversity of dimensions of firm performance are used for startups, such as employment growth, market share and evaluation of success by the founder (Eveleens, van Rijnsoever, & Niesten, 2017). Since the dimensions are meant to measure the success of a startup and the outcome of the startup is already known, namely failure, these measures are not suitable for this research. To ensure it is clear what is perceived as success and failure in this research, demarcations are given. Every startup that is included in the following definition is perceived as a success: '*the completion and successful marketing of the product of the startup to such*

an extent, the founder perceives the business as a success'. Failure of startups is harder to define, because failure can happen in every phase of the startups development. Therefore, a broader definition is established for failure of startups: '*a negative course of development of a startup to such an extent, the founder perceives the business as unsuccessful which is often followed by cessation*'.

For cessation of larger firms, models of organizational death exist (e.g. Hall & Tolbert, 2004). Hall & Tolbert (2004) explain organizational death is an outcome of organizational decline, which happens in five consecutive stages.1) Blind: The organization is blind for the decline and thus sees no need for action. 2) Inaction: There is need for change, the organization recognizes this, but takes no action. 3) Faulty action: The organization takes action, but the actions are inappropriate ones. 4) Crisis: There is a crisis situation in the organization. 5) Dissolution: The actual death of the organization. The stages confirm business failure does not happen suddenly, but it is a process as Bruno & Leidecker (1988) stated. Although startups are smaller organizations, which may spur the stages, there can be expected a process of decline is present for startups before reaching organizational death as well.

A process can be defined as a series of actions or steps taken which result in a particular end (Bonev, 2012). In this case the 'particular end' is failure. This means several actions or steps influence the ending of the business, which is called the failure process during the remainders of this research. Literature does elaborate on actions or steps that can influence the ending of a business, which are called failure factors. Therefore, failure factors influence the failure process and are elaborated upon in the remaining sections of this chapter.

2.3 Failure factors

Studying all failure literature of startups led to the creation of an integrative framework of several categories that contain failure factors. Literature reviews such as Battistella, De Toni, & Pessot, (2017) have been carried out, however, this is the first time an integrative framework of this size is tested. The categories of the integrative framework are created by studying the categories used in literature and thinking of umbrella terms for indicated causes for failure. Since a broad scope of potential influences on the failure process is studied, a diverse set of categories is included; product, market, financial resources, strategy and founder(s). These categories most resemble the ones used by Battistella et al. (2017). Furthermore, within the categories several factors are addressed. The failure factors are established combining all literature available on causes for startup failure. A systematic overview was made of factors found in the articles. Overlap between factors is prevented, by merging or clearly demarcating the factors. Sometimes it was necessary to combine factors, slightly adjust them or assign a more concise term to create a succinct overview of the failure factors. Furthermore, this research considers the process of failure, which means it takes place over time. Therefore, literature is studied to find indications if failure factors are more relevant at a certain phase in the process. If possible, the expected moment of impact of factors on the failure process is discussed.

2.3.1 Product 

The product of a startup, being a service, process or product, is perceived as an important category (Battistella et al., 2017; Vesper, 1990). Establishing a product is challenging, but the most important part of a startup, due to the facilitating effect for the remaining categories (Vesper, 1990). As a consequence of its facilitating role, absence of the qualities would be

notified early in the process of development of the startup and lead to problem in the first phase of the failure process. The failure factors within this category are; low potential of product, wrong time-to-market and lack of product protection.

Firstly, the product of a startup must be desired (Vesper, 1990) and must have added value for a market to have the potential to gain revenue (CB Insights, 2015). If this is not the case, the foundation of the startup has no potential, which leads to failure (Vesper, 1990). Secondly, when the timing is either too early or too late, this negatively influences the chances of survival (Battistella et al., 2017; Bruno, Mcquarrie, & Torgrimson, 1992; Vesper, 1990). If a product is brought to the market too early, the customers are not ready yet, e.g. when the surrounding infrastructure is still in its infancy. This can cause customers to have a negative association with the product, which leads to a very low or no sale. Releasing a product too late, can cause missing the window of opportunity in the market. This can lead to low sale of the product, because other competitors are already on the market and therefore the first mover advantage is lost (Markides & Sosa, 2013). Thirdly, it is important to protect the product against copying. However, startups have limited resources for the protection (Bruton & Rubanik, 2002; Cohen et al., 2000), which can result in other companies copying the product .This enlarges a startup's chance of failure (Cohen et al., 2000).

2.3.2 Market

The category market withholds the dynamics between the market and the startup. It consists of two main groups from different perspectives. The factor high market dynamics is from an industry perspective, because here the environment of the startup is taken into account (Ferreira, Li, & Suk, 2009). The second group consist of three failure factors that are associated with the startup itself, namely lack of market research, inappropriate marketing and limited user producer interaction.

Firstly, the states of markets can differ. When companies enter a smaller or more slowly growing market, there are shown better results than those in large fast-growing markets (Stuart & Abetti, 1987). One of the reasons is the high likelihood of entrance of competitors in a market with high dynamics. Therefore, this can be disadvantageous for startups, leading up to a failure (Battistella et al., 2017).

Secondly, a lack of market research can be problematic. Impatience of the founder of wanting to start selling the product, often results in a lack of market research. However, to sell a product it is important to know what market to address, otherwise it can lead to failure (Ries, 2011). Thirdly, inappropriate marketing can be a reason for failure for a startup as well. When a startup does address the right market, but has a selling or distribution strategy that does not fit the customers, this can mean customers cannot be reached (Battistella et al., 2017; Bruno et al., 1992). According to Carreira (2016), marketing is especially important in latter stages of a startup. Lastly, user-producer interaction (UPI) is of importance (Battistella et al., 2017; Blank, 2012; Lundvall, 2009). It is the knowledge gained by learning-by-using from users to producers and vice versa. UPI can give information about the needs of potential customers for an innovation and is necessary for fine-tuning an innovation. These processes are key for innovation (Lundvall, 2009; Porter, 1998), meaning if this process is not included, the chance of failure is enlarged.

2.3.3 Financial resources €

Although constrained financial resources may lead to more creative products (Scopelliti, Cillo, Busacca, & Mazursky, 2014), it is clear financial resources create opportunities as well, since having lack of finances enhances the chances of failure (Battistella et al., 2017; Vesper, 1990). The category financial resources consists of four failure factors, namely initial undercapitalization, limited availability funding, problematic relationship with investor and not being able to make both ends meet.

The first financial failure factor is the initial undercapitalization of a startup. A greater amount of capital raises the chance of survival (Vesper, 1990), moreover, limited financial means increase chances of failure (Battistella et al., 2017; Bruno et al., 1992; Duchesneau & Gartner, 1990). Secondly, the availability of funding influences the amount of financial means a startup can potentially gain. If a low amount of funding is available, it is harder for a startup to appeal for the money and to convince an investor to choose to invest in their startup (Battistella et al., 2017), which enlarges the chance of failure. Thirdly, if a startup has gained an investor, the quality of the relationship can influence the startup's well-being. A good relation being where the entrepreneur and investor share the same objectives and agree in what way to achieve them. This relationship often deteriorates over time, because objectives diverge (Bruno et al., 1992). Therefore, it can be assumed that if the relationship with the investor is problematic, the problems arise at the end of the failure process. The last failure factor in this category is not being able to make both ends meet. This means the expenses are higher than the income. This can be the case for startups that have financial problems, such as high overheads, too late return on investment or running out of cash (Battistella et al., 2017). They experience a lack of financial resources for normal operative activities (Grimaldi, Quinto, & Rippa, 2013). These problems lead to financial shortage, which can lead to failure of a startup.

2.3.4 Strategy 

The category strategy consists of factors describing the path set out for the startup and means used to achieve this. The factors within the category strategy that influence the failure process are the absence of a clear strategy, a limited business plan, low flexibility, lack of networking and lack of professional advice.

Firstly, strategy is set of committed choices that are guiding for the way resources are spend in order to achieve a particular goal, it determines the path of the startup (Casadesus-Masanell & Ricart, 2010). If a clear strategy is absent, the resources do not build up towards a goal, which can lead to failure (Duchesneau & Gartner, 1990). Secondly, a not clearly worked out business plan can cause obstacles and challenges for a startup. A business plan refers to the logic of the firm, how it works and operates. It describes how the strategy is concretely implemented and can be perceived as the daily steps along the path towards a greater goal (Casadesus-Masanell & Ricart, 2010). Duchesneau & Gartner (1990) show that successful startups have devoted almost up to three times as much time on writing a business plan compared to unsuccessful startup, therefore it is important an elaborate business plan is present to circumvent failure. Thirdly, flexibility is important for startups (Battistella et al., 2017; Cusumano, 2013; Duchesneau & Gartner, 1990). Startups often need multiple chances to get to the right business model, therefore they need flexibility in strategy, technology and business models to be able to determine the right path for the startup. The most suitable approach is often only found by trial and error. A startup needs to focus on this business model, however,

be prepared to pivot quickly if the initial strategy is not working (Cusumano, 2013). Thus, when a startup is not flexible enough to switch, it may cause the failure of the startup.

Fourthly, networking and making alliances is important for startups to prevent failing (Battistella et al., 2017; Vesper, 1990). Since startups have limited resources, an interorganizational cooperation to obtain access to resources of another company can be a smart move and help to follow the desired path. Alliances can help when innovating, in addition they positively affect the corporate performance (Nooteboom, Vanhaverbeke, Duysters, Gilsing, & Van den Oord, 2005). The assistance and information of industry partners and suppliers is a condition to survive (Duchesneau & Gartner, 1990). Lastly, the lack of professional advice is one of the causes of failure (Battistella et al., 2017; Duchesneau & Gartner, 1990). Carreira (2016) found out that having a mentor increases the chances of survival, because due to the advice the startup does not have to reinvent the wheel and find the suitable path more easily. Investors, who can be seen as professionals, can ask valuable questions to founders to search for unexplored directions to decrease the chances of failure (Cusumano, 2013).

2.3.5 Founder(s)

The founders of the startup often have a dominant influence on the state of affairs (Van Gelderen, Frese, & Thurik, 2000). Therefore, the capabilities of the founders can influence the performance of a startup. The following five failure factors are identified: a lack of management skills, little or no entrepreneurial experience, low commitment, an ineffective team and a mismatch between skills founder(s) and business.

Firstly, Bruno & Leidecker (1988) identified bad management as the cause for 90% of startup failures. Almost 25 years later Krishna et al. (2016) and Ries (2011) conclude bad management skills are one of the most important factors for startups to fail. Some founders do not have the knowledge to manage a startup (Ries, 2011). When founders have a lack of management skills the startup can be compared to a sailing ship, but the captain does not know how to sail. In this case the startup can be equipped with the right assets, but if somebody does not know how to use these, the startup will not make it. The same holds for lack of entrepreneurial experience. If one has no entrepreneurial experience, it is hard to take the right decisions, which enhances the chances of failure (Battistella et al., 2017; Cooper et al., 1994). According to Carreira (2016), entrepreneurial experience is a factor that is important in the early phases of a startups, and therefore could presumably be a factor influencing the first development phase of a startup which the start of the failure process. Thirdly, low commitment from entrepreneurs can lead to failure (CB Insights, 2015; Duchesneau & Gartner, 1990; Van Gelderen, Thurik, & Bosma, 2005). The lower commitment of the entrepreneur can result in an absence of leadership within the startup (Battistella et al., 2017). The absence of leadership can be compared to the same ship with a captain that does not steer the ship, meaning the startup cannot be steered in the right direction.

Furthermore, problems within the team can arise. This does not mean that the founder does not know how to manage the startup, but this is related to interpersonal problems or an imbalance in the team, which leads to an ineffective team (Battistella et al., 2017; Bruno & Leidecker, 1988). An ineffective team can be defined as one that operates at cross purposes rather than with common objectives, which leads to imbalance in the team (Bruno et al., 1992).

According to Bruno et al. (1992), this can be hold responsible for almost half of the startup failures.

The last factor discussed is a potential mismatch between skills of the founders and the business they are running. These skills can be technical skills, market skills or industry know-how (Battistella et al., 2017; Stuart & Abetti, 1987; Vesper, 1990). The skills can be compared to knowledge of the captain. When the captain is trained for inland sailing, it is very hard for him to sail at sea, due to a lack of knowledge of currents and rules at sea. The same holds for a founder and his startup. When the founder does not have the skills necessary, he is not equipped to take the right decisions. This makes it hard to lead the startup in a successful way, resulting in a higher chance of failure. Skills of the founder, such as technical experience, are most important at the start of a startup, and therefore potentially influence the start of the failure process (Carreira, 2016).

2.3.6 Take-off table

In this section a summary of the failure factors provided by literature is shown in the take-off table (Table 1). This is a basis for the execution of this study. Why these factors may lead to failure is clarified by the column explaining why these factors can influence the failure process. Literature does not often elaborate on the expected moment of impact of factors, therefore this is not included in the table below.

Table 1: Categories with their failure factors and the reason it can lead to failure

Category	FF	Failure factor	Why does it lead to failure?
Product 	FF1	Low potential of product	No added value, means no revenue
	FF2	Wrong time-to-market	Customers not ready yet, or missing window of opportunity
	FF3	Lack of product protection	Not protected against copying
Market 	FF4	High market dynamics	Threat of new entrants
	FF5	Lack of market research	Wrong market, means no adoption product
	FF6	Inappropriate marketing	Customers cannot be reached
	FF7	Limited user producer interaction	Customer needs not considered
Financial resources €	FF8	Initial undercapitalization	Too limited financial resources
	FF9	Limited availability funding	Too hard to gain financial resources
	FF10	Problematic relationship with investor	Diverging objectives of startup and investor
	FF11	Not being able to make both ends meet	Financial shortage
Strategy 	FF12	Absence of a clear strategy	No guidance
	FF13	Limited business plan	Missing steps towards goal
	FF14	Low flexibility	Not being able to switch, while switching is necessary
	FF15	Lack of networking	Missing out on sharing resources or information
	FF16	Lack of professional advice	No time and resources to reinvent the wheel
Founder(s) 	FF17	Lack of management(knowledge)	Resources available are not exploited
	FF18	Little or no entrepreneurial experience	Not experienced enough to make to right decisions
	FF19	Low commitment	Absence of leadership
	FF20	Ineffective team	Operating with cross purposes
	FF21	Mismatch between skills founders and business market	Not being equipped to take the right decisions

3 Methodology

This research consisted of two phases. In the first phase a preliminary research was executed using an existing database from a third party. This was followed by a more extensive in-depth study which is the main research. Thanks to the addition of the preliminary research, two methods and two kinds of data sources are used. The preliminary research mainly functioned as a search for additional causes for failure that could have been included in the main research.

3.1 Preliminary research

The Dutch Chamber of Commerce had offered the researcher access to a database. The database was built with a cross-sectional questionnaire. This questionnaire was send to businesses that had ended their activities. The questionnaire and the corresponding data, created the possibility to execute the preliminary research. This part of the research was used to gather general insights about why new ventures stop and what variety of failure factors are present. Furthermore, it can function as a verification to see if new failure factors did come up. If so, the factors could have been included in the main research (next phase of the research).

The questionnaire consisted of four parts, namely: cessation of ventures, the process of cessation of ventures, restarting ventures and background questions. An institute for market research, Ipsos, had send the questionnaire to 36,000 ventures that had ended their business activity of which 2562 responded. For this research a selection was made, startups that sold their venture or only changed its legal form were excluded. Furthermore, the data was filtered to leave out freelancers, because these did not comply with the definition of startups used in this research. Unfortunately, it was not possible the select the startups on level of innovativeness since this was not included in the questionnaire.

When the relevant data had been selected, the data was cleaned. This means all ‘ë’ were replaced by regular ‘e’, all decimal commas were replaced by dots, all answers indicating the amount of FTE were put into numbers and if the reason filled in at ‘other, namely...’ for ending the company matched bankruptcy or voluntary cessation, the categorization was changed accordingly. After the data cleaning and selecting the relevant data out of 2562 respondents, 192 respondents were left to use as input for the analyses. Eight questions of the questionnaire were selected (Appendix 10), which for example addressed a question about the hardest things when the entrepreneurs stopped, what one would do different in hindsight and how much time the entrepreneurs would like to invest in a new firm. These questions could potentially provide insight in factors that are relevant in the process of cessation and more insight in reasons why new ventures stop. The data was studied using the program R, which is a program for statistical computing and graphics. The association between the selected questions was studied using a chi-squared distribution and Cramers V. Additionally, the answers to the questions are presented in bar graphs and an open question asking the entrepreneurs to give advice for other entrepreneurs that are thinking about cessation was studied as well.

3.2 Main research

3.2.1 Research design

The main research had a multiple case study design, therefore it was of qualitative nature. By using this design, generative mechanisms that are responsible for observed regularities, were studied within their context (Bryman, 2012). This was important when studying the influence of the failure factors on the failure process. Furthermore, the multiple case study design

facilitated the combination of in-depth insights in a broad range of cases. This provided insights in what way the factors play a role, which was necessary to enhance the generalizability.

This research used a combination of a deductive and inductive approach. First, using the deductive approach, the existing knowledge about the startup process and factors influencing the process was studied. Secondly, an inductive approach was used for finding the influence of failure factors on the failure process, mapping the failure process and to detect the influence of factors in a certain phase of the failure process. This combination offered guidance but left room for the explorative character of this research because new concepts could arise. Furthermore, the unit of analysis for this research was the startup level and the unit of observation was the founder of the startup.

3.2.2 Data collection and sampling strategy

The main research consisted of semi-structured interviews to gather data. Semi-structured interviews provided the interviewer with in-depth qualitative data. The semi-structured design enabled interviewees to provide detailed information. Also, it contributed to keeping an open mind as a researcher for the answers given by the interviewee. This created the possibility for concepts to emerge from the data (Bryman, 2012).

The interview sample of this study consisted of people who experienced failure of a startup. It was important to interview somebody who is knowledgeable about the course of the startup, which is the founder in most cases. All respondents of the Dutch Chamber of Commerce questionnaire within the selection were repeatedly called and if not reached, e-mailed to find out if it concerned a young firm based on an innovative product. This resulted in five interviewees, therefore, personal contacts of the researcher and snowballing method was used to increase the number of interviewees. Interviews were executed, until theoretical saturation had been reached. This entails that additional data does no longer brings new findings or dimensions of the theoretical categories (Bryman, 2012). Furthermore, all new ventures were Dutch, which limits the difference in formal and informal institutions (Boschma, 2005).

In addition, five expert interviews were conducted to verify and to get a further understanding of the findings. Since, this research aimed to retrieve specific information about the influence of failure factors on the failure process of startups, it was key to interview knowledgeable people considering the life cycle of startups which is the reason purposive sampling was used (Bryman, 2012). Another reason purposive sampling was used, is to be able to select people with varying expertise, such as a finance of startups, from an incubator perspective or with a scientific view. The experts are people working for incubators, in contact with investment companies, advising startups or studying failure of startups.

3.2.3 Operationalization

A clear operationalization was created, to increase the external reliability (Bryman, 2012). To operationalize the theory section, an interview guide was established. The interview guide was written in Dutch, because this is the native language of both the interviewees and the interviewer. The interview guide (Section 11.1) started with background questions to gather basic information about the interviewee and the startup, followed by questions about the life cycle of the startup. This part of the interview guide was set up in a way it attempts to minimalize steering the interviewee towards an answer. To reach this goal, the first questions were not directly related to factors mentioned in the theoretical foundation but were directly

related to the research question. Questions were asked to retrieve insights about the phases and duration of the failure process, the events that happened during the life cycle and their influence on the failure process. These questions provide more insight in how a failure process of a startup looks like and what factors influence this process. This question also creates the possibility to identify additional insights besides the categories discussed in the theory section, due to the opportunity for interviewees to bring up new concepts. Several new factors emerged after a few interviews, these factors are taken into account during the interviews that followed (Section 5.1). The events mentioned by the interviewee as important for the development of the startup, were placed on a timeline during the interview. The researcher set up this timeline in cooperation with the interviewee and placed the events in chronological order. This helped the interviewee to map and remember the startup process and events influencing failure. The interviewee was asked to add phases to the timeline. Additionally, there was asked what factors the interviewee would point out as main causes for the cessation.

To ensure the interviewee did not forget relevant factors and to see what factors were affirmed, thereafter an overview of factors was presented to the interviewee. The factors were discussed in the order that was established in the theoretical foundation section. The interviewer briefly addressed the factors and asked the interviewee to indicate the relevance of the factor for the failure process of the startup in question. If the factor was perceived as relevant by the interviewee, there was asked if the factor had a minor or major contribution to failure. If factors came up as relevant that were not discussed in the previous part of the interview, in addition, the interviewee was asked what the influence of this factor was on the failure process and at what point of time the factor was relevant. If the interviewee knew at what point in time the factor was relevant, this was added to the constructed timeline.

Considering the delicate nature of this research, failure, it was most important the interviewee felt safe. Therefore, the interviewer used a friendly open tone and emphasized that the information given by the interviewee during the interview is valuable. This resulted in interviewees who spoke freely about their experiences of the failure process of the startup, which enhanced the internal validity (Bryman, 2012; Yin, 2003).

For interviewing the experts, an interview guide was established based on the results of the interviews with the founders (Section 11.2). During the interviews the experts were guided through the results to find out if he or she does or does not recognize the factors and the patterns found. During some expert interviews, a prioritization of questions had to be maintained, because of the limited time available of the expert. The interview guide was written in Dutch, since this is the native language of both the experts and the interviewer.

3.2.4 Data analysis

The interviews were recorded, transcribed and processed further using NVivo, which enhanced the external reliability. A basic coding scheme was developed, to link the interviews to the failure factors described in the theory section (Bryman, 2012). As the interview guide for founders was based on the theoretical concepts, a lot of information provided by the interviewees fitted within the basic coding scheme. However, when new concepts did arise, they were added as a new code in NVivo which enhanced the internal validity (Bryman, 2012).

A within case analysis is executed for all interviews, meaning patterns, concepts and phases indicated by the interviewee are studied per interview. Based on the timeline that was drawn

in cooperation with the interviewee and the transcribed interview, a digital timeline was created for every interview. This contained the most notable events of the course of the startup (e.g. Figure 1). If possible, these events were linked to failure factors, a detailed explanation can be found in appendix 14.2. Furthermore, if phases were mentioned by the interviewee these were added to the timeline. This helped to create a rough overview of the focus of the startup over time. Additionally, the preset phases described in the theory were added as well. To determine the change from conceptualization to commercialization, the presence of a minimal viable product (MVP) was used which is a simple version of the product that functions. The MVP was chosen, since a product must be present before one can start lowering the market risk, which is the focus of commercialization. The preset phases made it possible to chronologically study the failure factors and study the failure factors within the phases.

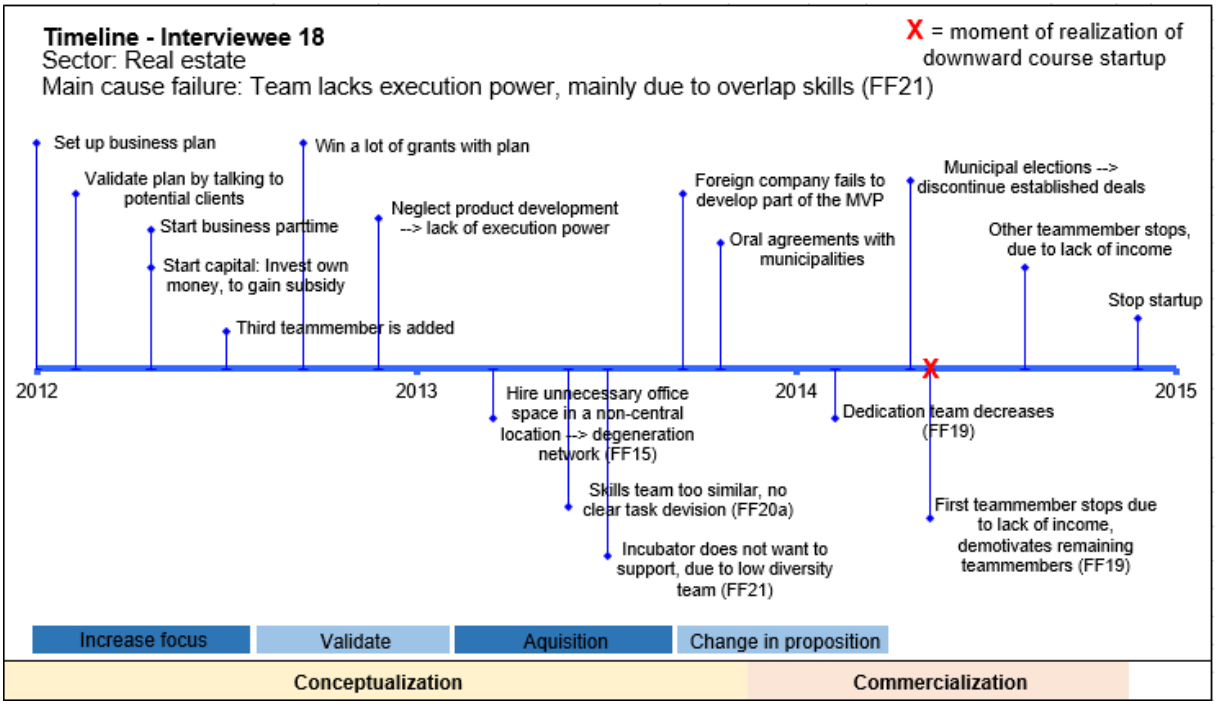

Figure 1: Example of timeline of interviewee with phases and most notable events including failure factors.

After the within case analysis, a cross-case analysis was done, which provided an overview of the results of all interviews. Here, the main patterns and concepts were studied. The analyses were executed by one researcher, resulting in a high internal reliability (Bryman, 2012). The coded interviews were used to retrieve valuable information per theoretical concept. New concepts introduced by interviewees were coded as well and were compared between cases.

Furthermore, for the cross-case analysis, multiple overviews and rankings based on frequency of occurrence were made. Firstly, an overview was created that shows per interviewee if a failure factor had no contribution, a minor contribution or a major contribution. The same table shows data per failure factor; the total number of major contribution, the total number of minor contributions, the total number of contributions, an overall score which was corrected for the minor contributions and a ranking of the failure factors. Secondly, the categories were scored and ranked as well, where the ranking is based upon the score of the failure factor. There is corrected for the number of failure factors a category withholds. Thirdly, a ranking of the main causes of failure is established based on the number of times it is mentioned as a main cause. Fourthly, an overview of the occurrence of causalities indicated by interviewees was made to ease studying causality. Fifthly, tables were constructed to observe the occurrence of failure

factors per preset phase. Here the frequency was included and the relative frequency where the occurrence was compared to the occurrence of the factors in other phases. This helped to search for systematic patterns within and between phases. Lastly, an overview of the self-indicated phases, which were described by interviewees, was made to try to find structures in the occurrence of failure factors within these phases.

The interviews with experts were recorded and transcribed as well. The expert interviews were processed further using NVivo, which enhanced the external reliability. The same basic coding scheme as for the founders was mainly used. The interview with experts led to additional insights. These did provide additional context, confirmed or contradicted the results based on the interviews with founders. Although the findings of the founders were leading, the information provided by the experts did bring more understanding, strengthen or weaken the findings.

4 Preliminary research

The selected and cleaned data from the database of the Dutch Chamber of Commerce, resulted in data from 192 respondents as input for the analysis. In this section the highlights are discussed. Additional information can be found in Appendix C – Preliminary research. To gain insights, the answers to selected questions were studied and the association between several questions was tested. The data from the questionnaire were where possible matched to the failure factors discussed in the theoretical foundation.

Respondents were asked to choose their most prominent reason for cessation (Figure 2), thus only one answer could be given per respondent. The analysis shows the most common reasons for cessation are *disappointing revenue*, *age*, *other option* and *focus on another firm*.

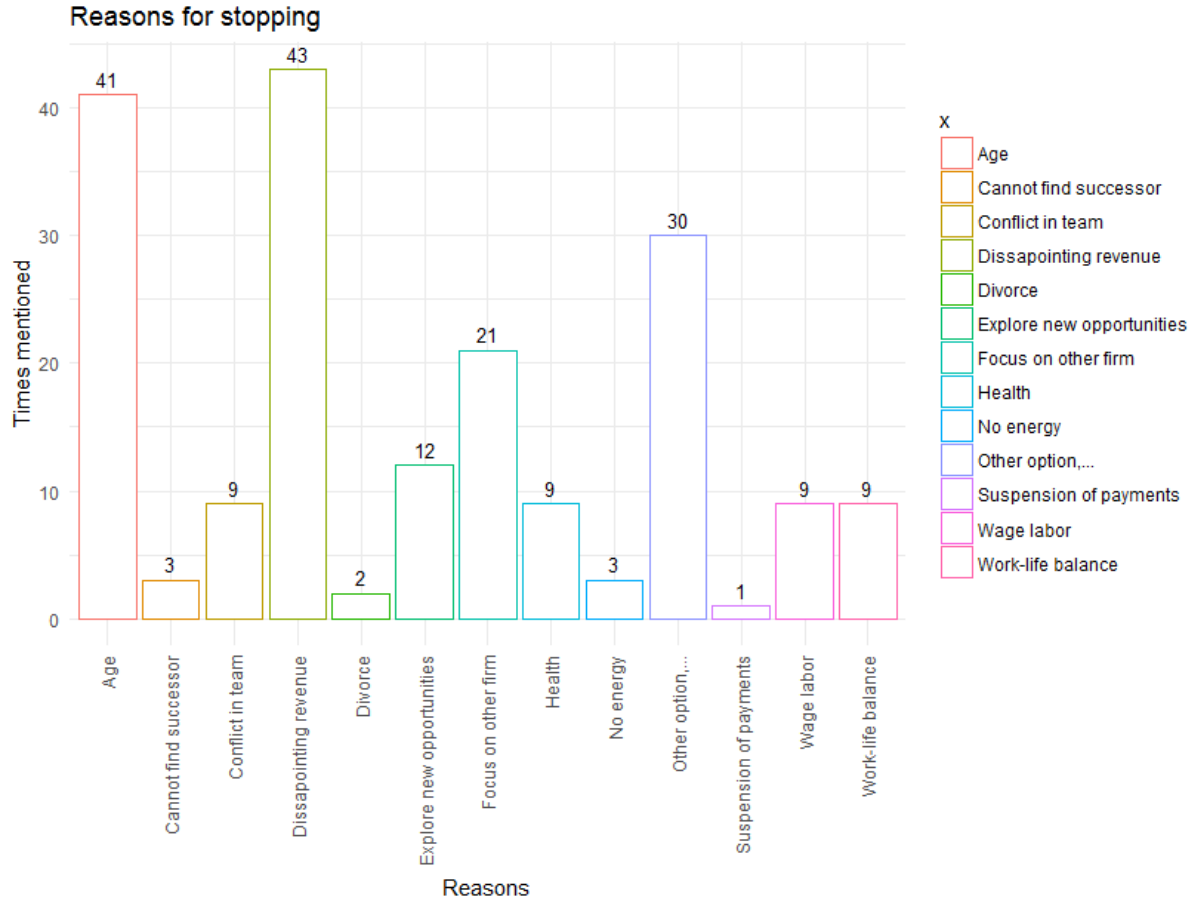

Figure 2: Overview of reasons for stopping with the firm

When linking these to the failure factors from theory, *disappointing revenue* fits the financial resources category and confirms the importance of the factor not being able to make both ends meet. Furthermore, people quitting of old age occurs a lot. However, this does not provide insights in the process of failing, because being too old cannot be perceived as a failure factor. The answers at *other options*, given by the respondents are studied as well. However, a high diversity of answers is given, thus no high occurrence of reasons came up. *Focus on other firm* has a contribution of 10.9% to the cessations. When somebody focused on another firm, the time and devotion of the person was shared. Therefore, it was not possible to have full commitment to the firm which is in line with and confirms the factor low commitment of the main research. However, this question does not give insights in the underlying reason for the respondent to focus on the other firm. It may be the case the other firm had more potential or

the founder identifies more with the second firm. Therefore, it is not sure what reason lies behind the change of focus and a one-to-one comparison with the factors from main research cannot be made. However, another part of the questionnaire is devoted to respondents *having other firms besides the one the questionnaire addresses.* This can directly be related to the factor low commitment of the founder. A fairly large group of the respondents, 30.7%, had *a firm besides the firm addressed* in the questionnaire, which means they could not have a fulltime commitment. It is striking to see that by far most entrepreneurs who consider starting a new company (73.5%) would choose for *working fulltime* for their next company. This does indicate it is preferred to focus fulltime on a starting firm.

Furthermore, respondents are asked to choose aspects they would do differently next time, considering their last experience. The 68 respondents who answered this question provided 143 aspects in total. Half of the respondents chose one factor that they would do different and the other half chose multiple factors as shown in the Appendix in Table 9. This shows often multiple factors play a role in cessation. Aspects that were mentioned most among others, *are offering another product* (18.2%) and *serving another market* (13.3%). *Offering another product* can be related to the factor of the main research low potential product, assuming people would offer another product to enlarge the potential. *Serving a different market* is related to lack of market research of the main research, as wanting to switch to another market probably indicates there is a market that suits better. Furthermore, most people indicate they *do not need support*, when starting a new business. This is interesting, because when giving advice to fellow starters it is often mentioned one should ask help of professionals or friends. Another advice given by respondents is to thoroughly think through the business plan, to be able to tackle problems that can be foreseen. This relates to the failure factor limited business plan.

The association between multiple questions of the questionnaire is studied (Section 12.1). Due to the limited amount of data and the lack of a normal distribution, the Fisher's exact test is performed where necessary and where possible, data columns are merged to make the data more suitable for the tests. However, no significant association is found between the questions studied (Appendix Table 8).

The preliminary research did provide some insights in what factors can influence cessation. However, it did not bring up factors that have to be changed or added for the main research. Therefore, the factors discussed in the theory section stay unchanged and are used as a take-off for the main research.

5 Results

To gather results, 21 founders have been interviewed. The average age of the interviewees is 40 years. The range in age of the founders interviewed is 24 to 61 years, with a median of 35 years. Founders have started 53 startups in total, 15.1% of these startups were perceived as a success, 60.4% as a failure and 24.5% are still ongoing. Most interviewees (67%) have had scientific education or finished a study in applied sciences (29%). Three interviewees are female, the rest is male. Furthermore, the startups of the interviewees were active in diverse sectors, such as, life sciences, ICT, education, horticulture and construction. On average, a startup existed for 3.8 years. The time spend from the moment the downward course of the startup started until the ending of the startup cost one third of the time (32.1%) of the total existence of the startup. Four of the startups have failed in the conceptualization phase, sixteen in the commercialization phase and one in the growth phase. In the appendix in chapter 13.1 a detailed overview of the interviewees and their startups can be found. In addition, five experts are interviewed with various backgrounds to discuss part of the results of the previous interviews. The overview of experts can be found in the appendix chapter 0. The information provided by the interviewees is leading within this section and the information provided by the experts is added to these insights to provide more context.

5.1 Changed and added factors

When conducting the interviews, additional causes of failure were indicated by the interviewees. Some of these causes of failure were clearly related to failure factors discussed in the theory section, some of the factors are slightly adjusted and two new factors did arise. The need for these changes and additions was noticed early in the interview process, which enabled the interviewer to take the changes into account during the remaining interviews and the analysis, to be able to present the results as complete as possible.

Two introduced causes of failure are closely related to failure factors in the theory. Firstly, lack of marketing was mentioned during the interviews, which can be linked to inappropriate marketing. In the theory section is discussed that inappropriate marketing covers addressing the market in an inappropriate way. However, when a *lack of marketing* activities is the problem, this is not covered by the prior description although it is a form of inappropriate marketing. Therefore, subcategories '*addressing market inappropriately*' and '*lack of marketing*' are added to inappropriate marketing. Secondly, having an incomplete team was brought up by interviewees. This is a form of having an ineffective team, however, it differs from operating at cross purposes, which was described in the theory section for an ineffective team. Therefore, subcategories '*operates at cross purposes*' and '*incomplete team*' are added to an ineffective team (Table 2).

Table 2: Overview added subcategories for failure factors

Category	Failure factor	Subcategories
Market 	Inappropriate market	Addressing market inappropriately
		Lack of marketing
Founder(s) 	Ineffective team	Operates at cross purposes
		Incomplete team

Furthermore, definitions of failure factors have come up during the interviews that are more suitable or complete (Table 3). Firstly, besides a problematic relationship with an investor, a problematic relationship with a potential investor can be a failure factor as well. Meaning a deal was withdrawn at last moment notice, or the potential investment was postponed repeatedly. Therefore, the failure factor is changed to problematic relationship with (potential) investor. Secondly, some founders experienced a lack of network, in despite of their great attempts of networking. These mainly were founders that started with a small network within the sector they startup their business. To cover this input, the failure factor lack of networking has been changed to lack of network(ing). Thirdly, the category founder(s) is changed to founder(s)/team, considering the complementary skills a team can have to its founder(s) skillset. Fourthly, in line with the last adjustment, the term 'founder(s)' is changed to founder(s)/team in the 21st failure factor, resulting in the adjusted failure factor mismatch between skills founder(s)/team and business.

Table 3: Overview changes in factors and category

Category	Former failure factor	New failure factor
Financial resources **€**	Problematic relationship with investor	Problematic relationship with **(potential)** investor
Strategy 	Lack of networking	Lack of network**(ing)**
Founder(s)**/team** 	Mismatch between skills founders and business market	Mismatch between skills founders**/team** and business market

Lastly, during the interviews there was indicated that the culture in the sector hinders startups. Interviewees mentioned an inert conservative culture within sectors they operate, which hampers innovation. Another barrier experienced in specific sectors are shifting and/or high demands within the sector, which is often related to strict legislation or regulation (Table 4). Since these factors emerged early in the interview process and reoccurrence of these factors contributing to failure was high, therefore the factors were taken into account in the remaining interviews and considered when analyzing the interviews.

Table 4: Overview added failure factors

Category	Failure factor
Culture in sector 	**Inert conservative culture**
	Shifting or high demands

5.2 Overview presence failure factors

An overview is created of the presence of the failure factors per founder (I1, I2, etc.). The overview is Table 5 where the founders are placed in the columns of the table and the rows represent the failure factors. This shows the contribution of a factor to the failure of the startup. Major contributions of failure factors to cessation are shown in red, minor contributions in orange and failure factors that had no contribution are green. Although not actively asked, founders sometimes indicated they were able to overcome a failure factor, these cases have been given a purple color if this problem did not reoccur. In the last columns, the frequencies of occurrence of contribution to failure is shown. The frequency (F) colored red shows the

number of major contributions followed by the orange frequency (F) which depicts the occurrence of minor contributions and includes the factors that are overcome. A total score of the contributions is given as well (T). To score the effect of the factor on failure, the overall score (Score) was introduced, where the frequencies are added up in the one-but-last column. To correct for the minor contribution these numbers are divided by two, before adding to the score. The last column shows a ranking of the failure factors based on the overall score (Rank).

Table 5: An overview of preset failure factors and additions discussed in the results section

Category	Failure factor	FF		I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15	I16	I17	I18	I19	I20	I21	F	F	T	Score	Rank
Product	Low potential of product	1																							1	4	5	3.0	20
	Wrong time-to-market	2																							3	1	4	3.5	#16
	Lack of product protection	3																							0	1	1	0.5	#24
Market	High market dynamics	4																							2	3	5	3.5	#16
	Lack of market research	5																							3	2	5	4.0	#14
	Inappropriate marketing	6a	Addressing market inappropriately																						3	5	8	5.5	10
		6b	Lack of marketing																						3	1	4	3.5	#16
	Limited user producer interaction	7																							0	4	4	2.0	#21
Financial resources €	Initial undercapitalization	8																							3	3	6	4.5	#11
	Limited availability funding	9																							5	2	7	6.0	#8
	Problematic relationship with (potential) investor	10																							7	1	8	7.5	#4
	Not being able to make both ends meet	11																							3	2	5	4.0	#14
Strategy	Absence of a clear strategy	12																							0	4	4	2.0	#21
	Limited business plan	13																							2	3	5	3.5	#16
	Low flexibility	14																							0	1	1	0.5	#24
	Lack of network(ing)	15																							3	6	9	6.0	#8
	Lack of professional advice	16																							1	1	2	1.5	23
Founder(s)/ Team	Lack of management(knowledge)	17																							5	4	9	7.0	6
	Little or no entrepreneurial experience	18																							5	3	8	6.5	7
	Low commitment	19																							8	1	9	8.5	#1

	Ineffective team	20a	Operates at cross purposes																							7	3	10	8.5	#1
		20b	Incomplete team																							4	1	5	4.5	#11
	Mismatch between skills founder(s)/team and business market	21																								5	5	10	7.5	#4
Culture in sector 	Inert conservative culture	22																								7	2	9	8.0	3
	Shifting or high demands	23																								3	3	6	4.5	#11

Key:

Major contribution to failure/cessation
Minor contribution to failure/cessation
No contribution to failure/cessation
Failure factor overcome

The interviewees weighed their answers and thought it through whether factors contributed and if the contribution was major or minor. On average, founders have indicated four failure factors as major contribution, with seven being the most and one the lowest number of factors mentioned. Failure factors having a minor contribution are mentioned three times on average per case, with seven times as highest score and zero as the lowest. This shows multiple (on average seven) failure factors have a role in the process of failure. Furthermore, six founders indicated of one's own accord a failure factor was overcome, and this factor did not reoccur.

All failure factors have played a role in at least one failure process. However, significant differences exist between the amount of times the failure factors contribute as the shown in the total contribution column (T). Furthermore, none of the factors is mentioned by all interviewees, but diverse sets of factors are mentioned.

The categories can be compared as well. The average scores of the failure factors per category are taken, where there is controlled for the number of failure factors per category. This results in an overview of the contribution to failure per category as shown in Table 6. The table shows that the category team/founder(s) contributes most and the category product contributes least often to failure.

Table 6: Overview of contribution to failure per category

Category	Score	Ranking
Team/Founder(s)	7.1	1
Culture in sector	6.3	2
Financial resources	5.5	3
Market	3.7	4
Strategy	2.7	5
Product	2.3	6

5.3 Failure Factors

The results of the failure factors are discussed per category, addressing the frequency of the factors and insights by interviewees and experts. Founders are perceived as the main interviewees. Therefore, quotes of founders are indicated using the letter I, followed by the number of the interviewee (e.g. I13). When quotes of experts are used, this is shown by the letter E followed by the number given (e.g. E2). At the end of the discussion of a failure factor the main message is given, which is indicated by an arrow. The overall score is added to the main message between brackets to show the impact.

5.3.1 Product

The factors in the category product are least mentioned as a problem by the founders. The category consists of the factors low potential of product, wrong time-to-market and lack of product protection.

Low potential of the product has contributed in five cases (one time major, four times minor), meaning it was no problem for sixteen founders. In the five contributing cases the interviewees indicated the product's potential was lacking; *'I would say, the potential of the product was too low. […] If it would have had a high potential, we would have had more backers'* (I21). According to experts, one of the reasons for products having a low potential is having a nice-to-have product instead of a must-have product as a startup. Where a must-have product is a necessity for people, a

nice-to-have product is perceived as a luxury which makes nice-to-have products vulnerable. *'What was not beneficial, is that educational institutes do not perceive this as their task*' (I4). Experts mention that due to the economic crisis nice-to-have products were even harder to put across, as expert 3 explains: *'If you coincidentally are in the nice-to-have business, then you are receptive to cultural and economic waves that appear'*. Furthermore, experts expected low potential of products to contribute more often to failure then mentioned by founders. They suggest lack of self-assessment of founders may contribute to perceiving the potential of their product as high instead of low: *'…this is based upon the words of* entrepreneurs *themselves'* (E2) and *'of course, they cannot imagine that the product was not good'* (E1). Furthermore, the complexity of a product can influence the potential of a product as well, however, this is a result that has come up when analyzing the interviews with founders. A product can be too complex due to the necessity of educated sales or the number of actors involved. This was a problem for interviewee 3, 9, 10, 12, 14, 19 and 20; *'They said it is educated sales. […]it is a complex product in production and sales'* (I20). The complexity of a product lowers the potential of the product in question due to additional efforts that must be taken. An expert suggests that these big efforts indicate the product is launched too early; *'Thus, you almost have something to evangelize. However, I think you actually chose the wrong moment'* (E5) meaning the startup was too early with the development of their product which indicates a wrong time-to-market.

➔ (3.0) Nice-to-have and complex products can lower the potential of a product, which results in low and challenging sales and contributes to failure. Experts indicate the frequency of this factor may be higher, due to a lack of self-assessment of founders.

Wrong time-to-market was not experienced as a problem in seventeen cases. Founders indicated their timing was right, because their product could build upon other products or societal developments. For example, by an increase of their market segment: *'You did see a decrease in retail, however, ICT was very upcoming'* (I10). Four times a contribution to cessation was mentioned (three times major, one time minor). In all these cases, the product was brought to the market too early, which created a gap between the product and the current state of technology; *'…everybody was talking about it. However, there was not happening a lot.'* (I9) and *'in the current society it is going to be hard to apply this'* (I19). Being too early, results in clients that are not yet ready to adopt the product. *'…This is how the market works, and at this moment the market is not ready yet, you are not rewarded right now bringing your product to the market'* (I19).

➔ (3.5) Launching the product too early, results in clients who are not yet interested which contributes to a negative course of the startup.

The lack of product protection has a minor contribution in one case, which makes it the least appearing problem of all factors. Theory suggested the limited resources of startups, make it hard to protect their product. However, startups do not experience protecting their product as a problem. While most startups perceive the costs of applying for patents as high, five startups did get a patent (I6, I7, I9, I11, I20). Due to high cost, most startups decide to spend money on different purposes and choose an alternative protection strategy for their product. Choosing an alternative is not perceived as a problem; *'The faster you realize it, the faster you improve compared to your competition. This determines your success […] not the patent' (I18).* Another reason startups are not likely to file a patent request is the possibility of other companies to design around their product as experts and interviewees describe. *'The same would be possible with a different product, then it [patent] would not have been useful'* (I2). However, as interviewees and

experts indicate, when having a patent is a necessity, which is the case in a sector such as life sciences, money is spend on the patent application.

➔ (0.5) Overall, lack of product protection is not perceived as a problem.

5.3.2 Market

With a fourth place in the category ranking, market is not highly represented in problems founders experience. The factors high market dynamics, lack of market research, inappropriate marketing and limited user-producer interaction are discussed.

High market dynamics did not contribute to failure for sixteen founders, whereas five founders mentioned (two times major, three times minor) high market dynamics contributing to failure. Both too much and too little market dynamics can be experienced as a problem. The presence of high market dynamics is caused by direct and indirect competition as interviewees indicate. For example, interviewee 2 was confronted with direct competition of a large competitor, which led to the realization the startup would not make it: *'You know, we are not going to win this development'* (I2). Furthermore, some startups deliberately reduce the chances of high market dynamics, for example by trying to create a monopoly by using patent protection for products; *'The beautiful thing of innovating and protecting something with a patent, you are creating a unique position for yourself'* (I11). However, a lack of competition can be a disadvantage as well, due to a lack of power to stimulate the market by one startup; *'having no competitors is no advantage. […] The market [of potential clients] is huge, we very much would have liked to have a competitor or two'* (I9).

➔ (3.5) High market dynamics can be a problem when too many competitors are present, because the high amount of competition creates a struggle to gain clients. When the market dynamics are too low, the market cannot be activated which leads to failure as well.

The lack of market research was mentioned second most in this category. In five cases it has contributed to cessation (three times major, two times minor), thus sixteen interviewees did not experience problems with market research. Several interviewees who experienced this as a problem, explain in hindsight they were not satisfied with their market research, which is a problem because the product-market fit could have been approved by doing better or more market research. *'If you know the market, you get more faith in the idea, of course. […] Or you could have turned it around, for it to work…'* (I12) and '*You have to think carefully about your market and keep on thinking about your market. […] It occurs a lot you define a wrong channel or market.'* (I13). Several reasons were given by the founders where a lack of market research was not perceived as a problem, such as they did not get to the market research yet or did not really do market research but did not experience this as a problem; *'We did not do market research. We were convinced [of our product/idea].'* (I2). Also, some interviewees thoroughly did market research or had in-depth market knowledge; *'We had in-depth knowledge about the market'* (I6). If a lack of market research occurs, experts perceive this as a problem. If performed well, it can help achieve the right product-market fit, which is a big challenge for every startup; *'…I think that is one of the biggest problems of a startup. Creating a product somebody is waiting for'* (E4). Furthermore, the experts suggest the lack of market research could be bigger than shown in these results, due to two reasons. Firstly, entrepreneurs falling in love with their product, which results in irrational optimism about the product; *'You could almost compare it to falling in love with someone, and all your friends tell you it is a really bad man. It is almost the same process.'* (E5).

Secondly, market research is sometimes executed in an incorrect way or interpreted wrong by the entrepreneur. For example, an entrepreneur searches for confirmation instead of doing objective market research, due to his enthusiasm for the product. *'And in the end, you think you have a problem-solution fit, but you don't, or you think you have a product-market fit, but you do not have one.*' (E4). According to experts having the right product-market fit is important, because a misfit can have negative consequences; *'Missing the right fits can have a lot of consequences, such as nobody who wants to invest, or they cannot get clients.'* (E5). This makes market research essential to succeed in an early phase.

➔ (4.0) A lack of market research results in a lack of product-market fit and a misfit can lead to failure. Experts indicate it may occur more often than founders realize, due to executing market research in an incorrect way or incorrect interpretation by the founder.

Inappropriate marketing is split in two subcategories; addressing the market inappropriately and lack of marketing. Fourteen interviewees did not experience problems considering addressing the market inappropriately and sixteen interviewees did not experience lack of marketing as a problem. Most interviewees told marketing was successful in quality and quantity. However, another reason interviewees did not feel inappropriate marketing led to failure, was the simple fact that interviewees did not get to the marketing phase, thus failed before reaching this phase. *Addressing the market inappropriately* is noted six times as a contribution to failure (three times major, three times minor) and in addition, two interviewees were able to overcome the problem. The interviewees who were able to overcome, realized they had to fine-tune their marketing per potential client or realized they were approaching the wrong people; *'at the start we were sitting at the table with the wrong people. Therefore, you get information from the wrong people. If you must make your plans based on this information, it is hard.'* (I9). Most interviewees who experienced addressing the market inappropriately as a contribution did not have enough focus in their concept or problems of the target audience. *'We were still too diffuse in our marketing'* (I17) and *'If we would have done it differently, maybe we could have shown the gravity of the problem more.'* (I21). Furthermore, experts explain where falling in love with the product could be a problem for market research, it is a necessity for successful marketing; *'And then [for marketing] you have to be on a mission. That is a contradictio in terminis for entrepreneurship'* (E5). This holds for both addressing the market inappropriately and lack of marketing. *Lack of marketing* has contributed to failure in five cases (three times major, two times minor). Interviewees mention the intensity of marketing or the occurrence of marketing was lacking; *'We really did, really zero marketing at that time.' (I8) and 'I wasn't really actively offering my product to contacts.'* (I2).

➔ (5.5, 3.5) If inappropriate marketing was a problem, the marketing or the focus of the marketing was missing. This contributes to failure.

Limited user-producer interaction did not contribute to failure for most entrepreneurs. For interviewees who developed their product with the target group or their network overlapped the target group it was most easy to interact frequently with potential users; *'It made a difference that I was a student, and a lot of people I know have had problems with stress [stress is related to the business concept]'* (I14). Four interviewees mentioned a minor contribution to their failure. Several causes are indicated, such as not getting to it and interaction with one group of users was lacking due to presence of multiple groups of users; *'the interaction with students was limited in my opinion.' (*I3), which makes it hard to fine-tune the product for potential users. Furthermore,

experts emphasize the importance of the interaction with users and to incorporate the feedback that is given; *'Also, being willing to adjust your product based on the feedback.'* (E5).

➔ (2.0) Limited user-producer interaction leads to not being able to fine-tune a product for potential users, which may negatively influence the course of the startup.

5.3.3 Financial resources

The category financial resources is third in the ranking of categories that contribute most to cessation. It withholds the factors initial undercapitalization, limited availability of funding, problematic relationship with (potential) investor and not being able to make both ends meet.

Sixteen interviewees did not experience initial undercapitalization as a problem; *'For the phase we were in, the finance was sufficient.'* (I17). Although a few of the sixteen interviewees do stress that more capitalization could have led to a better result; *'Yes, basically we did have enough [financial] resources. I think we could have done it better with more resources. Then we could have made different choices.'* (I21). Six interviewees stated it contributed to failure (three times major, three times minor). Whom experienced a major contribution to failure, the initial undercapitalization led to difficulties in working out the concept and for interviewees who experienced a minor contribution the development of the concept was limited due initial undercapitalization; *'Actually I wanted to start developing my concept, however, an investment was necessary.'* (I1) and *'Yes, so we had too little resources for sure. If there would have been a lot of money, we would have had a much better… [product]'* (I8).

➔ (4.5) Initial undercapitalization can result in struggles to work out the concept properly, which contributes to failure.

Fourteen interviewees did not experience that limited availability of funding contributed to failure. These interviewees invested their own capital, raised funding, developed the product without funding, or were offered investments but did not accept the offer. Where some interviewees explain it was hard to find funding and even harder due to the financial crisis, other interviewees state finding funding is not the problem, but there is an underlying reason for not getting finance; *'…that the finance deal did not work out, you can easily suggest this as the cause. However, of course there is an underlying cause.'* (I20) and *'…You do have to have a concept with potential, […] that is an absolute must. Then, finding money, that always works out.'* (I18). Despite that, seven interviewees stated limited availability of funding contributed to failure (five times major, two times minor). Interviewees explain the investment climate was bad at the time of the development of the startups but has improved by now; *'At that time it was really hard to find money for firms in our sector. […] In 2015 it has improved. For five or six years it has been very hard.'* (I6). Furthermore, Dutch culture is perceived as detriment, certainly compared to the investment culture of the USA; *'Investors, the climate in The Netherlands is talking a lot of bullshit but do almost nothing. Really stingy.'* (I15) and *'In the USA for example, is the climate of investing way different'* (I4). Many of these interviewees experienced a lack of willingness to invest in risk or long-term projects; *'Startups in The Netherlands are in any case a difficult market. There is not a lot of risk finance.'* (I4), and *'There was a new CEO [at the investor group]. And he thought it was not a clever idea to invest in long-term projects.'* (I6). Lastly, interviewees explained it is hard to raise funds outside your own network; *'Thus outside your own direct network and their direct network, it just stops, then it is really hard to raise money.'* (I9), which shows interaction between failure factors. Experts confirmed it is hard to raise the funds necessary, outside the network. Furthermore, experts agree that at the time interviewees started their startup the investment climate was

bad and has improved substantially by now*; 'Three years ago the finance of SME and startups was a real problem.'* (E1) and *'It is easier now, compared to five years ago. The amount of money per funding has increased as well compared to five years ago.'* (E4). Also, long-term and high-risk projects are harder to find funding for according to experts, for the simple reason investors prefer lower risks and short payback times; *'in general investors do not like high risk, low return, or a long payback time'* (E2). A startup can have bad luck as well, part of suitable startups is not selected because they do not fit the portfolio of the investor. However, experts indicate there can be an underlying reason a startup does not get funded. The underlying reason can vary. For example, the reason can be that a startup is not able to sell its concept, is not having a product-market fit, or the product of a startup has a low potential; *'If you do not sell your concept the right way, you do not find investors.'* (E3). However, the problem that occurs most, is that investors think the team or founders are not suitable for the job*; 'However, it can be the case people do not place trust in you or the team.'* (E2).

➔ (6.0) Limited availability of funding can be caused by the investment culture or the startup is not interesting enough to invest in. This results in lack of funds for startups, which contribute to failure.

A <u>problematic relationship with the (potential) investor</u> is mentioned remarkably often. Eight interviewees indicated it contributed to failure (seven times major, one time minor). Thirteen interviewees did not experience it as a problem. However, eight of them did not have an investor, which often was a deliberate choice because one was afraid it would result in problems; *'biggest reason being, we were screwed over by our last investor. […] I rather have we cannot pay our salaries, than getting an investor onboard.'* (I8) and *'We did not want…euhm…that the investor would influence our business.'* (I18). Interviewees who had the experience of a problematic relationship with their investor indicated three main reasons on what went wrong; Having an investor who is not knowledgeable, divergent interest of the investor and the founder and communication between the investor and founder. Sometimes investors are chosen who are not knowledgeable, this can be either a mistake, or because there were no other options. This can result in skewed expectations of the investor; *'Those were just people with a lot of money and not a lot of knowledge of biotechnology. […] it became problematic because there was a disconnect in the expectations.'* (I11). Furthermore, divergent interest of the investor and the founder often arise due to difference in drivers to have or invest in a startup. An aspect of divergent interest is the pursuit of profit by the investor, which can collide with the view of the founder who often has a drive to develop the product as best as they can; *'A strategy [of the investor] that is not focused on the goal, but on exit'* (I7). This can lead to decisions that are made or blocked by investors which turn out to be bad for the startup. Some investors want to prepare the startup for sale, but the preparation interferes with the development of the startup; *'My team was fired. […] I did not agree, they damaged my plan and the relationship.'* (I7). Furthermore, some investors back out at the very last moment or cases occur where deals are blocked by investors, for example because they think better options are possible which turns out to be incorrect; *'The two investors, they said "no" to the deal […] They thought they would lose too many stocks. Too much watering down.'* (I5). Lastly, a lack of communication between the founder and investor can lead to a loss of trust of the investors in a founder; *'I just did not dare to say it to the external investors. […] And I understand it has been a breach of trust.'* (I5). Experts agree communication is sometimes lacking between the investor and the founder. The founder is busy which results in involving the investor minimally or the founder is selling a rosy picture due to optimism or because he

perceives the investor as superior; *'That is the reason he forgets to involve the investor in his decision process and validated learning process'* (E5), '*If you get an investment using a rosy picture, […] and it is undoable to live up to those self-created expectations, […] you obviously get problems with someone who transferred a few hundred thousand dollars to your account.*' (E5) or *'If the startup and investor meet, it actually always results in a startup who is going to do its best for the investor'* (E4). Furthermore, experts describe professional investors plan the exit strategy from the beginning, which nauseates many entrepreneurs; *'That is very rational. Many entrepreneurs experience this as a cold process'* (E1). According to experts, investors who perceive investing as a hobby are more frequently active in the last five years. They can have a strong vision on how something should be developed or sometimes they are not knowledgeable which results in skewed expectations.

➔ (7.5) A problematic relationship with the (potential) investor can be caused by a founder who is not knowledgeable, divergent interests or the communication is lacking. This often leads to funds running dry to support the startup.

For six interviewees the expenses were higher than the income, meaning not being able to make both ends meet contributed to failure (three times major, three times minor). Fifteen people did not experience problems with this factor. However, for most interviewees, financial shortage was the case at the end of the startup; *'Yes, that [not being able to make both ends meet] is the case for every startup in the end'* (I4). This was a natural consequence of multiple other problems, such as hiring the wrong personnel, problems within the team or an investor that retrieved at the last moment led to financial distress. However, this was not mentioned as a problem by those interviewees. For interviewees who did experience it as contributing, this was a reason to stop the business. They explained their plans had to be adjusted to the minimum due to the financial shortage, which made it very hard to develop the product; *'Yes always [not being able to make both ends meet], that never changed. […] It never was the case you could execute your plans the way it was supposed to.'* (I7) and *'Actually there was always too little money. You can go on for a little while. However, at one moment it just over.'* (I11).

➔ (4) Not being able to make both ends meet causes problems to develop the product properly, which leads to failure.

5.3.4 Strategy

The category strategy is the second-to-last being mentioned as a problem by interviewees. The category withholds absence of a clear strategy, limited business plan, low flexibility, lack of network(ing) and lack of professional advice.

The absence of a clear strategy has only been mentioned as a having a minor contribution by four interviewees. For seventeen interviewees it was no problem. Most of them were able to hold on to their strategy which was determined at the start. Some of these interviewees did have a change in strategy, based on feedback of the potential market; *'Then I realized what is really important in an educational institute […] Considering our strategy, we were ignorant at the start.'* (I14). Interviewees where the absence of a clear strategy did contribute, explained they did not think their strategy through, or felt it did not work and searched for other options too often; *'In hindsight we may have jumped on the wagon too soon. And we did not think it trough.'* (I6) and *'I became desperate, due to a lack of finance. Thus, I was looking for any other option all the time to be able to make both end meet.'* (I1).

➔ (2.0) The absence of a clear strategy makes it unsure in what direction development must happen, which contributes to failure.

For sixteen interviewees a limited business plan was not the case and five interviewees did experience a contribution to failure due to this factor (two times major, three times minor). Multiple reasons are discussed, the concept being too broad or having an unrealistic business plan. When the concept is too broad, in practice too many options are developed. This can be the case for the product itself, or the concept is not narrowed down to a specific target group; *'Thus, you actually try to reach everyone. Therefore, you just send, send, send, without really knowing who your target group is.'* (I17). Furthermore, having an unrealistic business plan can be a problem. Most of the time this means the plan is too optimistic money wise or time wise, which results in direct failure or a long extension; *'In hindsight I can say the business plan was not achievable from day one. The numbers were too optimistic'* (I4). Besides the people who were satisfied with their business plan, the usefulness of a business plan is debated. There is stated it mainly is a plan to convince and guide others instead of the entrepreneur; *'I do not live with a business plan. I cannot do anything with it. I write one because of others.'* (I7) and *'It was more that you had to have one'* (I13). Experts do suggest many business plans are unrealistic. This is bad because no proper predictions can be made, which has a negative effect on the time and money available; *'A business case is a collection of lies, that should take care somebody decides, what you want them to decide.'* (E2) and '*Not being realistic is the biggest problem and it is connected to the financial picture.'* (E4). To try to avoid the optimism, assessments based on validated learning are advised, which enables to consider the concept in context; *'The concept should not solely function as a concept, but it has to function within context.'* (E2). Thus, a business plan does not work when the context is not taken into account.

➔ (3.5) A business plan can be limited due to a concept being too broad or the plan being unrealistic. This leads to failure because spent resources are not focused, or the planning cannot be achieved, which results in a shortage of time or money that can lead to failure.

A low flexibility is almost never mentioned, in one case it had a minor contribution to failure where the flexibility changed over time; *'At the start we were [flexible enough]. […] Then it turned into rigidity, an internal focus and discussion about shares and communication lines. That was the end.'* (I5). Most interviewees stated they were flexible enough. Although some interviewees explained, they themselves were stubborn as well: *'On the one hand we were flexible, on the other hand inflexible in going along with what others wanted.'* (I7). This seems to be a good attitude occasionally, because interviewees indicate being too flexible can be a problem as well. As a result, the business model must go through changes too often. Experts agree flexibility is a must for entrepreneurs to find the right business model and product-market fit. However, being too flexible can be harmful as well, thus the balance between flexibility and focus is important; *'You can be too flexible and do not hold on to anything, try this and that for a while. […] You have to find a sort of balance.'* (E4). Where flexibility is more important in the conceptualization phase and focus of importance in the commercialization phase; *'Focus is more suitable for this phase [points at commercialization]. There [conceptualization] you still have a wide view and is focus not really important yet.'* (E4). Experts raise the question if the low occurrence may be due to lack of self-assessment of the founders.

➔ (0.5) Low flexibility is not perceived as a problem by interviewees. However, experts think this may be the case due to a lack of self-assessment. Furthermore, experts

explain flexibility is important in the conceptualization phase which should make place for focus in the commercialization phase.

Eight interviewees mentioned a contribution to failure from a lack of network(ing) (three times major, five times minor) and one interviewee did overcome the problem. Meaning, for twelve interviewees their network or networking was extensive enough. Interviewees that indicated a problem, explained their network was too small within the sector they had their startup, they could not find people to cooperate with in time or did not put themselves out there enough: *'We did not have the network in this market to launch a completely new product'* (I4), *'That was too small. If I have a look at the people I know now… It was too small for sure yes.'* (I12) and *'You physically had to be there to continuously maintain that network. […] We were locked up in our own office instead of building a network.'* (I18). Furthermore, the interviewee who overcame the lack of network, explained it was hard, because none of them had an existing network: *'At the start is was at a minimum, because we came from a different market. However, we managed to expand the network very fast.'* (I8). The importance of a network and having a network in the right place, for example for raising funds, is confirmed by experts. Experts suggest that young entrepreneurs are confronted with a lack of network(ing) problem more often than entrepreneurs who have 20 years of work experience. Experts indicate that having an extensive network gives you access to more resources, for example it is the way to get funding; *'If you don't have a network that includes business angels, or people who can lend you €30,000. Then you don't get anywhere.'* (E1).

➔ (6.0) Lack of network(ing) is mainly a problem when people have a small network, which results in less access to resources that contributes negatively to the course of the startup.

Two interviewees felt a lack of professional advice contributed to failure (one time major, one time minor). Nineteen of the interviewees have had enough professional advice. Some interviewees realized this by constructing a board of advisors, joining an incubator or using contacts they already had; *'Take care you have a great board of advisors'* (I4) and *'That is really thanks to our incubator, what we did.'* (I5). The lack of professional advice was a problem for interviewees, because they did not use the potential of contacts they did have; *'I should have used my contact more often, because he was able to point out the problem.'* (I12) and *'Although it was offered [we did not ask for advice]. We could have gained a lot out of it.'* (I18). Therefore, it seems the problem is not a lack of offer of professional advice, but in asking for it.

➔ (1.5) Professional advice is not always asked for when necessary, when it would have been useful. This results in suboptimal choices that contribute to failure.

5.3.5 Founder(s)/team

This category is most mentioned as a contribution to failure, which was no surprise for the experts. They explained this category can be perceived as a foundation for a startup to work; *'You could call this a basic factor.'* (E4). The factors lack of management(knowledge), little or no entrepreneurial experience, low commitment, ineffective team, and mismatch between skills founder(s)/team and business market are included in this category.

Twelve interviewees did not experience problems with management(knowledge). However, a lack of management(knowledge) had a contribution to failure in eight cases (five times major, three times minor), and was overcome in one case. Difficulties that arose in managing the startup are offering structure, making well-thought out choices with possible consequences in

mind and missed opportunities*; 'You have to take into account a high diversity of aspects. I became extremely stressed. It resulted in not seeing the wood for the trees.'* (I21), and *'Then, maybe, I could have realized that I should have done something else.'* (I1). A way to be able to increase the management(knowledge) is to hire people who can steer the startup in the right direction, as the interviewee did who overcame the problem; *'When we came close to running a clinic, we hired the right people. That's how we took care we could handle it.'* (I6).

➔ (7.0) A lack of management(knowledge) shows in not offering structure and not spotting and utilizing opportunities, which leads to missed chances.

Eight interviewees stated <u>little or no entrepreneurial experience</u> contributed to failure (five times major, three times minor). Thirteen interviewees did not experience these problems. Besides interviewees who had enough entrepreneurial experience themselves or within their team, interviewees indicated there was enough entrepreneurial experience present in their surrounding; *'I am surrounded by a group of people, my dad was one of them, I got a lot of support from them'* (I3). Or they (I8, I12, I19) stated entrepreneurial experience was unnecessary, instead an entrepreneurial spirit was perceived as important; *'The chances are higher you would fail due to a lack of management skills than entrepreneurial experience. Those are not really skills, that's just a hands-on mentality.'* (I12) and *'No I did not experience that as a problem. It is something that must be you.'* (I19). Where little or no entrepreneurial experience was a problem, this could be seen in diverse aspects; the practical know-how about how to setup a business, how to monitor progress and the routine of having an innovative startup; *'He had entrepreneurship experience, but no startup experience. Those are different things.'* (I17). Furthermore, some interviewees indicate they missed the entrepreneurial spirit within their startup. Experts explain a distinction must be made between entrepreneurial experience and entrepreneurial spirit. The entrepreneurial spirit is a prerequisite to function properly and must be part of your nature; *'Entrepreneurship is an attitude. This includes things as passion, dare to take risks, persistency, flexibility, etc.'* (E2). If this attitude is present, one can become an entrepreneur by practice; *'Then you can learn how to be an entrepreneur. Just by start doing things.'* (E5). Besides the right attitude, entrepreneurial experience can be valuable, because it can prevent other failure factors to arise*; 'The more experience you have, the more possibilities you can spot. […] It is a way to tackle those [failure] factors. For example, an incomplete business plan, limited management knowledge, the absence of a clear strategy or the network.'* (E4).

➔ (6.5) A lack of entrepreneurial experience shows in missing practical know-how or entrepreneurial spirit which can contribute to failure. Entrepreneurial experience is not perceived as necessary by all interviewees.

<u>Low commitment</u> contributed to failure in nine cases (eight times major, one time minor). A low commitment can be caused by a wide variety of reasons, that all come down to not wanting or being able to put enough time in the startup. Reasons causing the low commitment are a low or no personal income, having other priorities and a lack of motivation. Firstly, having a form of income is important to foresee in basic needs. To foresee in basic needs, many entrepreneurs choose to work part-time, which makes it harder to devote enough time to the startup compared to a fulltime devotion; *'We put in a lot of time, However, we were not able to work fulltime, because the investment did not provide enough funds to pay ourselves.*' (I16) and *'For me money was crucial, that means income and security. For me this was a main reason why I did not want to proceed anymore.*' (I18). Part of the founders that do start fulltime, explain having no or a low

income is a reason for cessation; *'You have invested so much time, money and effort. However, I get a minimum amount of money in return, you have to live in short supply'* (I19). Secondly, having other priorities leads to a lower commitment in time spend as well. Some interviewees explained they tried to finish their study and work on the startup simultaneously which made it not possible to have a fulltime devotion; *'I was busy in school. I was in my second year of my education and my companion was studying as well.'* (I16). Lastly, a lack of motivation could lead to low commitment. The lack of motivation can be caused by several reasons. A disconnect of the founder with the concept which can arise because one finds out the concept or having a startup does not suit them after all; *'I think we were less supportive of the idea than we realized at that point in time.'* (I12) and *'I just noticed it cost me a lot of energy, more than I thought was normal*.' (I14). Additionally, a lack of need for an idea to work can cause lack of motivation which can be the case if people have other thriving businesses. One of the interviewees reflects on trying to set up a business part-time and concludes fulltime devotion is a must when having a startup; *'You have to do it because you really believe it has to become big. I think, if you want something to become big, you cannot get there part-time.*' (I18). However, not all interviewees consider working part-time as a problem; *'I thought it was easy to combine [employment and startup].*' (I20). The experts are in line with the first statement, because creating something new needs full attention; *'Entrepreneurship is fulltime or no time. Right? There does not exist part-time entrepreneurship, because you are literally and figuratively speaking, creating something out of nothing.'* (E5). However, the importance of being able to foresee in basic needs is perceived as a necessity and a legitimate reason to stop the startup; *'You have to be able to live. […] Having a job on the side to make some money, however, this is often the reason the startup deteriorates'* (E2) and *'I think too many entrepreneurs ruin their own life by continuing for too long.'* (E4).

➔ (8.5) Low commitment is mainly caused by not being able to have a fulltime devotion, however, creating something out of nothing is hard to do part-time therefore this often leads to failure.

In fourteen cases an <u>ineffective team</u> contributes to failure, meaning in seven cases no problems were experienced. The high occurrence complies with theory which suggested about half of failures is caused by an ineffective team. Having an effective team enlarges chances of success; *'a good team can turn a bad idea into something beautiful, however, a bad team can only screw up a promising idea.'* (I17). The first subcategory, *operating at cross purposes* withholds interpersonal problems or an imbalance in the team. This is a problem for nine interviewees (seven times major, two times minor) and is overcome by one interviewee. In the case where the problem was overcome the team was able to choose a focus which aligned the visions of the team members, which decreased interpersonal problems. This led to effective cooperation. Where operating at cross purposes was a problem, an imbalance is observed in a significant difference in work ethic, personality or focus of the startup. When team members do not meet up expectations in these areas, interpersonal problems often arise. The work ethic can differ a lot between team members which negatively influences the relation; *'Everybody has to have similar effort. Because that was a problem as well. I was working until two o'clock in the morning and the other left at 1800 or 1900. […] that led to interpersonal problems'* (I18), and *'I was approaching shops at night, by myself. The rest of the team members, did not do that, which was hard.'* (I21). An imbalance in personality or personal interests in a team can lead to an inefficient work relation, which costs valuable time and money for a startup; *'The group awareness was low. That resulted in hiring people who were not good for us as a group. […] That costs time and money'* (I15).

Furthermore, different visions in the development of a startup can lead to a stop; *'At that time, they isolated me. […] They perceived me as the stubborn one, that I did not believe in their beautiful story'* (I7) and *'I wanted to bring the product to the market, no matter what [percent of the company] would still be mine. However, the other team members did not feel that way.'* (I21). Teams often start noticing the problem of working at cross purpose when other problems cause stress; *'At the start we had no problems. We were riding a pink cloud. How can you fight if you are having success? Then the trouble starts […] than it is hard.'* (I13).

The second subcategory is *having an incomplete team*, which contributed five times to cessation (four times major, one time minor). When having an incomplete team, there is stated a business partner was missed. This can be someone to brainstorm with to get to superior plans; *'I did not have team members with whom sparring was possible.'* (I21), or someone with complementary interests or skills to the founder; *'I just needed a commercial partner who already was in the horticulture, to improve the concept.'* (I1) and *'If I have to point out one cause, I would say missing a good business partner who complements me.'* (I20). Experts agree an effective team is crucial to be able to succeed. Therefore, a good mix of people with complementary skills should be present in the team; *'You must have people with complementary skills in a team, a team of people with complementary soft and hard skills.*' (E5). The soft skills are considered as highly important; *'One underestimates the soft skills, it is about the patterns of thoughts of people.'* (E5) The team is considered as a basic factor that can make or break a startup, which makes it a main reason for investors to base upon their investment choices*; 'That is why investors say, I invest in the team, not in the product or plan. You can change the plan and product, but the team stays.'* (E4). An important aspect is if the investor believes this team can deliver and can listen to feedback; *'You have to trust that these people can deliver'* (E2) and *'They have to be coachable'* (E4).

- ➔ (8.5, 4.5) Imbalance in a team may lead to interpersonal problems. Imbalance can be caused by the composition of personalities, difference in preferences or in being incomplete which makes the team ineffective. An ineffective team cannot function well, which makes failure likely.

A <u>mismatch between skills founder(s)/team and business market</u> has contributed to failure in eight cases (five times major, three times minor) and is overcome two times. Thirteen interviewees did not experience the mismatch, because most skills are covered within the team. The cases where one was able to overcome the mismatch of skills, there were people hired with the skills necessary or the skill was self-taught. Interviewees that experienced the contribution of a mismatch of skills between the founder(s)/team and the business market mentioned a general incompleteness of the skillset or sector specific skills that are missing; *'Not all skills were in-house'* (I18), *'We actually missed other skills in the team, we did not have them.'* (I21) and *'In the end, it cost me a lot of money. I did not have training [in practical sector specific knowledge], that caused me making a lot of errors of judgement in considering time and materials necessary for a garden.'* (I1). Missing these skills led to not being able to efficiently develop the concept or serve the market. Experts state it is important all skills are present. If skills are missing one must change the team as fast as possible, because trying to learn skills does not work; '*If there is no connection, you must correct it as fast as possible, by hiring people with those skills. […] Training can be useful for tricks, that cannot be done for skills.'* (E3). Furthermore, the experts describe the skills necessary vary over time. When a startup transits to another phase, other skills are necessary which is difficult to respond to for startups; *'Everything changes; other finance,*

different governance, other types of clients and other skills in your team. In this moment of time, you see a startup fails, because they cannot make the change.' (E2) However, when looking forward to the future developments in a startup, these changes can be spotted according to experts.

➔ (7.5) A mismatch in skills between the founder(s)/team and the business market leads to not being able to efficiently develop the concept or serve the market, which often leads to failure. When skills are missing, it is best to hire people who can add those skills.

5.3.6 Culture in sector

The category culture in sector is added based on the information given by interviewees. It is the runner up in contributing to failure. The failure factors discussed are inert conservative culture and shifting or high demands.

Nine interviewees experienced an inert conservative culture which contributed to failure (seven times major, two times minor), meaning for twelve interviewees this factor did not contribute to cessation. When an inert conservative culture did contribute, it is noticeable sectors are heavily regulated, such as life sciences, education and construction; '*Education is a hard sector, because it has no open market.'* (I3), '*The market [education] was not appealing to me, due to its bureaucracy and politics.*' (I14) and *'It [Life Sciences] is just a very conservative market'* (I20). The consequences of adopting a product in these sectors are far-reaching compared to a consumer product; '*I am not selling some plates. You have to consider an entire system.*' (I3). Therefore, a bigger momentum must be created to be able to convince potential clients to adopt the product. However, this is hard, certainly when only a small group of people is receptive to change; *'We had the illusion, if you would offer a great technological solution, everybody would like to have it. However, the education market is a defensive conservative market.*' (I4) and *'The group of people who wants change is too small. […] A change in culture is almost necessary.*' (I3). Furthermore, innovation in these sectors takes a lot of time; '*If you innovate in biotech, health care or pharmaceutical products, you know you have a long trajectory ahead of you.*' (I11). When a development needs more time, chances of something going wrong are larger; '*The chance to fail is thus larger, because the time you must bridge to become successful is so long, many fail'* (I11). Experts indicate it is hard to state some sectors are more innovative compared to others. A sector as life sciences is perceived as hard for startups, however, the experts explain it is important to focus on the room there is considering the regulations in a sector; '*You have to search within the existing margins, the freedom they have, and then determine how innovative they are. In certain sectors you just have to deal with certain laws and regulations.'* (E2).

➔ (8.0) An inert conservative culture appears mostly in regulated markets, where the consequences of changes are bigger. Therefore, a larger momentum is necessary to be able to innovate, as it is hard to achieve this as a startup, chances of failure are higher.

Shifting or high demands have contributed to failure in six cases (three times major, three times minor) and was no problem for fifteen interviewees. All interviewees who were confronted with shifting or high demands, did also experience an inert conservative culture. High demands were experienced as a problem, because it makes it harder to comply with the expectations of the client. These high demands prolong the process of fitting the product with the potential client. However, a startup cannot permit the luxury of a recurring postpone in adoption or being send back to the drawing board multiple times. Certainly not when no commitment is made by

the potential client; '*It [potential client educational sector] demands a lot but is not willing to make any commitment. […] There has to be complied with many more conditions than having an excellent product.*' (I4). Furthermore, high demands are present in regulations to be followed; '*I mean, introducing some new medical device is hard, but for kids it is even harder and, in my case, almost impossible.*' (I20). Also, startups are confronted with shifting demands, in the sense of every client asking a slightly different product and changes in demands. The variety in the products demanded by clients would lead to increased costs for startups to custom-make all products; *'They all wanted custom-built systems'* (I10) and *'It is very hard. Almost no standards do exist. Every hospital has its own system.'* (I20). The changes in demands consist of additional demands that were made; '*The market did not like the product enough. They set new conditions, such as; we want additional content, but also this and this.*' (I4) and *'Video had to be interactive all the sudden.*' (I3). Experts state the founders may have been able to foresee these problems. The founder should take the culture of a sector in consideration during the conceptualization and consider switching sector; '*If you find out in the commercialization phase, only then…then you just did not do your homework.*' (E2) and '*Then you just go to another sector. […] If everybody tells you 'no' when trying to sell your product. You have to explore other markets or adjust your product.*' (E5).

➔ (4.5) Shifting or high demands occur due to demand for custom-made products, demands of the potential clients and legislation. The process of creating a product prolongs, because the product must comply with the demands. This means the startup needs a longer runway to market launch, however, no resources are available for this which results in failure.

5.3.7 Factors that came up during analysis

Due to the explorative nature of this research, two emerging concepts are brought to the attention. Firstly, interviewees regularly described external events that have a negative influence on the course of the startup. In other words, interviewees had bad luck. Contingencies were described, as either a positive or negative influence on the development of a startup. However, due to the focus of this research, cases of external events having a negative influence are described more often. Secondly, there was indicated the Dutch culture can be a factor that hampers startups in their development.

It is likely that every startup has bad luck sometimes, however, multiple (six times major; I1, I9, I10, I11, I18, I21) interviewees described contingencies having a strong negative influence on the course of their startup. A high diversity of external events was mentioned, such as all raw materials that were destroyed by the landowner, office space that is changed into a refugee center and a terrorist attack which results in a collapse of the investor climate; *'In the end, he threw all raw materials on a heap, what I saved up in one year.'* (I1), '*However, this was in the middle of the refugee crisis. When we wanted to go live, we were thrown out of our office by the municipality. We had two weeks to leave, because the office building was suitable as an emergency refugee center.*' (I21) and '*It resulted in all formal finance possibilities closed at once, all at once. In the meantime, we really needed money at that moment.*' (I11). These are examples of external events that lay outside the scope of influence of the founders but did influence the startup. This shows startups are vulnerable for external events; *'a startup is always vulnerable for external influences.'* (I10). Experts add the financial crisis as an external event being a negative factor for startups for finding investors and potential clients; '*One I miss in your list is for example the financial crisis.'* (E2). They acknowledge chance contributes negatively or positively to entrepreneurship; '*You can be very good. Or if you are not good, you can have luck and the product will sell anyway. […] I think luck has a*

significant contribution.' (E4). The influence of external events on the course of the startup can be big, which makes it a valuable factor to include when studying entrepreneurship; *'Very good this is added as an official factor'* (E4). Sometimes it is possible to anticipate external events, although this is not always possible according to experts; *'Bad luck and maybe, sometimes but not always, a lack of anticipation to something as bad luck.'* (E2). Having a startup means setbacks will occur, however, getting back on your feet again is the challenge that makes it a failure or a success; '*The faster you can get on your feet again, the more success you get. […] However, do not forget if you fall down one more time than you get up, it is called a failure.*' (E5).

➔ External events out of the scope of interviewees can negatively influence the course of the startup, but sometimes it may be possible to anticipate them.

An aspect mentioned by five founders (five times minor; I8, I9, I13, I15, I20) is the Dutch culture that is not suitable for startups. Losing face is an element Dutch entrepreneurs have to cope with when their startup failed; '*If you go bankrupt in The Netherlands, your name appears on a list [by figure of speech], than you are not trustworthy anymore.*' (I13) and '*You risk your whole image'* (I4). Therefore, most Dutch entrepreneurs focus on the successes; *'I do not often talk about that [failed] company, I always talk about the company that is going well.'* (I8). This risk-averse attitude that results from not wanting to fail, is not beneficial for innovation. Also, in the Netherlands the entrepreneur is perceived as the one responsible for the course of the startup; '*You are the entrepreneur, it is your responsibility. That feeling is very strong in The Netherlands.*' (I13). This gives the impression the entrepreneur is fully responsible if he or she fails. Furthermore, the Dutch are not eager to change systems that currently work fine. Therefore, it often takes longer to convince potential Dutch clients; '*I think if you can make a breakthrough in this market [Dutch], you can make it anywhere. I did business all around the world, but here it is the hardest*' (I9). For both losing face and convincing clients the USA was perceived as a better place for entrepreneurs, but the USA was above all seen as superior considering the investment climate in quantity and ease to get investments; '*You hear in Silicon Valley, if you have a promising idea; 'There you have a bulk of money go and try to develop your concept.' Than you get the full amount and you are going to try a year fulltime.*' (I20). Although expert 1 does nuances the difference in investments between Europe and the USA by explaining definitions of venture capital differ a lot in Europe and the USA, which makes it hard to compare them; '*Definitions differ, the methodology of all research institutes, they differ a lot'* (E1). However, he does state the venture capital market is a lot better in the USA.

➔ The Dutch culture is risk and change averse, which raises barriers for founders, personally and in the development of the startup, which negatively influence the course of the startup.

5.4 Factors overcome

Although not actively asked, ten founders indicated they were able to overcome a failure factor. Overcoming failure factors is a new insight brought to the attention by this study. However, four of the ten interviewees were confronted with a different problem that was related to this same failure factor. Therefore, these failure factors are not shown as overcome in the overview Table 5 in section 5.2. A factor that needs to be overcome can be perceived as a bump in the road. The founder or team needs to devote time and attention to overcome the failure factor, which otherwise could have been put in the development of other aspects of the startup.

As Table 12 in section 14.1 shows, a high diversity of factors is overcome by founders, but no clear pattern is visible. Since the variety of factors is high, a high diversity of factors can potentially be overcome. However, interviewees did not frequently indicate failure factors were overcome which can be explained because it was not included in the interview guide, or because it is hard to overcome failure factors or a combination of both. Experts confirm the frequency is low, because it is challenging to overcome failure factors. They explain it is possible to overcome all failure factors individually, which is in line with the high variety of factors overcome. To be able to overcome failure factors external pressure from an investor or another party involved is necessary, as well as, entrepreneurial capabilities, such as self-reflection, according to experts.

5.5 Timelines and interaction of factors

In cooperation with the interviewees, timelines were constructed during the interview. To have clear overviews, a digital version was created afterwards. The timelines and the information following from the timelines, such as patterns of occurrence of factors, are discussed in this section.

5.5.1 Timelines and main causes

The reconstructed timelines contain the most notable events of the lifetime of the startup. The events can be negative and positive for the startup. If possible, the events are linked to failure factors. All timelines can be studied in section 14.2. The timeline provided structure to order events for interviewees and served as a tool for interviewees to isolate the main mechanisms and causes for failure. The main causes for failure are depicted at the top of every timeline (section 14.2). A maximum of two main causes could be chosen. Of the 29 main causes mentioned, 26 are failure factors (appendix Table 13), this is a lot. In addition, two main causes are external events as described in section 5.3.7. The top three of main causes (Table 7) is closely linked to the frequency of occurrence of the failure factors, with a problematic relationship with the (potential) investor as most mentioned, followed by an ineffective team operating at cross purposes and an inert conservative culture.

Table 7: Overview top three in failure factors mentioned as main cause

Failure factor	Ranking main causes
Problematic relationship with (potential) investor	1
Ineffective team; Operates at cross purposes	3#
Inert conservative culture	3#

5.5.2 Patterns in order of occurrence failure factors

In this section the causality of failure factors is discussed, followed by the order of failure factors mentioned in the timelines.

Interviewees did indicate causality between failure factors occurs (Table 15). However, no clear patterns are identified of one failure factor frequently trigger another factor (

Table 16). Almost all factors did cause another failure factor to arise. The high diversity of causalities and the fact that often multiple factors contribute to cessation, indicates a complex system of influences. As an illustration of the complexity of the interaction between failure factors, two example of chain reactions are shown. Firstly, interviewee 2 describes selling the recently developed product to the first customers, when a large corporate start offering a similar product at a much lower price (FF4). This got the founders down-hearted; *'…for us, this led to demotivation'* (I2), this demotivation lowered the commitment (FF19) and resulted in lack of marketing (FF6b) *'…The demotivation led to not being proactive in gaining more clients'*. Secondly, interviewee 19 explained the timing was premature (FF2). The wrong time-to-market in combination with the strict legislation within the sector (FF23), caused a low potential for the product due to the complexity (FF1). Both examples show one failure factor can trigger a few others. In addition, the second example shows the presence of the combination of two factors can trigger another failure factor. These chain reactions provide a glimpse of the total complexity of the interaction of the failure factors. There can be stated factors are able to trigger each other, thus interaction takes place between factors, but no systematic patterns or configurations emerged.

Furthermore, using the timelines, the order of failure factors has been studied. Factors did also not appear remarkably often at the start, middle or end of the failure process. There were no factors that played a role for every startup and no factors that were not mentioned at all in the failure processes. There is no fixed order in the occurrence of the failure factors, but the order differs in every case. This adds to the complexity of the failure process.

The factors have been analyzed in the preset phases as well. The factors within these phases, conceptualization, commercialization and growth are shown in the appendix (Table 17) and

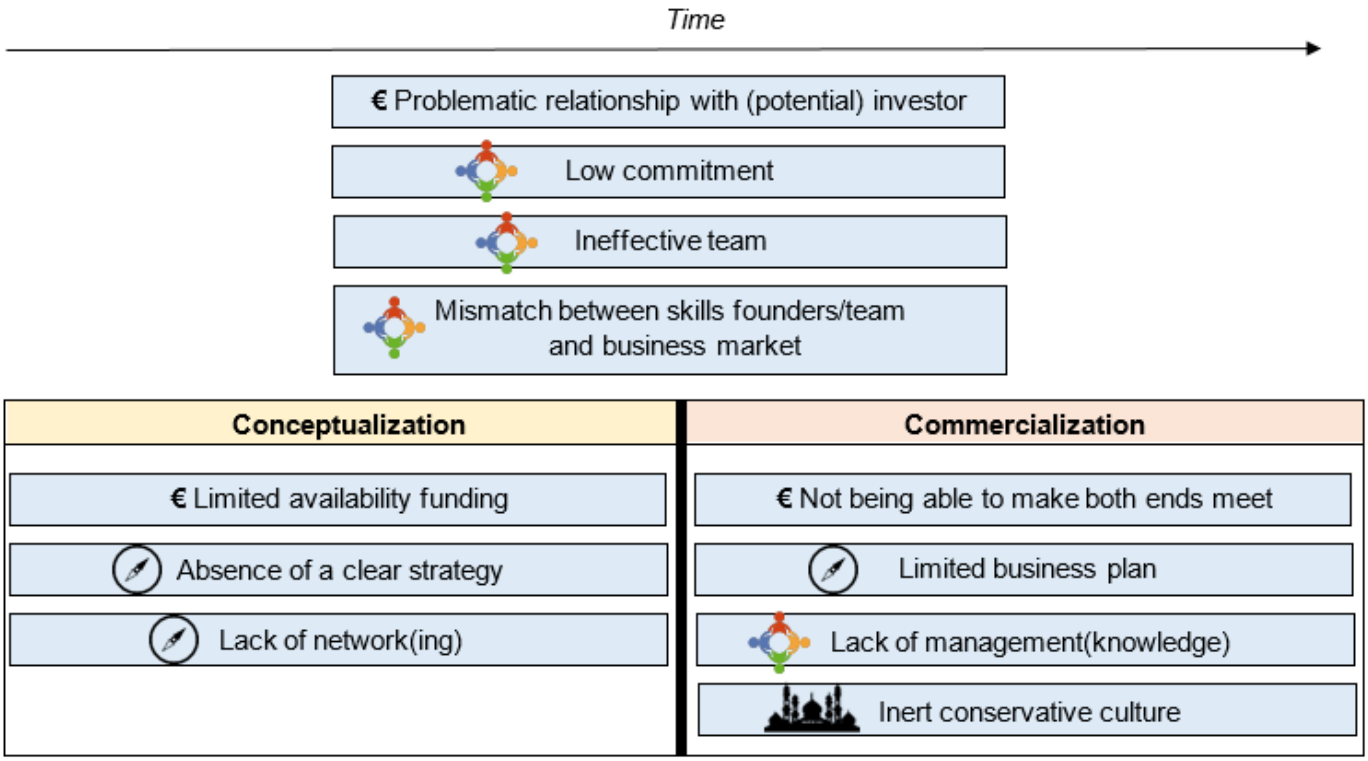

Figure 3: Overview of factors that occur most in conceptualization and/or commercialization phase

their frequency per phase in Table 18 in the appendix. Just one startup made it to the growth phase, therefore this phase is not considered in the analysis. The failure factors did not occur in a certain order within the phases, thus no pattern could be found. The same holds, when the categories are considered the failure factors are in. There is not a certain category that plays remarkably often a role in conceptualization or commercialization, therefore no trend is found of categories in the phases. The most occurring failure factors in both phases are shown in Figure 3 at the upper half. Experts are not surprised that problematic relationship with (potential) investor, low commitment, ineffective team and mismatch between skills founder(s)/team and business market are mentioned a lot. In these factors a lot of factors of the category founder(s)/team are present. Since this category is highly represented in occurrence in general, this is not surprising. Factors that appeared most in the conceptualization or the commercialization phase are depicted in the bottom half of Figure 3. For conceptualization these are; limited availability funding, absence of a clear strategy and lack of network(ing). The category strategy is mentioned twice in the conceptualization phase, which may indicate a struggle with strategy related factors at the start of the startup. In the commercialization phase not being able to make both ends meet, limited business plan, lack of management(knowledge) and inert conservative culture occur most. All factors represent different categories, which results in a diverse set of factors that are of importance in the commercialization phase. Considering the conceptualization phase, experts state the most occurring factors within this phase are interlinked; *'Those three are interconnected, if you have no strategy for example, it is harder to get funding.'* (E2). In addition, experts explain they are surprised that taking the context into account, which can be perceived as the product-market fit, was not one of the factors included and the incompleteness of a business plan; *'What I miss in the conceptualization is, the assessment in a very early stage; is the world ready and does my concept suit the world?'* (E2) and *'people having an invention, but nothing that comes close to a business plan.'* (E1). Furthermore, experts do not agree with each other on the phase strategy is most important in. On the one hand, two experts propose a clear strategy is important to get finance, which is often a necessity to develop the concept, thus during the conceptualization phase; *'If a clear strategy is absent, […] you do not get financing'* (E4). On the other hand, there is stated strategy becomes important after one has a product-market fit, which indicates at the start of commercialization; *'The absence of a strategy is irrelevant, if you do not have a product-market fit yet.'* (E5). Thus, it is unclear when strategy is most important, but is necessary in both phases.

Furthermore, experts are surprised to see the factors least mentioned; low potential product, lack of product protection and low flexibility. The experts suggest the factors low potential product and low flexibility are mentioned less, because it is hard to reflect objectively upon your own startup process and requires a lot of self-assessment by entrepreneurs; *'What I mainly miss, is a little bit of self-reflection, because this is based upon information given by the entrepreneur himself.'* (E2).

6 Discussion

In this section there is given a small summary of the approach, and theoretical insights, limitations and future research and recommendations are discussed.

6.1 Summary of approach

This explorative research has used mainly qualitative data and has tried to gain insights in influence of failure factors on the failure process of startups. Starting with a setup of failure factors based on literature, a preliminary quantitative research was held to find out if factors had to be adjusted or factors were missing. Factors did not have to be changed based on the outcomes, thus the 21 interviews with founders are conducted as planned. The interviews provided insights in the frequency of occurrence of failure factors and how failure factors influence the course of the startup. Also, thanks to the explorative character of the research, failure factors are added, and minor changes have been made before the analysis took place (Section 5.1). In addition, five experts are interviewed to gain more insights in the results from the interviews with founders. In a variety of cases the experts provided in-depth information over the role of failure factors and information was gained to be able to place the factors in context.

6.2 Theoretical insights

The failure factors and the failure process are reflected upon, followed by the theoretical implications.

6.2.1 Reflection on failure factors

The failure factors set up in the theory section, formed a take-off for the research. Some clarifications of failure factors could be made, either by adding a subfactor or slightly changing the definition. There has been chosen to apply those before the analysis took place, because taking these new insights into account increases the information that can be used from the interviews and adds to defining factors in-depth. It was possible to incorporate the changes before analyzation, because the realization some factors did not have a complete coverage was early in the interview process. Also, thanks to the explorative nature of this research, new concepts such as category 'culture in sector' could arise. The failure factors are discussed per category in this section. To make a clear distinction between concepts discussed, **categories** are shown in bold, failure factors are underlined, and *new concepts* compared to the theory section are shown in italics.

The category **product** and the three factors have a low frequency which results in contributing the least to failure. It is striking to see that the product, as a core of the startup, is not experienced as a main influence on the course of the startup, although Vesper (1990) described it as the most important part of the startup due to its facilitating role. Firstly, low potential of the product is not often seen as a problem. This may be due to the studied cases or it is caused by the challenge of self-assessment as experts suggested. However, most interviewees were open to talk about the failure process of their startup, their own contribution in this failure and interviewees considered all failure factors seriously when discussed with the interviewer at the end of the interview. Therefore, the frequency may be higher than this research shows, but no major difference in the frequency is expected. Secondly, the frequency of wrong time-to-market is low as a reason for failure, meaning, overall the timing of the interviewees was all right or the timing was not perceived as problematic. However, having a product that is too complex and a lack of competition are suggested as an indication for wrong

time-to-market. Meaning, interviewees who indicated this was a problem may have been too early on the market, without noticing this. Therefore, the actual contribution may be slightly elevated. Thirdly, in literature is suggested a lack of product protection is a problem for startups (CB Insights, 2015; Vesper, 1990). However, due to the fact almost no interviewee experienced this as a problem, it may be the case this factor is an overrated problem. The phase startups have failed in, may also explain the low occurrence. Most startups have failed in the commercialization phase, if product protection is most important at the end of this phase or in the growth phase, it is not surprising product protection is not yet experienced as a problem. However, since most interviewees chose alternatives to patents and were satisfied with their choice, it seems more likely a lack of product protection is an overrated problem. To conclude the category **product**, although some factors may have been a slightly bigger problem than the results show, there can be stated this category is of secondary importance for failure.

The second category is the **market**, which reached a fourth place in the ranking. Firstly, studying high market dynamics it has become clear there is need for balance in the market dynamics, not too high and not too low. When market dynamics are low, and no competition is present, this may be an indication of being too early to the market. Assuming the product does not have a low potential, having no competitors can mean the system surrounding the innovation is in it's infancy, which means a lot of energy and work has to be put in to develop the system surrounding an innovation. Certainly, because having no competitors at all, suggests a very low state of entrepreneurial activity which is the first step of development of the system (Suurs & Hekkert, 2009). Secondly, a lack of market research can have a large negative impact, because it can result in the wrong product-market fit. Experts think it occurs more often than founders realize, which may be the case considering that many of the interviewed founders still are very enthusiastic and positive about their product, although the startup did fail. Therefore, it is likely the actual contribution of a lack of market research is higher than shown in this study. Thirdly, inappropriate marketing did contribute to failure regularly, due to lack of marketing, a lack of focus in the concept or a lack of focus on problems of the target audience. Theory suggested marketing is important in latter stages (Carreira, 2016), this is confirmed by interviewees stating they did not get to marketing yet because their startup was not developed far enough. Fourthly, limited user-producer interaction is not often perceived as a problem. Many interviewees did have contact with (potential) users, which facilitates the interaction between user and producer. To conclude the category **market**, the category is no dominant determent for failure, however, the factors within this category can play a role in the process of failure of startups.

The **financial resources** category ranks third. The finances for a startup can be perceived as a prerequisite to be able to work on developments. When a startup suffers from initial undercapitalization it is hard to work out a concept due to the limited financial budget. Since this factor addresses the start of financial means, this factor starts playing a role, early in the development process of the startup. The limited availability of funding was a problem for startups. This was to be expected according to experts, because most startups searched for funding during the financial crisis. At that time, there was a low availability of investments. Literature confirms if the state of economy is bad, chances of survival are lower for startups (Corner, 2013; Song, Song, & Parry, 2010). A problematic relationship with the (potential) investor comes at the top of the list in the ranking of main causes for failure. Key is the communication between investor and founder; Visions are not aligned, or the startup is presented as functioning better than it does. This causes problems that could have been

avoided by honest and clear communication between investor and founder. However, it may have been more difficult to choose an investor with a suitable fit with the startup and the startup team due to the limited availability of investors offering funding. Theory suggested, most problems with investors would occur close to ending the startup, however, this cannot be confirmed because the occurrence is the same for the conceptualization and commercialization phase. The last factor is not being able to make both ends meet, which is a problem if the balance is off between income and expenses. Since finance is a prerequisite, almost every startup faces this factor right before cessation. However, for some founders not being able to make both ends meet was a problem relatively early in the process and cessation was the only option. To conclude the category **financial resources**, the financial resources category regularly contributed to failure due to startups that did not have enough funds or problems with the investor.

The category **strategy** is last but one in the ranking of contributing to failure. Strategy consists of factors describing the path set out for the startup and means used to achieve this. The first and second factor, the absence of a clear strategy and limited business plan address the goal and the daily business of how to achieve this goal. Both factors contributed under average to failure. Absence of a clear strategy is an example of a factor interviewees felt like they were able to make the right choices for their startup and did not experience as a reason for failure. For the limited business plan, theory suggests the amount of time put into a business plan can make the difference. However, founders did not indicate that the amount of time put into the plan was a reason for their startup to go wrong. Reasons that were brought up more often were missing parts in the business plan. Also, part of the interviewees and experts perceive a business plan as useless for guidance for a startup and more as a tool to convince investors. Therefore, there can be questioned if the writing of the business plan is desired, it may be more valuable to study the consistency and sense of purpose of a startup. Thirdly, a low flexibility is a factor that is least mentioned in the overall ranking. For this factor it is important there is a balance in flexibility. A high flexibility is necessary in the conceptualization phase but must change into focus (low flexibility) when the commercialization phase starts. The low frequency of this factor makes experts raise the question if the challenge of self-assessment played a role. Since, most entrepreneurs are stubborn, it is generally hard to practice the right amount of flexibility and it is hard to assess yourself on your flexibility and if this was a suitable amount of flexibility, chances are enlarged a misjudgment is made by interviewees. Therefore, it is likely the actual contribution of low flexibility is higher than depicted by this research. Fourthly, the lack of network(ing) is a problem that occurs often. As literature suggested, the network of a startup can contribute positively to the development of a startup, for example in assisting in the search for funding or get specialized advice by using connections. Lastly, the lack of professional advice contributed barely to failure. Most people do have the contacts, however, some are not bold enough to ask for help when necessary. Since the possibility is present, this factor may be less important than assumed in literature. To conclude the category **strategy,** none of the factors has a substantial role in causing failure, except for the factor lack of network(ing). Therefore, this category does contribute mildly to failure, except for lack of network(ing).

The category **founder(s)/team** contributed most to failure. Considering theory, it was expected the founder(s) would play a significant role in the failure of the startup, since they have influence on the state of affair. This is in line with the results of this research, because all but one factor contributed above average to failure compared to the other failure factors. Firstly,

the lack of management(knowledge) does not confirm theory. Here was suggested 90% of failures are caused by bad management, but in this research 43% of the interviewees noted a contribution to failure. Although it is clear the lack of management(knowledge) did cause a lot of damage as sixth in line of the overall ranking of failure factors, it cannot be confirmed it is one of the most important reasons for startups to fail as Ries (2011) suggested. Secondly, the lack of entrepreneurial experience did contribute to failure, but the need for this experience was debated by other interviewees. Besides theory confirming the importance of entrepreneurial experience, other literature explains that in the case of novice entrepreneurs, entrepreneurial experience can have a negative influence on the performance (Toft-Kehler, Wennberg, & Kim, 2014). Which means entrepreneurial experience can stimulate failure as well. On the contrary, experts state entrepreneurial experience can prevent other failure factors to arise. Therefore, entrepreneurial experience is still perceived as a valuable factor. Furthermore, no indication is given that this factor is more important in early phases of the startup as addressed in the theory section. Thirdly, low commitment is one of the most occurring factors contributing to failure. Low commitment occurred most as not being able to have a fulltime devotion to the startup. Therefore, the comparison made in the theory section with a captain that does not steer the ship does not fit low commitment but can better be compared to a captain who douses the sails a few days a week. This results in losing the speed necessary to reach the destination on time. Fourthly, an ineffective team often contributed to failure. The subcategories operating at cross purpose and the *incomplete team* caused problems for thirteen startups. Adding both subcategories, theory is confirmed that states more than half of the startups are confronted with this problem. Having a complete team is seen as a prerequisite to be able to function well as a startup (Roure & Keeley, 1990). Lastly, a mismatch between skills founder(s)/team and the business market has contributed to failure often as well. The skills missed have a high diversity. However, no confirmation could be found for skills being more important at early stages of the startup, since most startups that experienced this as a problem have failed in the commercialization phase. To conclude the category **founder(s)/team**, there can be stated founder(s)/team is the most prominent category to contribute to failure.

The last category is the ***culture in the sector***. This new added category has become the runner up in causing trouble for startups. Firstly, the *inert conservative culture* has often contributed to failure. The existence of an inert conservative culture can be illustrated using the public sector. As Hartley (2010) describes, compared to the private sector, the public sector has a high complexity, which includes sectors as education and health care. The public sector is interwoven with society, has obligations to individuals and must provide public goods and services. Besides these challenges, barriers to innovate are present in the culture of the public sector. Mulgan and Albury (2003) describe the existence of barriers such as a culture of risk aversion, poor skills in active risk or change management, short-term budgets and planning horizons that hamper innovation in the public sector. The inert and conservative culture can be observed in the strong bureaucracy (Sørensen & Torfing, 2011) and existing constraining cultural or organizational arrangements (Mulgan & Albury, 2003). Secondly, *shifting and high demands* can partially be linked to literature. The high demands can be linked to the presence of strong adherence to legal rules. Also, high demands are supported in the complexity and multifunctionality of the system, which makes it difficult to introduce innovation without causing all kinds of problems (Sørensen & Torfing, 2011). However, shifting demands within specific sectors is not supported by literature. To conclude the category ***culture in sector***, the culture in a sector can influence the course of a startup and literature confirms culture within a sector

can hamper innovation and thus results in higher chances of failure. However, the interviewed experts suggested this barrier should have been considered when starting your business in this sector, which could have prevented failure. Thus, the problematic culture can be present, however one can be informed before choosing this market.

External events were one of the aspects that has come up as having a contribution to the course of startups, which is interesting because contingency is a factor that is often overlooked in entrepreneurship literature (Harmeling, 2011). Komen (2017) describes contingency is a relative large explanatory factor in the process of opportunity formation compared to other factors which entrepreneurs can fully control. Although this research does focus on sustainable entrepreneurs, where the effect of contingency is expected to be larger, it does indicate the role for unexpected events positive or negative can be valuable to consider for entrepreneurship literature and specifically when studying the course of startups. Furthermore, Komen (2017) does agree with the experts that some contingency indicators are unpredictable and cannot be planned for, but by executing decent risk management an entrepreneur can influence indirectly the consequences of unpredictable contingency. For example, by searching for liabilities and trying to eliminate them.

Dutch culture is a concept that has emerged that hindered the development of startups and contributed to failure. The risk-averse culture hampers innovation. Cultural support of entrepreneurs is seen as a pillar to realize an entrepreneurial ecosystem. A component of the cultural support is the tolerance for risk and failure (Stam, 2014). Considering this is not part of the culture in The Netherlands, it is understandable Dutch entrepreneurs experience this as a bottleneck. In addition, interviewees indicated the entrepreneurs are hold responsible if the startups fail. This is confirmed by literature describing bankrupt entrepreneurs are often stigmatized in The Netherlands (Wakkee, Dorrestein, & Englis, 2014). Overall, there can be stated the Dutch culture has a negative influence on the startup culture, which can result in a negative influence on courses of startups.

6.2.2 Reflection failure process

Studying the failure process has contributed to insights in the complexity of the process and the occurrence of factors and categories in phases of the process.

6.2.2.1 Complexity

One of the main findings of this study is the complexity of the process of failing of startups. The complexity comes about through several findings.

Multiple factors contribute to the failure process in all cases. On average seven factors play a role in a failure process. All factors established in the theoretical foundation are mentioned at least once, which results in a high variety of factors that contribute to the failure processes. In addition, new factors arose, which expands the variety of factors and thereby the complexity of the process. Furthermore, there is no factor that occurs in all cases and even no factor, taking into account the subfactors, that occurs in half of the cases or more. Twelve factors appear in over a quarter of the failure processes, but the rest appears less often. Due to the fact the occurrence is distributed over different factors, diverse sets and combinations of failure factors play a role in the failure processes. However, it is clear what can be considered as the most important failure factors, since the results show that the main reasons for failure shown

in the timelines and the frequency of occurrence of failure factors are in line. This reinforces the ranking and thereby the amount of contribution of the factors to the failure process.

Furthermore, it has become clear failure factors do influence each other. The causal relations are present in a high variety. However, no clear patterns in order of occurrence of failure factors are present. Thus, no factor systematically causes other factors to arise. The influence failure factors have on each other, can manifest in multiple ways. Firstly, failure factors can trigger other failure factors, meaning the presence of one failure factor can lead to one other factor to crop up. Secondly, two factors can lead to the appearance of another factor. Thirdly, chain reactions of factors can arise within a failure process. The failure factors seem interwoven without clear patterns. The interrelatedness of failure factors makes it challenging to isolate the influence of individual factors on failure.

Furthermore, the failure factors derived from literature are mostly factors a founder can influence. However, influences from the surrounding cannot be controlled by a founder while this can have a significant role in the course of the startup. This adds to the complexity of the process of failure. All emerged concepts are external influences and are thus out of the scope of influence of the founder. These are; the category culture in the sector with inert conservative culture and shifting and high demands as failure factors, external events, and the Dutch culture. This research shows, when mapping the process of failure of startup, the environment can play a vital role and must be included when studying the course of startups and in startup literature.

6.2.2.2 Phases

In this section the preset phases and the failure factors within the phases are discussed.

As shown in the results, some failure factors occurred more often in one of the preset phases; conceptualization, commercialization and growth. The category founder(s)/team is highly represented in both phases, due to the high frequency of occurrence overall, and is perceived as the foundation of the startup. This makes it harmful if a crack appears. This crack can be present at the start but can appear later in the development process as well. An explanation for problems to arise in a later stage of development can be the change to the new phase, in which the focus of the startup changes, and therefore other tasks must be performed by the team as well.

No strong prominence of categories within conceptualization or commercialization is present. However, the most prominent category in one of the phases is category strategy in the conceptualization phase. This may be explained because the conceptualization is a time where the path of the startup is determined which is related to the category strategy. The factors of category strategy mentioned, are absence of a clear strategy and lack of network(ing). Having a good network can help with fundamental aspects of a startups, such as raising funds as the results show. Therefore, it is not striking a lack of network(ing) has a more significant role in the conceptualization phase. Since determining the path of the startup is a step that hopefully every startup does in their early days, it is plausible having an unclear strategy is mentioned more in the conceptualization phase. The last factor that occurs often in the conceptualization phase is limited availability funding. Most startups need funds to be able to develop their product. The first version of the product is developed in the conceptualization phase. If no funds are available, the development of the product comes in jeopardy.

The commercialization phase shows a high diversity of categories, considering the failure factors that occur most. Firstly, not being able to make both ends meet was for the interviewees considering it as a problem the final reason to stop the business, meaning it was close to cessation. Since most interviewees failed in the commercialization phase, it is expected this factor shows up more in the commercialization phase. Lack of management(knowledge) may be a problem in the commercialization phase, due to the focus shifts from the product to marketing. The same holds for the limited business plan, it may be the case the commercialization is too little represented in the business plan. It is remarkable the inert conservative culture does occur most in commercialization phase, since the culture does not suddenly change, meaning the culture was the same during the conceptualization phase. A possible explanation is the difficulties are not present when developing the product, but they are confronted with the inert conservative culture of the sector when trying to commercialize the product.

In addition, some factors did not come up as being important in certain phases by studying the frequency but can be linked to a phase due to information given by founders and experts (Figure 4). Initial undercapitalization can be a problem at the start in the conceptualization phase, although the effects can sometimes be noticed further down the process. Inappropriate marketing appears in a later stage; the commercialization phase. Low flexibility is problematic in the conceptualization phase, but a high flexibility is a problem when one reaches the commercialization phase.

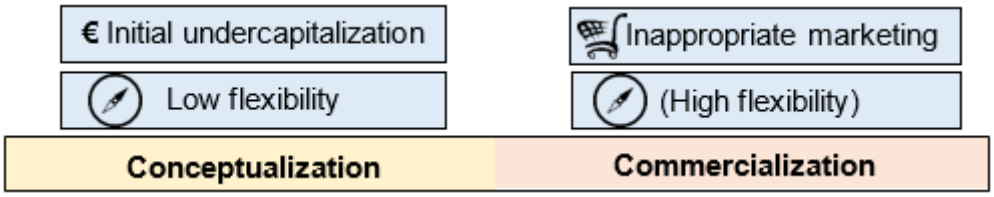

Figure 4: An overview of the moment in startup development certain failure factors can become a problem

6.2.3 Theoretical implications

Few studies have been performed on failure of startups and its causes (Song et al., 2008). This thesis has focused on failure factors that influence the failure process, therefore startup failure and potential causes of failure are the point of focus in this study. As this focus is relatively new in literature, research has been combined to determine categories with a set of failure factors. Furthermore, this study has been the first to study the moment of influence of failure factors in the startup process to be able to get a better understanding of the failure process of startups. The results of this study add to startup literature in several ways.

The literature on causes for failure of startups was fragmented before this research. Research addressing causes of failure was executed, but few overview studies have been made. For this research all scientific literature available on causes of startup failure is studied to be able to bring together all factors in an integrative framework. More clarity on what the concepts withhold is established by defining the factors in the theoretical foundation section. Literature reviews such as the one of Battistella, De Toni, & Pessot (2017) have been carried out. However, the overviews are not put to the test. This is, to the best knowledge of the researcher, the first research that puts an integrative framework of failure factors of startups of this size to the test. The framework could even be expanded, due to the factors that emerged during this research, which adds to the integrative overview of this research. Thanks to the qualitative

approach, the factors are placed in context which clarifies under what circumstances the factors contribute to failure. This helps to reduce controversial findings in literature.

The process of failed startups was not studied before this research. The most striking finding concerning the process, is the complexity. The interrelatedness of failure factors and the influence of the surrounding, result in the high complexity of the failure process. Besides the failure factors derived from literature, influences from outside the startup can have impact the internal process of the startup as well. Also, the moment of impact of some failure factors could be established, meaning these factors mostly appear in a certain stage of development of the startup. In addition, studying the process resulted in insights in the role of factors in frequency, how the factor comes into existence and how the factor contributes to failure. This provides useful information on how the process of failure comes about.

This research also enables to place the contribution of categories and failure factors in perspective. An addition to literature is the portrayed influence per category. In the theory section the categories are roughly speaking presented as equal. However, this research has shown there are big differences in influence categories can have on failure. The category founder(s)/team, where soft skills such as good communication are key, has a substantial influence which confirms the findings of Bruno et al., (1992) and Krishna et al. (2016). In the same line of reasoning, the failure factors were presented as equal in the theory section. However, the contribution of failure factors differs, and some factors could even be overcome. Furthermore, multiple factors are formulated in extremes, such as high market dynamics and low flexibility. However, it is often a balance between the extremes which is the best position for a startup.

6.3 Limitations and suggestions for further research

In this section, empirical, methodological and theoretical limitations are discussed and suggestions for further research are given.

Since not sufficient interviewees could be found using the database of the Chamber of Commerce, snowballing and the network of the researcher is used to find the additional interviewees. This resulted in a sample less random, than was aimed for. However, the diversity of age of the interviewees and sectors interviewees operated in was still high. However, it may have advantages for research to have less diversity in startups. Although the diversity in sector and timeframe did not seem to have a large influence on which failure factors were important, it may make it easier to compare the storylines of startups if the circumstantial influences such as culture and fluctuations in economic prosperity would be the same. However, the diversity within this research did result in a higher external validity.

Using the self-assessment approach by founders was necessary to gather data. As experts suggested, this may have influenced the frequency of occurrence of failure factors, since it is hard to assess everything objective when you were part of the process. However, no large differences in occurrence are presumed and the self-assessment method did suffice in providing a lot of useful information on the process of failing. Thus, a good first impression of the processed of failed startups has been made and more clarity in failure factors and their relevance has been gained. Furthermore, the semi-structured approach was suitable, because it did provide a guideline and gave enough room to explore insights interviewees brought up. Also, giving the interviewee time and space to construct their own story by using the timeline

question was an appropriate choice. The interviewee could tell their story unbiased, without having seen the failure factors used in this research. Also, constructing a timeline helped to structure the interview and to ensure the order of events. Constructing a timeline is experienced as an effective way to recall events and the order they occurred in and structure the thoughts as was indicated by multiple interviewees; *'I thought it was a clever idea using this timeline, I have to say it helped me. […] It provides structure.'* (I16).

During the interviews it turned out the formulation of two failure factors was unclear. Firstly, absence of a clear strategy does not cover a strategy being the suitable strategy for the startup in question. As expert 4 states; *'Good [strategy] is at least as important'* (E4). During the interviews the problem of choosing the wrong strategy did not come up. However, it may be useful to add this as a possibility in follow-up research, since it is plausible a strategy does not only have to be clear, but suitable as well. Secondly, the word 'limited' in limited business plan raised questions, due to the fact limited can also refer to a lack of volume, meaning the business plan is not long enough. However, this is not where it refers to, it refers to a business plan that is not clearly worked out. Either resulting in vital parts missing or unrealistic plans. Therefore, the advice is given to use the term 'business plan not clearly worked out' which better suits the description.

Furthermore, the growth phase could not be studied, due to a lack of data for this phase. The lack of data for startups in this stage may not be surprising considering the high failure rate of startups (Salamzadeh & Kawamorita Kesim, 2015). Since most startups have failed before the growth phase, the concentration of startup getting into trouble before the growth phase is much higher. Therefore, the relevance of studying the conceptualization and commercialization phase is higher to enable startups to get further in the development process. However, it would be useful to study the startup in the growth phase to see what failure factors are relevant here and how these can be overcome. This can help startups that have come a far way, to make it to the finish line as a startup and grow up.

During the analysis it occurred the phases interviewees thought of themselves and added to the timeline (Appendix Table 19), were highly diverse. The diversity was present in names, the number of phases and in core message per phase. This was mainly caused by the fine-tuning of phases for their startups process or specific developments of this startup. Due to the incomparability of the phases mentioned by interviewees, it was not possible to effectively study patterns of occurrence of failure factors within these phases (Appendix Table 20). Although the phases indicated by interviewee are not comparable, they often did summarize the events and main actions of an interviewee in a period of the timeline. This provided a quick overview of the developments over time.

As this research has shown, circumstances startups are in, can make a difference. Since the startups that are interviewed are situated in the Dutch entrepreneurial climate and Dutch culture, this may have resulted in other factors acting out compared to other countries. Therefore, the generalization to other countries may be limited to a certain extent.

To tackle two of the issues mentioned above, part of circumstantial influences and self-assessment, one must go beyond the first impression this research provided. Following startups real time and mapping their progress could provide valuable insights in failure and success factors, because the startups will probably be a mix of failed and successful startups.

Using this method, it is possible to observe the behavior and choices of the startup team instead of using self-assessment. Furthermore, the startups are exposed to the same circumstantial influences, certainly if a badge of startups from, for example, one incubator can be followed. This follow-up research can also provide a valuable contribution in factors that are overcome. Specifically, more information can be gained on what methods entrepreneurs use to overcome failure factors, which can give future entrepreneurs guidance in how to overcome problems.

A study about successful and failed startups may shed more light on the discussion of success and failure being no opposites, but coexist as described in the introduction (Danner & Coopersmith, 2015). A small comparison between failure and success factors can give insights in differences and similarities in causes for failure and success. In literature, success factors have not yet reached standards. However, most studies do include the factors shown in the appendix in Table 21 (Corner, 2013; Groenewegen & De Langen, 2012; Song et al., 2008; Toganel & Zhu, 2017). For three failure factors there is attempted find the opposite success factor, additional insights are shown in Appendix F – Comparison failure and success factors. Firstly, initial undercapitalization can be linked to the success factor *financial resources*. It both indicates a substantial amount of money can help the startup become successful (Corner, 2013; Robinson & Phillips McDougall, 2001; Song et al., 2008; Toganel & Zhu, 2017). However, the failure factor initial undercapitalization considers the start of the startup and for the success factor no specific timing has been chosen. Secondly, the failure factor product protection is partly represented by the success factor; *existence of patent protection* (Marino & De Noble, 1997; Song et al., 2008), however, leaves out other options to protect products such as secrecy and lead time. On paper, this match exists. However, considering the results that show lack of product protection is not experienced as a problem, a success factor is present, without an opponent as a failure factor. Thirdly, the external events can be associated with the state of the economy which is a success factor and an example of an external event. If the state of the economy is good, the survival chances of the startups are higher (Corner, 2013; Song et al., 2010). Thus, some failure factors do have a similar success factor, however, not all factors do. In addition to the suggested follow-up research for failure and success, it would be interesting to devote part of the study to differences and similarities in success and failure. This can provide startups and institutions involved with startups with useful information in recognizing if the presence of factors is problematic or not.

6.4 Recommendations

This research has provided insight in the process of failing which is interesting for multiple actors. For every actor involved in startups this research can be used to gain more understanding of failure factors individually, the frequency and the manner failure factors can influence the course of a startup. Furthermore, this thesis may help society and its actors to perceive failures as an informative and valuable part of entrepreneurship to study. In addition, some specific managerial and policy recommendations can be given as well. The researcher has chosen to focus on recommendations that logically result from the outcomes of this research.

The managerial advice can be useful for actors that are involved with startups, such as incubators, venture capitalist or startups themselves. In general, the insights gained by this research, can assist in recognizing pitfalls of startups, or spotting a downward trend of a startup. This can be achieved by checking if failure factors are present within the startup and

if so, try to steer the startup in another direction. Furthermore, specific advice can be given for eight factors. Firstly, to prevent a problematic relationship with the (potential) investor, expectation management is necessary. Startups should give updates and discuss the course of the startup regularly with their investor without withholding facts or make things seem better than they are. Investors must make sure information provided is realistic and be upfront about investments that can be made and their expectations of the startup. This manages the expectations of both sides. Secondly, founders tend to be too optimistic which results in unrealistic business plans. To increase chances of a realistic business plan, assessments based on validated learning are advised, which enables to consider the concept in context. Thirdly, a lack of professional advice does not occur very often, but if it does, founders did not ask for help. Therefore, it is important to give startups unsolicited advice and stimulate founders to ask for help and advice regularly. Fourthly, the founder(s)/team has a huge influence on failure, and hence needs attention and devotion in selection to get an effective team. It is important to ensure the team fits and is complementary considering hard skills, but in soft skills as well. The competences in the team and the balance within the team can help to avoid failure. If the team turns out to be unbalanced, it is important the team is changed as soon as possible, by adding someone, firing someone of a combination of the two. Fifthly, fulltime attention of all team members is advised to make sure the concept gets the time and devotion it needs. Sixthly, when management(knowledge) is lacking in the team, it can be increased by hiring people who can steer the startup in the right direction. Seventhly, it is important to keep the culture of the sector in mind as a founder and balance off need for innovations, in a sector such as the public sector, (Sørensen & Torfing, 2011) and the possibilities within a sector. Lastly, it is important to realize not everything is in control of the founder, external events can throw a spanner in the works. It is important to apply risk management to minimize the damage of external events. A way to try to make a startup more robust is by minimizing liabilities. Liabilities can be located by studying the effect of disaster scenarios on the startup. When found, the liability has to be minimized.

For policymakers specific, this research helps to realize what can cause failure and take the results into account when creating policies to stimulate startups to become successful. To do so, not only the individual startups have to be considered, but the entrepreneurial ecosystem surrounding the startups as well. To enhance the surrounding system, the focus should shift to the role of the entrepreneurial ecosystem and the processes of how it is developed, nurtured, adapted and sustained should be stimulated (Wright & Stigliani, 2013). Since the results show the category team is often the bottleneck, it is advised policymakers enable startups to create an effective team via incubators or other institutions. If policymakers are ambitious and want to take it a step further, they can consider providing basic income for basic needs to enable entrepreneurs to work fulltime on the development of their startup.

7 Conclusion

Startups contribute to economic development and initiate innovation (Arasti et al., 2014; Cusumano, 2013; Richter et al., 2018; Song et al., 2008). However, the failure rate of startups is high and the amount of research to reasons of failure of startups is low (Gong, Baker, & Miner, 2009; Salamzadeh & Kawamorita Kesim, 2015). To contribute to the understanding of startup failure, this thesis studies the influence of failure factors on the failure process of startups located in The Netherlands. By establishing an integrative framework of failure factors and interview 21 founders followed by five experts, the researcher tries to answer the following research question:

What are the failure factors and what is the influence of failure factors on the failure process of startups?

A total of 25 failure factors that influence the failure process of startups have been identified. The failure factors that influence the failure process of startups are within the categories product, market, financial resources, strategy, founder(s)/team, culture in sector and external influences (Appendix Table 22). Different failure factors contributed to different extents to the failure process. Failure factors in the category founder(s)/team occurred most and had the strongest negative impact on the failure process.

On average the failure process was influenced by seven failure factors. The factors are interwoven and interact, meaning factors influence each other. Patterns and causality among factors are diverse and most factors are not bound to a certain phase of development of the startup. The high number of factors contributing per case and the diversity of these factors, results in a high variety of sets of factors contributing to failure, which shows the high amount of paths to failure. This shows the high complexity of the failure process of startups.

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9 References

Arasti, Z., Zandi, F., & Bahmani, N. (2014). Business failure factors in Iranian SMEs: Do successful and unsuccessful entrepreneurs have different viewpoints? *Journal of Global Entrepreneurship Research*, *4*(1), 10. https://doi.org/10.1186/s40497-014-0010-7

Audretsch, D. B., & Mahmood, T. (1995). New Firm Survival: New Results Using a Hazard Function. *The Review of Economics and Statistics*, *77*(1), 97. https://doi.org/10.2307/2109995

Battistella, C., De Toni, A. F., & Pessot, E. (2017). Open accelerators for start-ups success: a case study. *European Journal of Innovation Management*, *20*(1), 80–111. https://doi.org/10.1108/EJIM-10-2015-0113

Baum, J. A. C., Calabrese, T., Silverman, B. S., Baum1, J. A. C., Calabrese1, T., & Silverman2, B. S. (2000). Don't Go It Alone: Alliance Network Composition and Startups' Performance in Canadian Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology. *Source: Strategic Management Journal Strategic Management Journal Strat. Mgmt. J*, *21*(21), 267–294.

Blank, S. (2012). *The startup owner's manual: The step-by-step guide for building a great company*. BookBaby. Retrieved from https://books.google.nl/books?hl=en&lr=&id=1hRcDQAAQBAJ&oi=fnd&pg=PT8&dq=Blank,+S.+(2012).+The+startup+owner%27s+manual:+The+step-by-step+guide+for+building+a+great+company.+BookBaby.&ots=nmMpwZj8QQ&sig=nHDAJ1gl0cgdgYiS56R714lf0mo

Bonev, M. (2012). *Managing Reverse Logistics Using System Dynamics: A Generic End-to-end Approach*. Diplomica Verlag. Retrieved from https://books.google.nl/books?hl=en&lr=&id=FdoeOEr5uxcC&oi=fnd&pg=PR6&dq=Bonev,+M.+(2012).+Managing+Reverse+Logistics+Using+System+Dynamics:+A+Generic+End-to-end+Approach.+Diplomica+Verlag.&ots=0-hVBP6GEB&sig=7pIccd745mNH28oMrQo6rDVVLMo

Boschma, R. (2005). Proximity and Innovation: A Critical Assessment. *Regional Studies*, *39*(1), 61–74. https://doi.org/10.1080/0034340052000320887

Bruno, A. V., Mcquarrie, E. F., & Torgrimson, C. G. (1992). The Evolution of New Technology Ventures over 20 Years: Pattern of Failure, Merger, and Survival. *Journal of Business Venturing*, *7*(4), 291–302. https://doi.org/10.1016/0883-9026(92)90003-A

Bruno, A. V, & Leidecker, J. K. (1988). Causes of new venture failure: 1960s vs. 1980s. *Business Horizons*, *31*(6), 51–56. https://doi.org/10.1016/0007-6813(88)90024-9

Bruton, G. D., & Rubanik, Y. (2002). Resources of the firm, Russian high-technology startups, and firm growth. *Journal of Business Venturing*, *17*(6), 553–576.

Bryman, A. (2012). *Social Research Methods* (4th ed.). New York: Oxford University Press.

Cai, L., Chen, B., Chen, J., & Bruton, G. D. (2017). Dysfunctional competition ampamp; innovation strategy of new ventures as they mature. *Elsevier*, *78*(September), 111–118. https://doi.org/10.1016/j.jbusres.2017.05.008

Carreira, B. (2016). Does success come with practice?: an overview of entrepreneurs' background and new venture performance. *Reitoria*, *2*(5). Retrieved from https://repositorio.ucp.pt/handle/10400.14/20684

Casadesus-Masanell, R., & Ricart, J. E. (2010). From Strategy to Business Models and onto Tactics. *Long Range Planning*, *43*(2), 195–215. https://doi.org/10.1016/j.lrp.2010.01.004

CB Insights. (2015). *The Top 20 Reasons Startups Fail*. Retrieved from https://www.cbinsights.com/research-reports/The-20-Reasons-Startups-Fail.pdf

Cefis, E., & Marsili, O. (2005). A matter of life and death: innovation and firm survival. *Industrial and Corporate Change*, *14*(6), 1167–1192. https://doi.org/10.1093/icc/dth081

Chamanski, A., & Waagø, S. J. (2001). Organizational Performance of Technology-Based Firms – the Role of Technology and Business Strategies. *Enterprise and Innovation Management Studies*, *2*(3), 205–223. https://doi.org/10.1080/14632440110105062

Cohen, W. M., Nelson, R. R., Walsh, J. P., Arora, A., Arundel, A., Baldwin, J., … Levinthal, D. (2000). *Protecting their intellectual assets: Appropriability conditions and why US manufacturing firms patent (or not)*. *National Bureau of Economic Research*. Retrieved from http://www.nber.org/papers/w7552

Coleman, S., Cotei, C., & Farhat, J. B. (2010). Factors Affecting Survival, Closure and M&A Exit for Small Businesses. *Midwest Finance Association 2012 Annual Meetings Paper*, (July 2015), 49. https://doi.org/10.2139/ssrn.1768728

Colombelli, A., Krafft, J., & Quatraro, F. (2013). Properties of knowledge base and firm survival: Evidence from a sample of French manufacturing firms. *Technological Forecasting and Social Change*, *80*(8), 1469–1483. https://doi.org/10.1016/j.techfore.2013.03.003

Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, *9*(5), 371–395. https://doi.org/10.1016/0883-9026(94)90013-2

Cope, J. (2011). Entrepreneurial learning from failure: An interpretative phenomenological analysis. *Journal of Business Venturing*, *26*(6), 604–623. https://doi.org/10.1016/j.jbusvent.2010.06.002

Corner, W. J. (2013). Doctor of Philosophy Dissertation Submitted in Partial Fulfillment. *ProQuest Dissertations Publishing*, *3568515*.

Cusumano, M. a. (2013). Evaluating a startup venture. *Communications of the ACM*, *56*(10), 26. https://doi.org/10.1145/2505337

Dahl, M. S., & Reichstein, T. (2007). Are You Experienced? Prior Experience and the Survival of New Organizations. *Industry & Innovation*, *14*(5), 497–511. https://doi.org/10.1080/13662710701711414

Dahlqvist, J., & Wiklund, J. (2012). Measuring the market newness of new ventures. *Journal of Business Venturing*, *27*(2), 185–196. https://doi.org/10.1016/j.jbusvent.2010.12.001

Danner, J., & Coopersmith, M. (2015). *The Other "F" Word: How Smart Leaders, Teams, and Entrepreneurs Put Failure to Work*. John Wiley & Sons. Retrieved from https://books.google.nl/books?hl=en&lr=&id=Vt25BgAAQBAJ&oi=fnd&pg=PA81&dq=Danner,+J.,+%26+Coopersmith,+M.+(2015).+The+Other%22+F%22+Word:+How+Smart+Leaders,+Teams,+and+Entrepreneurs+Put+Failure+to+Work.+John+Wiley+%26+Sons.&ots=CUcCci8l23&sig=UrUKHELqRG4H

Duchesneau, D. A., & Gartner, W. B. (1990). A profile of new venture success and failure in an emerging industry. *Journal of Business Venturing*, *5*(5), 297–312. https://doi.org/10.1016/0883-9026(90)90007-G

Eveleens, C. P., van Rijnsoever, F. J., & Niesten, E. M. M. I. (2017). How network-based incubation helps start-up performance: a systematic review against the background of management theories. *The Journal of Technology Transfer*, *42*(3), 676–713. https://doi.org/10.1007/s10961-016-9510-7

Ferreira, M. P., Li, D., & Suk, J. Y. (2009). Foreign Entry Strategies: Strategic Adaptation to Various Facets of the Institutional Environments on JSTOR. *Development and Society*, *Vol. 38*(No. 1), 27–55. Retrieved from http://www.jstor.org/stable/pdf/deveandsoci.38.1.27.pdf?seq=1#page_scan_tab_contents

Fisher, G., Kotha, S., & Lahiri, A. (2016). Changing with the Times: An Integrated View of Identity, Legitimacy, and New Venture Life Cycles. *Academy of Management Review*, *41*(3), 383–409. https://doi.org/10.5465/amr.2013.0496

Gegenhuber, T., & Dobusch, L. (2017). Making an Impression Through Openness: How Open Strategy-Making Practices Change in the Evolution of New Ventures. *Elsevier*, *50*(3), 337–354. https://doi.org/10.1016/j.lrp.2016.09.001

George, G., Zahra, S. a., & Wood, D. R. (2002). The effects of business-university alliances on innovative output and financial performance: A study of publicly traded biotechnology companies. *Journal of Business Venturing*, *17*(6), 577–609. https://doi.org/10.1016/S0883-9026(01)00069-6

Giardino, C., Wang, X., & Abrahamsson, P. (2014). Why early-stage software startups fail: A behavioral framework. *Lecture Notes in Business Information Processing*, *182 LNBIP*, 27–41. https://doi.org/10.1007/978-3-319-08738-2

Gong, Y., Baker, T., & Miner, A. S. (2009). Failures of Entreprneurial Learning in Knowledge-Based Startups. *Frontiers of Entrepreneurship Research*, *26*(15), Article 2. https://doi.org/10.2139/ssrn.1336714

Grimaldi, M., Quinto, I., & Rippa, P. (2013). Enabling Open Innovation in Small and Medium Enterprises: A Dynamic Capabilities Approach. *Knowledge and Process Management*, *20*(4), 199–210. https://doi.org/10.1002/kpm.1423

Groenewegen, G., & De Langen, F. (2012). Critical Success Factors of the Survival of Start-Ups with a Radical Innovation. *Journal of Applied Economics and Business Research JAEBR*, *2*(3), 155–171. Retrieved from https://s3.amazonaws.com/academia.edu.documents/30869939/4_makale_critical_success_factors_of_the_survival_of_start.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1519826739&Signature=DXBedbiD%252B5sap2S2mb7tWh9Y4gg%253D&response-content-disposition=inline%253

Hall, R. H., & Tolbert, P. S. (2004). *Organizations: Structures, Processes, and Outcomes*. Prentice Hall.

Harmeling, S. (2011). Contingency as an entrepreneurial resource: How private obsession fulfills public need ☆. *Journal of Business Venturing*, *26*, 293–305. https://doi.org/10.1016/j.jbusvent.2009.10.003

Hartley, J. (2010). Innovation in Governance and Public Services: Past and Present. *Public Money & Management*, *25*(1), 27–34. https://doi.org/10.1111/j.1467-9302.2005.00447.x

Holgersson, M., Se, M., Phan, T., & Hedner, T. (2016). Entrepreneurial patent management in pharmaceutical startups. *Drug Discovery Today*, *21*, 1042–1045. https://doi.org/10.1016/j.drudis.2016.02.018

Hyytinen, A., Pajarinen, M., & Rouvinen, P. (2015). Does innovativeness reduce startup survival rates? *Journal of Business Venturing*, *30*(4), 564–581. https://doi.org/10.1016/j.jbusvent.2014.10.001

Kane, T. (2010). The importance of startups in job creation and job destruction. *Kauffman Foundation Research Series: Firm Formation and Economic Growth*, (July), 12. https://doi.org/10.2139/ssrn.1646934

Kim, J., & Miner, A. (2005). *Modes of Internal Experience and Survival-Enhancing Learning in New Firms*. Madison. Retrieved from https://scholar.google.nl/scholar?q=Kim%2C++J.+Y.%2C+J.+Kim%2C+%26+A.+S.+Miner+%282005%29.+Modes+of+Internal+Experience+and+Survival-Enhancing+Learning+in+New+Firms.+Working+paper.+University+of+Wisconsin%2C+Madison.&btnG=&hl=en&as_sdt=0%2C5

Kim, Y., & Heshmati, A. (2010). Analysis of Korean IT startups' initial public offering and their post-IPO performance. *Journal of Productivity Analysis*, *34*(2), 133–149. https://doi.org/10.1007/s11123-010-0176-0

Komen, J. P. (2017). *Sustainable entrepreneurship as a game of chance A narrative approach on the role of contingency in opportunity formation*. Lambert Academic Publising. Retrieved from https://www.morebooks.de/store/gb/book/sustainable-entrepreneurship-as-a-game-of-chance/isbn/978-3-330-35126-4

Krishna, A., Agrawal, A., & Choudhary, A. (2016). Predicting the Outcome of Startups: Less Failure, More Success (pp. 798–805). IEEE.

Li, H. (2001). How does new venture strategy matter in the environment-performance relationship? *Journal of High Technology Management Research*, *12*(2), 183–204. https://doi.org/10.1016/S1047-8310(01)00036-0

Lundvall, B.-A. (2009). Innovation as an interactive process: user-producer interaction to the national system of innovation: research paper. *African Journal of Science, Technology, Innovation and Development*, *1*(2_3), 10–34. Retrieved from https://journals.co.za/content/aa_ajstid/1/2_3/EJC10518

Mandakovic, V., Cohen, B., & Amorós, J. E. (2015). Entrepreneurship, Regional Development and Culture. *Entrepreneurship, Regional Development and Culture: An Institutional Perspective*, (April), 109–125. https://doi.org/10.1007/978-3-319-15111-3

Marino, K. E., & De Noble, A. F. (1997). Growth and early returns in technology-based manufacturing ventures. *The Journal of High Technology Management Research*, *8*(2), 225–242. https://doi.org/10.1016/S1047-8310(97)90004-3

Markides, C., & Sosa, L. (2013). Pioneering and first mover advantages: The importance of business models. *Long Range Planning*, *46*(4–5), 325–334. https://doi.org/10.1016/j.lrp.2013.06.002

Mas-Verdú, F., Ribeiro-Soriano, D., & Roig-Tierno, N. (2015). Firm survival: The role of incubators and business characteristics. *Journal of Business Research*, *68*(4), 793–796. https://doi.org/10.1016/j.jbusres.2014.11.030

McGee, J. E., Dowling, M. J., & Megginson, W. L. (1995). Cooperative strategy and new venture performance: The role of business strategy and management experience. *Strategic Management Journal*, *16*(7), 565–580. https://doi.org/10.1002/smj.4250160706

McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, *24*(1), 13–30. https://doi.org/10.5465/AMR.1999.1580438

Mudde, T. (2017, December 7). Briljantste mislukking in de zorg was té klantgericht ggz-traject: "Hier valt het meeste van te leren" - Wetenschap - Voor nieuws, achtergronden en columns. *De Volkskrant*. Retrieved from https://www.volkskrant.nl/wetenschap/briljantste-mislukking-in-de-zorg-was-te-klantgericht-ggz-traject-hier-valt-het-meeste-van-te-leren~a4543874/

Mulgan, G., & Albury, D. (2003). *Innovation in the public sector*. London. Retrieved from http://www.sba.oakland.edu/FACULTY/MATHIESON/MIS524/RESOURCES/READINGS/INNOVATION/INNOVATION_IN_THE_PUBLIC_SECTOR.PDF

Nooteboom, B., Vanhaverbeke, W., Duysters, G., Gilsing, V., & Van den Oord, A. (2005). Optimal cognitive distance and absorptive capacity. *Academy of Management Proceedings*, *2005*(1), L1–L6. https://doi.org/10.5465/AMBPP.2005.18783564

Nuscheler, D. (2016). Regularly change a running system! An analysis of stage-specific criteria for attracting venture capital and changing the likelihood for getting funded. *International Finance and Banking Society*, *1*(1), 1–55. Retrieved from

http://ifabs.org/assets/stores/1206/userfiles/3IFABS Best Poster Award - Daniela Nuscheler, TU Dortmund University, DE.pdf

Porter, M. E. (1998). Location, Clusters, and the "New" Microeconomics of Competition on JSTOR. *Business Economics*, *33.*(No 1.), 7–13. Retrieved from http://www.jstor.org/stable/23487685?seq=1#page_scan_tab_contents

Richter, N., Jackson, P., & Schildhauer, T. (2018). Entrepreneurial Behaviour and Startups: The Case of Germany and the USA. In *Entrepreneurial Innovation and Leadership* (pp. 1–14). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-71737-1_1

Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Business. Retrieved from https://books.google.nl/books?hl=en&lr=&id=tvfyz-4JILwC&oi=fnd&pg=PA15&dq=Ries,+E.+(2011).+The+lean+startup:+How+today%27s+entrepreneurs+use+continuous+innovation+to+create+radically+successful+businesses.+Crown+Business.&ots=8H8bE49irX&sig=dr-UVnosWIBLRI

Robinson, K. C., & Phillips McDougall, P. (2001). Entry barriers and new venture performance: a comparison of universal and contingency approaches. *Strategic Management Journal*, *22*(6–7), 659–685. https://doi.org/10.1002/smj.186

Roure, J. B., & Keeley, R. H. (1990). Predictors of success in new technology based ventures. *Journal of Business Venturing*, *5*, 201–220. Retrieved from http://ac.els-cdn.com/088390269090017N/1-s2.0-088390269090017N-main.pdf?_tid=b01fe02e-397c-11e7-a1e1-00000aab0f27&acdnat=1494859515_db3a80089ca76e20ed4334187a585210

Salamzadeh, A., & Kawamorita Kesim, H. (2015). Startup Companies: Life Cycle and Challenges. *SSRN Electronic Journal*, (AUGUST 2015). https://doi.org/10.2139/ssrn.2628861

Scopelliti, I., Cillo, P., Busacca, B., & Mazursky, D. (2014). How do financial constraints affect creativity? *Journal of Product Innovation Management*, *31*(5), 880–893. https://doi.org/10.1111/jpim.12129

Shrader, R., & Siegel, D. S. (2007). Assessing the Relationship between Human Capital and Firm Performance: Evidence from Technology-Based New Ventures. *Entrepreneurship: Theory & Practice*, *31*(6), 893–908. https://doi.org/10.1111/j.1540-6520.2007.00206.x

Song, L. Z., Song, M., & Parry, M. E. (2010). Perspective: Economic Conditions, Entrepreneurship, First-Product Development, and New Venture Success*. *Journal of Product Innovation Management*, *27*(1), 130–135. https://doi.org/10.1111/j.1540-5885.2009.00704.x

Song, M., Podoynitsyna, K., Van der Bij, H., & Halman, J. I. M. (2008). Success factors in new ventures: A meta-analysis. *Journal of Product Innovation Management*, *25*(1), 7–27. https://doi.org/10.1111/j.1540-5885.2007.00280.x

Sørensen, E., & Torfing, J. (2011). Enhancing Collaborative Innovation in the Public Sector. *Administration & Society*, *43*(8), 842–868. https://doi.org/10.1177/0095399711418768

Spender, J.-C., Corvello, V., Grimaldi, M., & Rippa, P. (2017). Startups and open innovation: a review of the literature. *European Journal of Innovation Management*, *20*(1), 4–30. https://doi.org/10.1108/EJIM-12-2015-0131

Stam, E. (2014). The Dutch Entrepreneurial Ecosystem. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2473475

Stuart, R., & Abetti, P. a. (1987). Start-up ventures: Towards the prediction of initial success. *Journal of Business Venturing*, *2*(3), 215–230. https://doi.org/10.1016/0883-

9026(87)90010-3

Suurs, R. A. A., & Hekkert, M. P. (2009). Cumulative causation in the formation of a technological innovation system: The case of biofuels in the Netherlands. *Technological Forecasting & Social Change*, *76*, 1003–1020. https://doi.org/10.1016/j.techfore.2009.03.002

Toft-Kehler, R., Wennberg, K., & Kim, P. H. (2014). Practice makes perfect: Entrepreneurial-experience curves and venture performance. *Journal of Business Venturing*, *29*(4), 453–470. https://doi.org/10.1016/J.JBUSVENT.2013.07.001

Toganel, A.-R.-M., & Zhu, M. (2017). Success factors of accelerator backed ventures : Insights from the case of TechStars Accelerator Program. Retrieved from http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1134316&dswid=article

Utterback, J. M., & Suárez, F. F. (1993). Innovation, competition, and industry structure. *Research Policy*, *22*(1), 1–21. https://doi.org/10.1016/0048-7333(93)90030-L

Van Gelderen, M., Frese, M., & Thurik, R. (2000). Strategies, Uncertainty and Performance of Small Business Startups. *Small Business Economics*, *15*(3), 165–181. https://doi.org/10.1023/a:1008113613597

Van Gelderen, M., Thurik, R., & Bosma, N. (2005). Success and risk factors in the pre-startup phase. *Small Business Economics*, *26*(4), 319–335. https://doi.org/10.1007/s11187-004-6837-5

Van Praag, C. M., & Versloot, P. H. (2007). What is the value of entrepreneurship? A review of recent research. *Small Business Economics*, *29*(4), 351–382. https://doi.org/10.1007/s11187-007-9074-x

Vesper, K. H. (1990). New Venture Strategies. *SSRN*, *University*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1496217

VNO-NCW. (2015). *Breng Nederland in de EU Top 3 Statup ecosystemen; Actieagenda van VNO-NCW, MKB-Nederland en StartupDelta*. Retrieved from https://www.vno-ncw.nl/sites/default/files/downloadables_vno/brief16-10157-bijlage.pdf

Wakkee, I., Dorrestein, F., & Englis, P. (2014). The stigmatization of bankrupt entrepreneurs in Dutch newspapers. *Journal of Small Business & Entrepreneurship*, *27*(4), 369–391. https://doi.org/10.1080/08276331.2015.1017869

Wright, M., & Stigliani, I. (2013). Entrepreneurship and growth. *International Small Business Journal*, *31*(1), 3–22. https://doi.org/10.1177/0266242612467359

Yin, R. (2003). Case Study Research: Design and Methods,(3rd) Sage Publications. *Thousand Oaks, California*. Retrieved from https://scholar.google.nl/scholar?q=Yin%2C+R.+K.+%282003%29.+Case+study+research%3A+Design+and+methods+%283rd+ed.%29.+Thousand+Oaks%2C+CA%3A+Sage+Publications+Inc.&btnG=&hl=en&as_sdt=0%2C5

Zacharakis, A. L., Meyer, G. D., & DeCastro, J. (1999). Differing perceptions of new venture failure: A matched exploratory study of venture capitalists and entrepreneurs - ProQuest. *Journal of Small Business Management*, *37*(3). Retrieved from http://search.proquest.com/docview/221009868?pq-origsite=gscholar

Zahra, S. a., & Bogner, W. C. (2000). Technology strategy and software new ventures' performance. *Journal of Business Venturing*, *15*(2), 135–173. https://doi.org/10.1016/S0883-9026(98)00009-3

10 Appendix A - Preliminary questionnaire selected questions

For the preliminary research a database of the Dutch Chamber of Commerce was used. Eight questions of the questionnaire, where the database is based on, were selected to study. The questions are shown below including the original indication (a letter followed by a number) of the questionnaire. Since the questionnaire was in Dutch, the questions are shown in Dutch as well.

A2: Wat was de belangrijkste reden om [bedrijfsnaam] te beëindigen/stop te zetten?
A4: Heeft u naast het beëindigde bedrijf nog een ander bedrijf of bedrijven?
B4: Wat vond u het lastigst bij het stoppen/beëindigen van uw bedrijf? (Meerdere opties mogelijk)
B5: Welke tip(s) heeft u voor andere ondernemers in het proces van bedrijfsbeëindiging? (Open vraag)
C3: Is of wordt uw nieuwe bedrijf een fulltime activiteit of ziet u uw bedrijf als een parttime activiteit (naast bijvoorbeeld uw huidige werk, uitkering en/of zorgtaken)?
C4: In vergelijking met [bedrijfsnaam], wat wilt u in uw nieuwe bedrijf anders doen? (Meerdere antwoorden mogelijk)
C6: Wat vindt of vond u het lastigst bij het opnieuw starten van een bedrijf? (Meerdere antwoorden mogelijk)
C8: Bij welke zaken zou u op dit moment ondersteuning willen hebben om uw nieuwe onderneming te realiseren? (Meerdere antwoorden mogelijk)

11 Appendix B – Interview guides

11.1 Interview guide founders

The changes that were made in the interview guide for founders discussed in section 5.1, are shown in red.

Introduceren van mijzelf en het onderzoek bij founders via de Kamer van Koophandel
Mijn naam is Els de Jong en momenteel doe ik de master Innovation Sciences aan de Universiteit Utrecht. Op dit moment houd ik mij bezig met het schrijven van mijn masterthesis. Ik ben erg geïnteresseerd in startups, hierdoor ben ik in aanraking gekomen met de Kamer van Koophandel. En via de enquête van de Kamer van Koophandel ben ik dus bij u terechtgekomen. Door middel van interviews probeer ik meer te leren over factoren die spelen rondom het proces van bedrijfsbeëindiging.

Introduceren van mijzelf en het onderzoek bij founders via andere wegen
Mijn naam is Els de Jong en momenteel doe ik de master Innovation Sciences aan de Universiteit Utrecht. Op dit moment houd ik mij bezig met het schrijven van mijn masterthesis. Ik ben erg geïnteresseerd in startups. Door middel van interviews probeer ik meer te leren over factoren die spelen rondom het proces van bedrijfsbeëindiging.

Doel en informatie over het interview
Van dingen die anders lopen dan we verwacht hadden of zouden willen, kunnen we enorm veel leren. Voor het niet slagen van een startup geldt hetzelfde. Dit is niet alleen een bron van leerzame informatie voor de ondernemer zelf, maar ook voor andere ondernemers. Helaas wordt door de wetenschap niet veel aandacht besteed aan startups die niet geslaagd zijn. Daarom richt dit interview zich op het verkrijgen van informatie over het dit proces. Met behulp van dit interview, probeer ik de invloed van factoren op het proces van de bedrijfsbeëindiging in kaart te brengen zodat de nuttige lessen die hier geleerd kunnen worden, ook daadwerkelijk bij anderen terecht kunnen komen.

Het interview duurt ongeveer 45-60 minuten. Graag zou ik het interview opnemen om het interview zo accuraat en goed mogelijk mee te kunnen nemen in mijn onderzoek. Tevens helpt dit om de context goed mee te kunnen nemen. Het interview in mijn onderzoek anoniem verwerkt worden.

In het eerste deel van het onderzoek zal ik een aantal vragen stellen over de achtergrond van u (de geïnterviewde). Daarna zou ik graag samen met u het verloop van de startup in kaart brengen. Aan het eind zal ik afsluiten met een lijst met factoren die in de literatuur zijn geïdentificeerd als invloedrijk op het einde van het proces van de startup.

Persoonlijk

1. Wat is uw geboortejaar?
2. Wat is uw hoogst voltooide opleiding?
3. Wat voor soort opleiding heeft u gevolgd?
4. Hoeveel startups bent u gestart?
5. Hoeveel startups zijn hiervan wel en niet geslaagd?

6. Welk jaar is uw startup gestart? (focus op startup waarvoor de enquête ingevuld is)
7. En welk jaar is de startup beëindigd?

IJsbreker

8. Waarom bent u deze startup gestart?
9. Waar hield uw startup zich mee bezig?

Tijdslijn

Graag zou ik samen met u de verloop van uw startup door willen nemen. Hierbij teken ik een tijdlijn en kunnen we samen bekijken welke gebeurtenissen er plaatsvonden en eventuele achterliggende redenen hiervoor. Aangezien mijn onderzoek gaat over de afloop van de startup wil ik u vragen om zich vooral op de aspecten te richten die misgingen en in uw oordeel een bijdrage hebben gehad in het uiteindelijke bedrijfsbeëindiging.

10. Hoe ziet de levensloop van uw startup eruit?
    a. Wat voor gebeurtenissen hebben plaatsgevonden die bij hebben gedragen aan de teloorgang van de startup?
    b. Wanneer startte de neerwaartse gang van de startup?
11. Waren er verschillende fasen te onderscheiden in het proces rond de tijd dat het niet goed meer ging met de startup? Zo ja, welke? En hoe lang duurden deze?
12. Wat was de invloed van de gebeurtenissen op het faalproces (per fase)?
13. Hoe kwam het dat deze gebeurtenissen plaats vonden?
14. Nu we het hele plaatje gereconstrueerd hebben, wat ziet u als de hoofdzaken die de bedrijfsbeëindiging veroorzaakt hebben?

15. Met de kennis van nu, waarbij had u destijds graag hulp bij gehad van buitenaf?

Voorleggen factoren

In de theorie heb ik een aantal factoren geïdentificeerd die een oorzaak kunnen zijn dat een startup misgaat. Deze zijn, gebaseerd op literatuur, ingedeeld in categorieën. Graag leg ik deze om de beurt aan u voor.

16. Zou u deze willen bekijken en aangeven welke u herkent en relevant geweest zijn voor de neerwaartse gang van de startup (Tabel 3)?
    Als een factor eerder besproken is, wordt dit aangehaald door de interviewer bij het bespreken van de factor, en geverifieerd of de eerder besproken gebeurtenis inderdaad onder deze factor valt.
    a. Product
    b. Markt
    c. Financieel
    d. Strategie
    e. Ondernemer(s)

Als er factoren benoemd worden die nog niet eerder in het interview besproken zijn of er alsnog nieuwe concepten opkomen dan worden de volgende vragen gesteld:

17. Wat was de invloed van deze factor op het neerwaartse gang van de startup?
18. In welke fase van het proces was deze factor van belang?

Tabel 1: Een overzicht van de faalfactor die per categorie aan de geïnterviewde getoond wordt.

Categorie	Factor
Product	Lage potentie product
	Verkeerde moment op de markt brengen
	Gebrek aan bescherming product (met bijv. een patent)
Markt	Hoge markt dynamiek
	Te weinig marktonderzoek
	Ongeschikte marketing of geen marketing
	Beperkte interactie tussen de producent en gebruiker
Financieel	Aanvankelijke te weinig financiële middelen
	Beperkte beschikbaarheid financiering
	Problematische relatie met de investeerder
	Het financiële plaatje niet rond krijgen
Strategie	Afwezigheid van een duidelijke strategie
	Beperkt businessplan
	Lage flexibiliteit van de onderneming om zich aan te passen
	Te weinig netwerk(en) en strategische samenwerkingen
	Te beperkt gebruik van professioneel advies
Ondernemer/team	Beperkte management skills
	Weinig of geen ondernemerschapservaring
	Lage toewijding van de ondernemer aan de onderneming
	Geen effectief team of een incompleet team
	Geen overeenstemming tussen de vaardigheden van de ondernemer(s) en de startup

Category	Failure factor
Culture in sector	Inert conservative culture
	Shifting or high demands

11.2 Interview guide experts

Introduceren van mijzelf en het onderzoek

Mijn naam is Els de Jong en momenteel doe ik de master Innovation Sciences aan de Universiteit Utrecht. Op dit moment houd ik mij bezig met het schrijven van mijn masterthesis over innovatieve startups die hebben moeten stoppen. Door middel van 21 interviews met founders heb ik meer informatie gekregen over de invloed van factoren op het proces van bedrijfsbeëindiging.

Doel en informatie over het interview

Met behulp van dit interview, probeer ik meer inzage en context te krijgen bij de resultaten die ik inmiddels verkregen heb met mijn onderzoek. Het interview duurt ongeveer 45 minuten. Graag zou ik het interview opnemen om het interview zo accuraat en goed mogelijk mee te kunnen nemen in mijn onderzoek. Tevens helpt dit om de context goed mee te kunnen nemen. Graag zou ik uw naam en functie willen noemen voor mijn thesis. Gaat u hiermee akkoord?

In het eerste deel van het onderzoek zal ik een aantal vragen stellen over de achtergrond van u (de geïnterviewde). Daarna zou ik graag samen met u de hoofdpunten van mijn resultaten door willen lopen en hier een aantal vragen bij plaatsen.

Persoonlijk

1. Wat is uw naam?
2. Wat is uw functie (in relatie tot startups)?
3. Op welke wijze heeft u ervaring met startups?

Resultaten

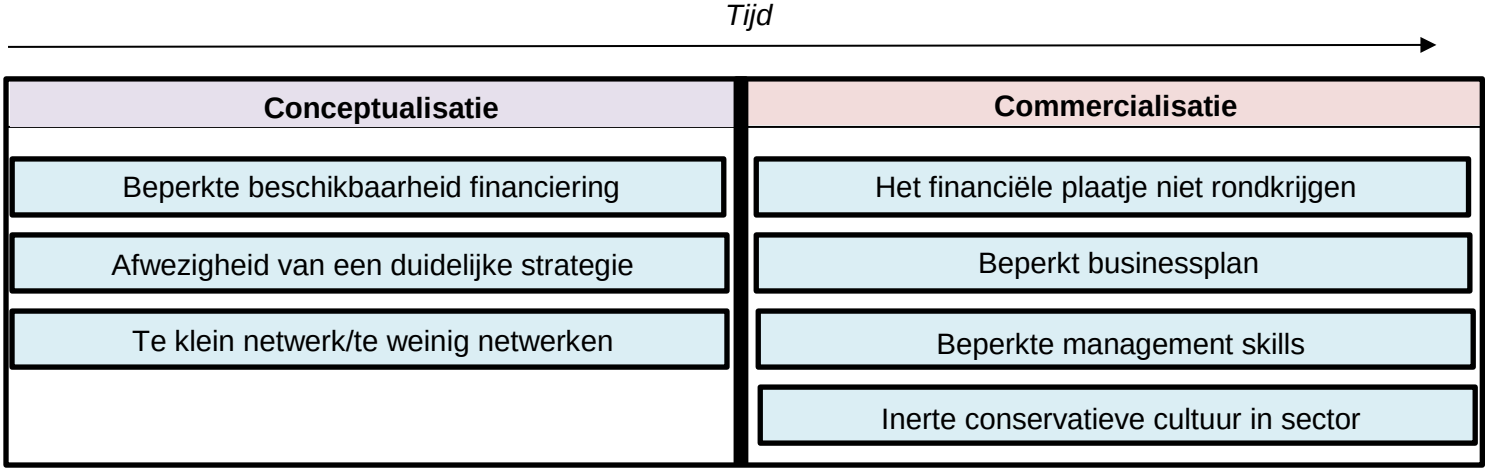
Graag neem ik met u hoofdpunten uit mijn resultaten door. Ik zal eerst kort uitleggen hoe ik te werk ben gegaan tijdens de interviews met ervaringsdeskundigen.

- Chronologisch hebben zij vertelt wat er allemaal gebeurd is tijdens het bestaan van hun startup. Ik heb hierbij gevraagd in hun achterhoofd te houden dat ik ook geïnteresseerd ben in aspecten die minder goed verlopen zijn. Aan de hand van deze informatie heb ik een tijdlijn gecreëerd tijdens het interview (en een complete reconstructie achteraf).
- Vervolgens heb ik een lijst met factoren met hen doorgenomen die volgens wetenschappelijke literatuur invloed kunnen hebben op het niet slagen van een startup.

<u>Factoren relevantie en frequentie in fases</u>

Hieronder staan de verschillende ontwikkelingsfases weergegeven van een startup. Van de drie fases, conceptualization (*Focus on development emerging technology/product, resolving critical technical problems)*, commercialization (*Focus lowering the market risk*) and growth (*Seek a broader base of financial resource providers, to expand organization)*, kwam de laatstgenoemde nauwelijks voor, daarom is deze buiten beschouwing gelaten. De meest voorkomende factoren die tot falen hebben geleid staan onder de desbetreffende fase weergegeven.

1. Herkent u dit?
    a. Zijn dit de factoren die u verwacht had?
    b. Mist u nog factoren?



In beide fases veelvoorkomend:

- Problematische relatie met (potentiële) investeerder
- Lage toewijding (minder tijd hebben, ed.)
- Geen effectief team
- Geen overeenstemming tussen de vaardigheden van de ondernemer(s)/team en de startup

2. Herkent u dit?
    a. Zijn dit de factoren die u verwacht had?
    b. Mist u nog factoren?

3. Een aantal factoren die wél in de theorie genoemd worden bleken niet heel relevant gevonden door de founders. Waardoor denkt u dat dat komt/ Wat zit hier volgens u achter?

- Lage potentie van product
- Gebrek aan bescherming product (met bijv. een patent)
- Lage flexibiliteit (moeite met aanpassen wanneer nodig)

Kwesties bij factoren

4. Een van de factoren die ik met de founders besprak was het gebrek aan ondernemerschapservaring in een team. Deze factor werd vaak genoemd door founders als een probleem, maar werd voornamelijk beschreven als gebrek aan ‘entrepreneurial spirit’ of als het ontbreken van de kennis van een échte startup die ook nog een eens innovatief is.

   Het interessante is, is dat een aantal andere founders aangegeven hebben dat deze factor niet echt relevant is. Omdat je met het juiste karakter/houding deze vaardigheden snel kan ontwikkelen. Wat is uw standpunt hierin?

5. In een aantal gevallen gaf de founder aan dat ‘educated marketing’ nodig was, aangezien het product complex was. Dit werd ervaren als een daling in potentie van het product, aangezien het product zelf een barrière opwerpt om goed verkocht te gaan worden. Herkent u dit fenomeen? Zo ja, hoe wordt dit vertaalt in de begeleiding van startups? (Wat is er anders in het begeleiden dan bij een startup waar educated marketing niet nodig is?)

6. Tevens was er een groot aantal founders die aangaf dat er een erg lage bereidheid heerst om in projecten te investeren met hogere risico en/of projecten met een lange termijnvisie. De founders gaven hiervoor verschillende redenen. Herkent u het fenomeen? En wat is volgens u de reden hiervoor?

7. Regelmatig kwam in de interviews met founders terug dat een externe factor de ontwikkeling van de startup in de weg stond (Voorbeelden hiervan zijn het uit je kantoor gezet worden, een terroristische aanslag die investeringsmogelijkheden stillegt, of het product dat iemand opgebouwd heeft wordt kapot gemaakt).
   a. Ziet u dit vaker terug bij startups? Hoe ervaart u de veerkracht van startups na een dergelijke gebeurtenis?
   b. In hoeverre hebben dit soort externe factoren invloed op het moeten stoppen?

8. Een aantal founders gaf aan moeite te hebben bij het verkrijgen van investeringen. Daarentegen gaf een ander deel van de founders aan: als je geen investeerder kan vinden, is je idee niet goed genoeg (ligt dat aan de potentie van het product). Wat is uw standpunt in deze kwestie?

9. Veel founders gaven aan dat het hebben van een startup betekende dat zij persoonlijk geen inkomsten hadden, of nauwelijks. Tevens is terug te zien dat dit voor menigeen een reden is om te stoppen (of een reden was dat de motivatie erg laag werd en hierdoor gestopt werd). In hoeverre denkt u dat het hebben van geen inkomsten een afspiegeling is van de potentie van de startup? Of een zaak is die hoort bij het oprichten van een innovatieve startup?

Factoren overkomen

10. Voor een aantal factoren gaven founders aan dat dit in het begin een probleem was. Maar bleek dit later in de tijd overkomen voor hen. Echter was er ook een deel van de founders waarvoor dit wel een probleem bleef. Waardoor denkt u dat de volgende factoren voor sommigen te overkomen was? Mist u factoren in deze lijst?
    a. Ongeschikte marketing (Addressing market inappropriately)
    b. Geen effectief team (Operates at cross purposes)
    c. Geen overeenstemming tussen de vaardigheden van de ondernemer(s) en de startup.

Overige

11. In de gesprekken met de founders werd het duidelijk dat de mogelijkheid om financiering te verkrijgen per sector erg verschilt.
    a. Hoe zou u de kans indelen van de volgende sectoren?
    b. Tevens verschilt de innovativiteit per sector, hoe zou u de onderstaande sectoren scoren op mate van innovatieve cultuur binnen de sector?

Sector startup	Score
Horticulture	
ICT	
Education	
Life Sciences	
Mechanical	
Recruitment	
Security appliances	
Sales	
Food	
Real estate/construction	
Consumer products	

    c. Waarom hebben de sectoren deze score toebedeeld gekregen?

Causale relaties tussen factoren

1. In een aantal gevallen gaven de geïnterviewden aan dat een bepaalde factor ertoe leidde dat een andere faalfactor opspeelde. In twee gevallen was hetzelfde patroon vaker te zien. Waardoor bestaat dit patroon denkt u?
    a. Te weinig marketingonderzoek → Ongeschikte marketing (Addressing market inappropriately)
    b. Het financiële plaatje niet rondkrijgen → Lage toewijding

12 Appendix C – Preliminary research

Additional information of the preliminary research is given in this section. The research is executed using the database of the Dutch Chamber of Commerce. After the data cleaning and selecting the relevant data out of 2562 respondents, 192 respondents are left to use as input for the analyses. Firstly, the association tests are discussed, followed by information from questions of the questionnaire.

12.1 Association tests

The association of multiple questions is studied. The chi-squared distribution and Cramers V are executed. However, due to the limited amount of data and the lack of a normal distribution, the counts are very small which makes the approximation of both test poor. Therefore, a Fisher's exact test is performed where necessary and where possible, data columns are merged to make the data more suitable for the tests. In Table 8 an overview is given of the test results.

Table 8: Overview of association tests and the results

	Question	Degrees of Freedom	Chi-squared		Cramers V	Fisher's exact test
			x-squared	p-value		p-value
1	Fulltime or part-time, 1st and 2nd time	3	63.953	0.09388	0.306673	0.1125
2a	Reason of cessation and amount of time decided to stop before cessation (more than 5 years, 3-5 years, 1-3 year, 1 month to 1 year, shorter than 1 month, do not remember)	60	97.438	0.001604*	0.3185876	0.4235
2b	Reason of cessation and amount of time decided to stop before cessation (adjusted 1: more than 3 years, 1-3 year, 1 month to 1 year, shorter than 1 month, do not remember)	48	89.948	0.000233*	0.3422278	ERROR: Entry table too large
3a	Reason of cessation and amount of time decided to stop before cessation (adjusted 1: more than 3 years, 1-3 year, 1 month to 1 year, shorter than 1 month, do not remember, furthermore: no energy, divorce, health and work-life balance are summarized as personal circumstances)	36	73.103	0.000251*	0.3085234	ERROR: Entry table too large

3b	Reason of cessation and amount of time decided to stop before cessation (adjusted 1: more than 1 year (including 'do not remember', or 1 year or less, furthermore: no energy, divorce, health and work-life balance are summarized as personal circumstances)	9	13.716	0.1328	0.2672806	LDSTP too small for this problem. FEXACT error 7

Since the results of the Chi-squared test and Cramers V cannot be relied upon due to the small amount of data, there can be stated no test gives a significant outcome. The result is indicating that the null-hypothesis cannot be rejected. Meaning, no significant association is to be found in 1,2a, 2b, 3a or 3b.

12.2 Information from questionnaires

Part of the questionnaire is devoted to having other firms besides the one the questionnaire is about. In Figure 5 and Figure 6 overviews are given of the number of respondents in respectively the selected and remaining data who had another firm, besides the firm that the questionnaire addressed. 30.7% of the respondents of the selected data had a firm besides the firm addressed in the questionnaire, compared to 15.8% of the respondents of the remaining data. It is remarkable that almost twice as many respondents of the selected data have multiple firms, compared to the remaining data respondents.

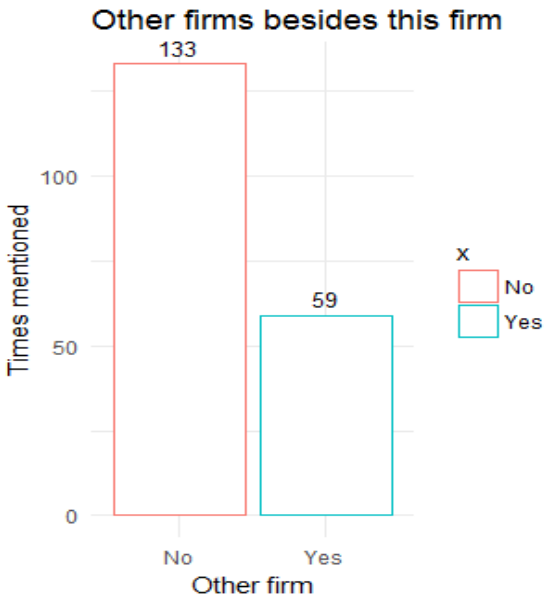


Figure 5: Overview of other firms besides this firm (selected data)

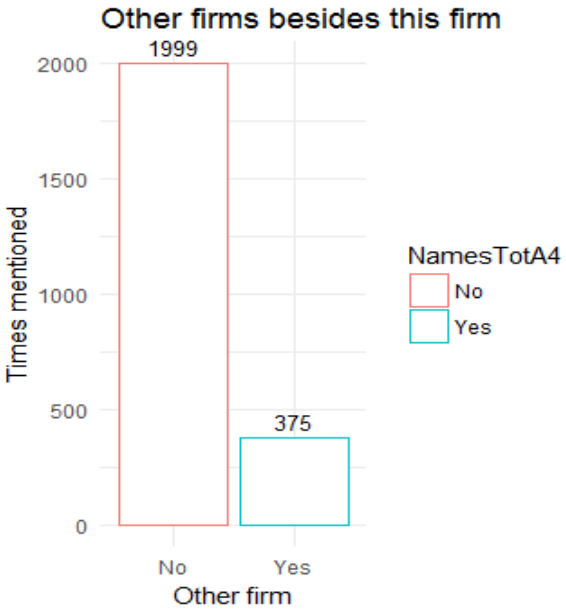


Figure 6: Overview of other firms besides this firm (remaining data)

In addition, part of the questionnaire is meant for entrepreneurs that have started or want to start a new business. Figure 7 gives an overview of the time the entrepreneur wants to invest

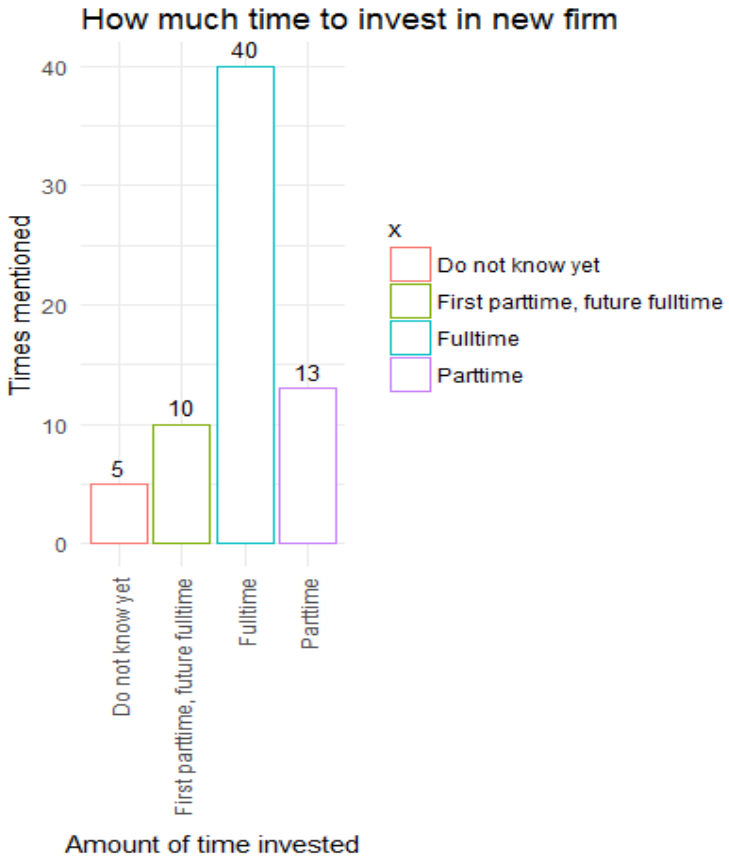


Figure 7: Overview of time planning to invest in new firm

in its new company. It is striking to see that by far most entrepreneurs that consider starting a new company, 73.5%, would choose for working fulltime for their next firm.

An overview is provided (Figure 8) of the things that were experienced as hardest considering the cessation. Here can be seen that most people mark *nothing* as hard, followed by the *feeling of failure* and *what institutions to inform*. The feeling of failure people experience together with *losing face*, suggests failure is not socially accepted. The institutions to inform is a practical issue, which may be prevented by providing people with the right information.

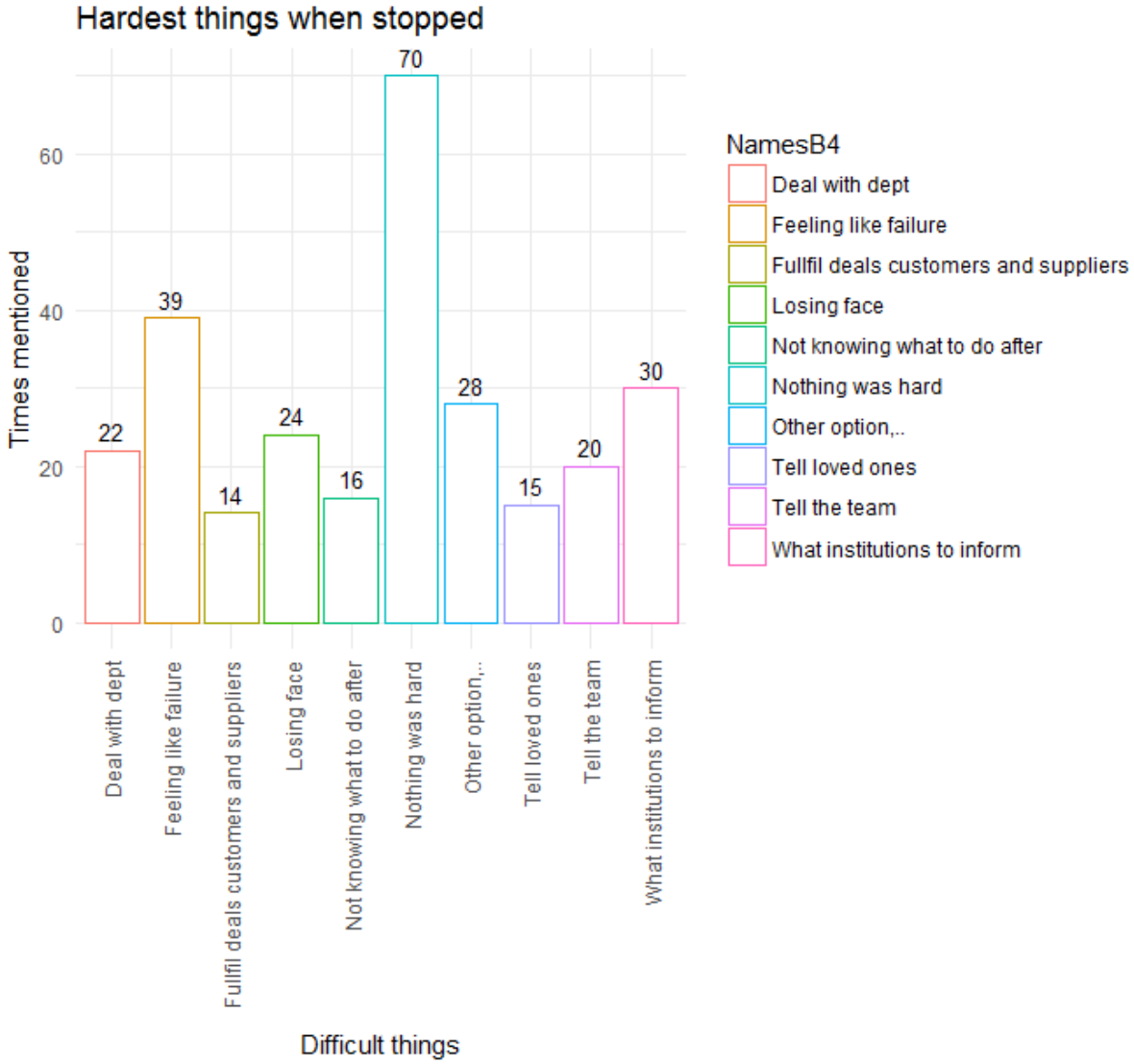


Figure 8: Overview of hardest things when stopped

Aspects people would have done differently a next time, considering their last experience, are shown in Figure 9. The 68 respondents who answered this question provided 143 aspects in total. The number of factor given by interviewees is shown in Table 9. *Offering another product* is mentioned most often, followed by a *different legal form* and *service another market*.

Table 9: Overview of number of factors that would be done differently by respondents next time

N. factors different	N. interviewees
1	34
2	15
3	9
4	3
5	5
6	1
7	1

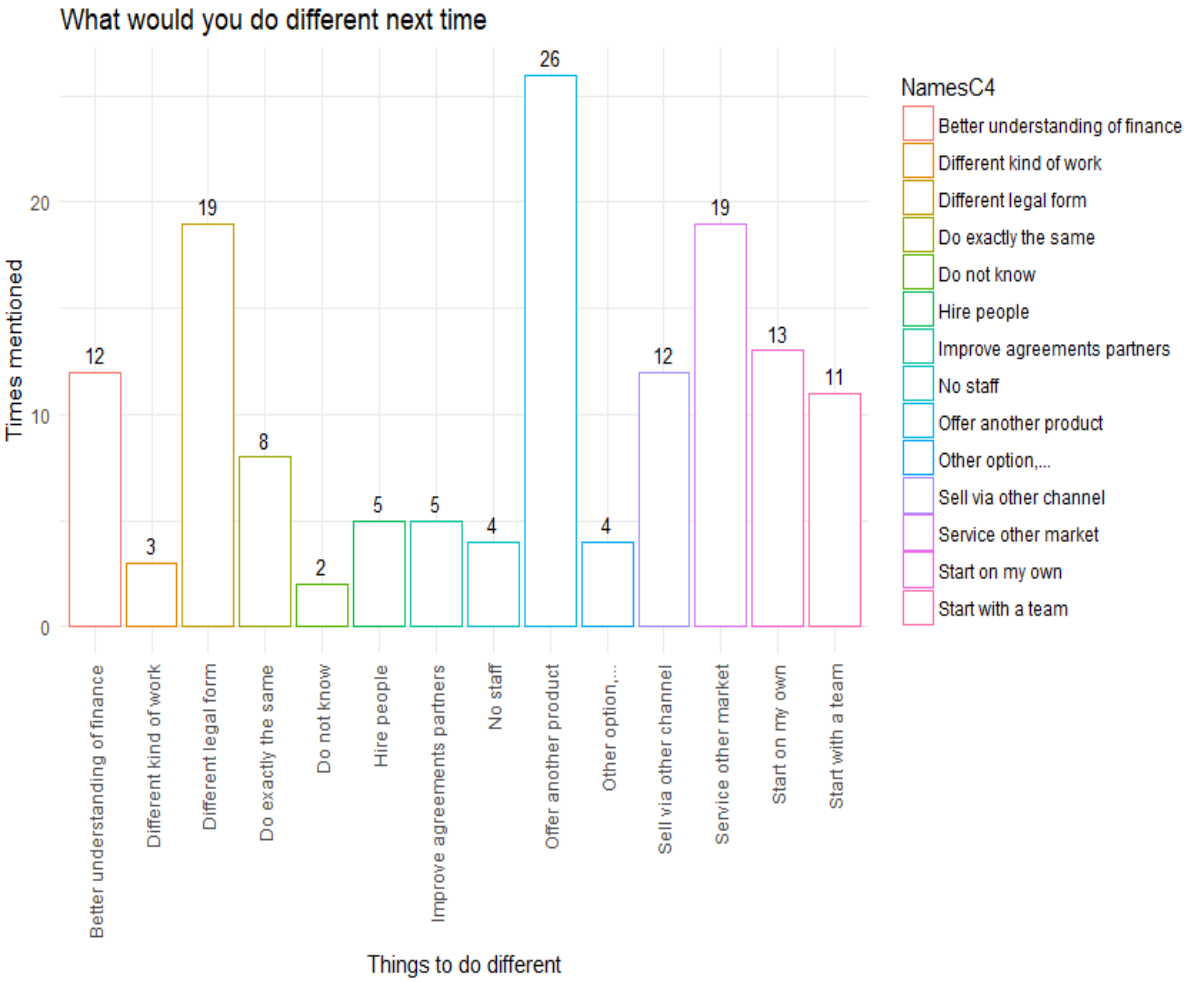


Figure 9: Overview of things entrepreneurs would do differently next time

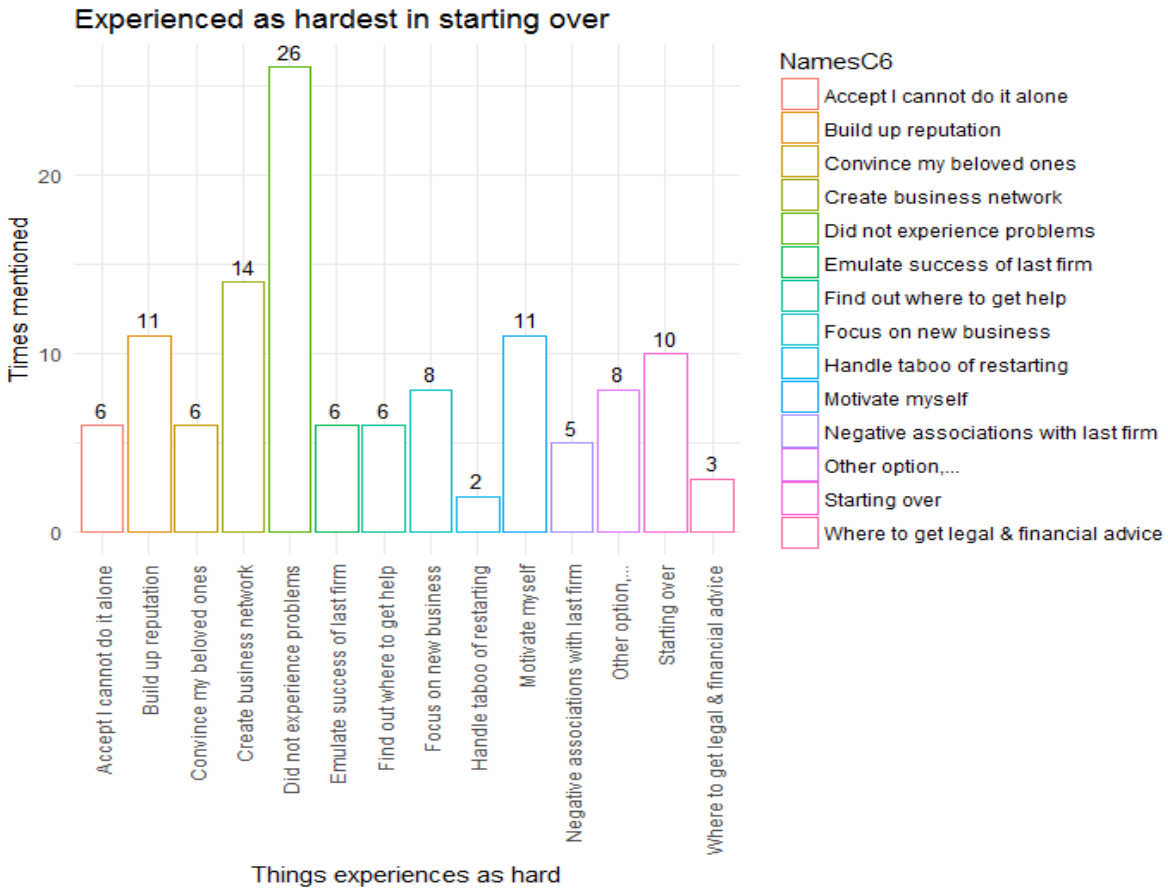


Figure 10: Overview of things experienced as hardest when starting over

As shown in Figure 10, most entrepreneurs did not (yet) experience problems when starting a new business, which is positive. However, *creating a business network*, which relates to lack of networking is experienced as hard. Furthermore, building a reputation and motivating themselves are experienced as hard. *Building a reputation* can indirectly be linked to lack of network, if the reputation of the firm still must be made. *Motivating themselves* can be linked to the failure factor low commitment, because it is very hard to have full commitment if one has difficulties motivating themselves.

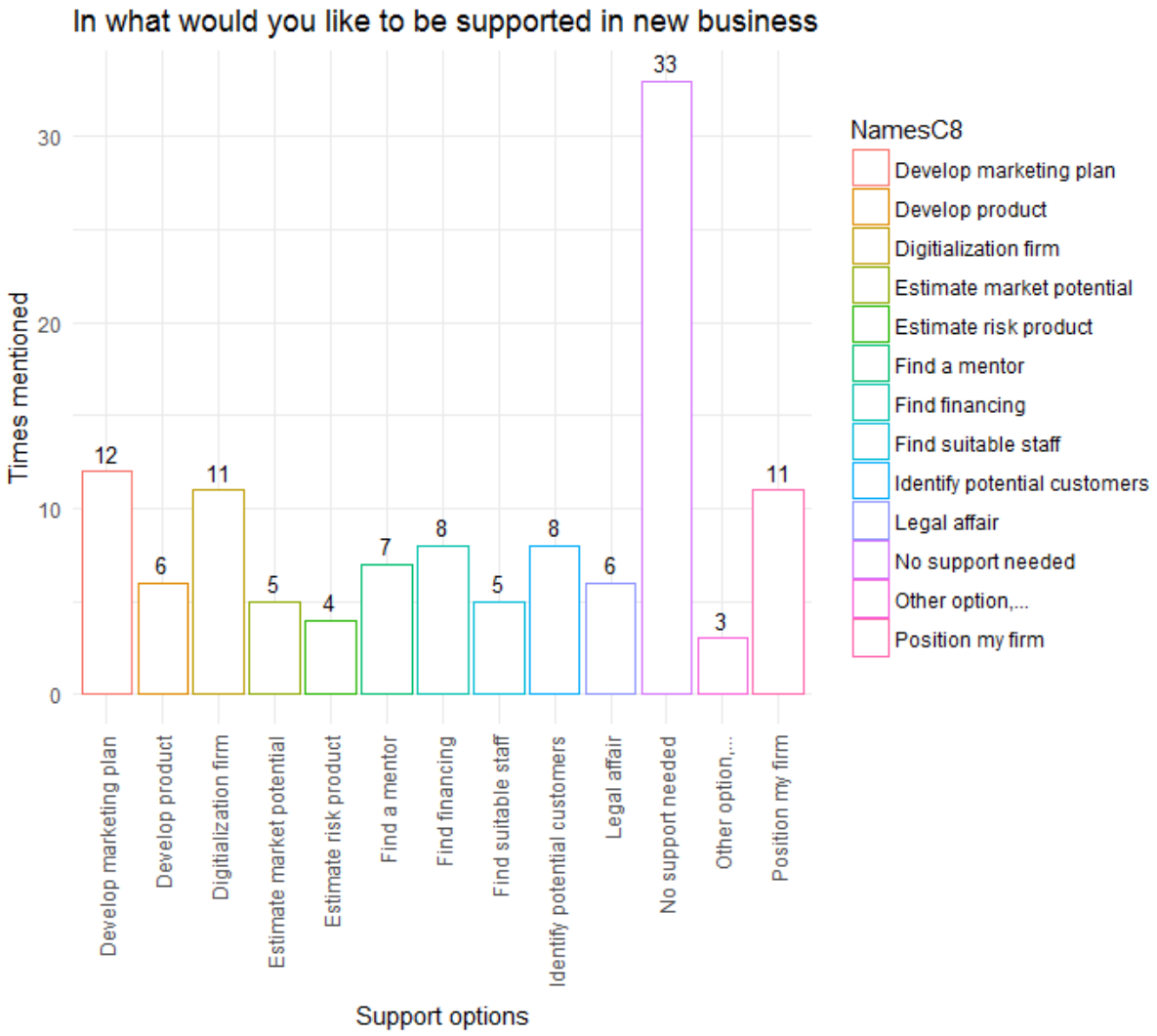


Figure 11: Overview in what entrepreneurs would like support

Figure 11 shows most people do *not need support* in their new firm. Followed by *developing a marketing plan*, *digitalizing the firm* and determine the right *position of the firm*.

The last question which can provide relevant insights is question B5 that asks for advice for fellow starters that have to stop their business. Besides asking advice, more aspects are frequently mentioned by respondents. The respondents warn other entrepreneurs for continuing the business too long. This has negative consequences on finances and personal life according to the respondents. On the other hand, there is mentioned taking time to make the decision to stop is important as well, to ensure you did everything in your power to save the business. Furthermore, warnings are given for making sure you must be able to make both ends meet, otherwise the problems get out of hand. Lastly, it is advised to thoroughly think through the business plan, to be able to tackle problems that can be foreseen. This relates to the failure factor business plan not clearly worked out.

13 Appendix D - Overview interviewees

13.1 Overview founders (I)

In Table 10 an overview is given of the 21 founders who are interviewed.

Table 10: Overview information on founders

	Gender	Level of education	Kind of education	Number of startups started			Start year	Year of cessation	Sector startup
				Total	Success	Failed			
Int. 1	Male	Vocational Ed.	Caregiver	2	0	2	2012	2015	Horticulture
Int. 2	Male	Applied Sc.	Accounting	1	0	1	2008	2015	ICT
Int. 3	Female	Scientific Ed.	Social Sciences	1	0	1	2013	2015	Education
Int. 4	Male	Scientific Ed.	Computer Sciences	4	2	2	2013	2015	Education
Int. 5	Male	Applied Sc.	Digital communication	2	1	1	2013	2016	Education
Int. 6	Male	Scientific Ed.	Molecular Sciences	4	0	2	2004	2011	Life Sciences
Int. 7	Male	Scientific Ed.	Pharmacology	5	0	1	2003	2015	Life Sciences
Int. 8	Male	Scientific Ed.	Information Sciences	3	0	1	2012	2014	ICT
Int. 9	Male	Scientific Ed.	Natural Sciences	2	0	1	2012	2015	Mechanical
Int. 10	Male	Scientific Ed.	Business administration & Chemistry	1	0	1	2011	2014	Retail
Int. 11	Male	Scientific Ed.	Molecular Biology	2	1	1	2001	2006	Life Sciences
Int. 12	Female	Scientific Ed.	Business administration	2	0	1	2011	2012	Recruitment
Int. 13	Male	Scientific Ed.	Electrical engineering	5	1	3	2004	2014	Security appliances
Int. 14	Male	Applied Sc.	Media design	1	0	1	2016	2017	Health/Education
Int. 15	Male	Scientific Ed.	Management Sciences	4	0	2	2012	2017	ICT
Int. 16	Male	Applied Sc.	Computer Sciences	6	2	4	2014	2015	Sales
Int. 17	Male	Scientific Ed.	Business administration	2	0	2	2014	2015	Food
Int. 18	Male	Scientific Ed.	Construction sciences	2	0	2	2012	2014	Real estate
Int. 19	Male	Applied Sc.	Construction sciences	1	0	1	2012	2016	Construction
Int. 20	Female	Scientific Ed.	Biomedical technology	1	0	1	2010	2016	Life Sciences
Int. 21	Male	Applied Sc.	Business administration	2	1	1	2015	2016	Consumer products

13.2 Overview of experts (E)

In Table 11 an overview is given of the experts and their function. All experts are serial entrepreneurs as well but are currently involved in startups from a different perspective.

Table 11: Overview of experts and their relation to startups

Expert	Name	Relation to startups
Int. 1	Felix Zwart	Financial expertise; Dutch association of investment companies
Int. 2	Paul Iske	Chief failure officer (Mudde, 2017)
Int. 3	Pieter Hoogstraten	Serial entrepreneur, advice to startups
Int. 4	Arthur Tolsma	Accelerator advisor
Int. 5	Marc Wesselink	Advising startups, for example via StartupBootcamp

14 Appendix E – Detailed results

In this Appendix detailed information can be found where the result section is based upon.

14.1 Failure factors overcome

During the interviews, interviewees indicated that they were able to overcome failure factors. The factors overcome are noted in Table 12 per interview.

Table 12: Overview of failure factors that are overcome

Interview	Sector	FF (partly) overcome	
1	Horticulture	n.a.	
2	ICT	n.a.	
3	Education	21	
4	Education	20a	
5	Education	20a	
6	Life Sciences	17	21
7	Life Sciences	n.a.	
8	ICT	15	
9	Mechanical	6a	
10	Retail	n.a.	
11	Life Sciences	n.a.	
12	Recruitment	n.a.	
13	Security appliances	n.a.	
14	Health/Education	21	
15	ICT	n.a.	
16	Sales	6a	
17	Food	13	
18	Real estate	n.a.	
19	Construction	n.a.	
20	Life Sciences	n.a.	
21	Consumer products	20b	

14.2 Timelines startups

This section shows all timelines of the startups constructed using the draft timeline that was made during the interview and the transcribed interview. The most notable events are shown on the timeline. When a failure factor is recognized, it is coupled to the failure factor. For example, when the absence of a clear strategy is mentioned, which is the twelfth failure factor, this is indicated by adding FF12 between brackets to the event description (FF12). When a failure factor is overcome, this is shown by adding a minus sign before the failure factor indication (-FF12). When a failure factor is included, the event is placed beneath the timeline instead of above. An overview of the numbered failure factors is shown in Table 13, including the number of times a factor is mentioned as a main cause of failure.

Table 13: Numbered failure factors with frequency occurrence as main cause

Category	Failure factor	FF		Freq. main cause
Product 	Low potential of product	1		2
	Wrong time-to-market	2		1
	Lack of product protection	3		
Market 	High market dynamics	4		1
	Lack of market research	5		
	Inappropriate marketing	6a	Addressing market inappropriately	
		6b	Lack of marketing	
	Limited user producer interaction	7		
Financial resources €	Initial undercapitalization	8		1
	Limited availability funding	9		
	Problematic relationship with (potential) investor	10		4
	Not being able to make both ends meet	11		1
Strategy 	Absence of a clear strategy	12		
	Limited business plan	13		2
	Low flexibility	14		
	Lack of network(ing)	15		1
	Lack of professional advice	16		
Founder(s)/ Team 	Lack of management(knowledge)	17		1
	Little or no entrepreneurial experience	18		
	Low commitment	19		2
	Ineffective team	20a	Operates at cross purposes	3
		20b	Incomplete team	1
	Mismatch between skills founders/team and business market	21		2
Culture in sector 	Inert conservative culture	22		3
	Shifting or high demands	23		1

For every timeline, the moment of the start of the downward course of the startup is marked by a red cross. This is the moment the interviewee perceives as the start of the downward course of the startup in hindsight. An overview is shown in Table 14 of the moment in time of the downward course, the time the startup lasted after this moment absolute and in percentage. Also, the phases indicated by the interviewee are added to the timeline. Both, the moment of the downward course and the phases indicated by the interviewee, are only added to the timeline if a clear answer was formulated by the interviewee. Furthermore, the preset phases are added during the reconstruction of the timeline, as well as the sector and main cause of failure.

Table 14: Overview of start of downward course per interview

	Start	Start downward course	Year of cessation	Time	Time downward course to cessation
Int. 1	2012.0	-	2015.0	-	-
Int. 2	2008.9	2010.0	2015.0	5.0	82.0%
Int. 3	2013.0	2015.0	2015.5	0.5	20.0%
Int. 4	2013.4	2014.8	2015.5	0.7	33.3%
Int. 5	2013.5	2015.4	2016.4	1.0	34.5%
Int. 6	2004.5	2008.5	2011.3	2.8	41.2%
Int. 7	2003.5	2012.7	2015.2	2.5	21.4%
Int. 8	2012.0	2013.7	2014.9	1.2	41.4%
Int. 9	2012.0	2014.5	2015.7	1.2	32.4%
Int. 10	2011.0	2013.0	2014.2	1.2	37.5%
Int. 11	2001.0	2004.0	2006.0	2.0	40.0%
Int. 12	2011.8	2012.5	2012.8	0.3	30.0%
Int. 13	2004.5	2011.0	2014.0	3.0	31.6%
Int. 14	2016.1	2017.3	2017.5	0.2	14.3%
Int. 15	2012.0	2015.6	2017.0	1.4	28.0%
Int. 16	2014.0	2015.3	2015.8	0.5	27.8%
Int. 17	2014.0	2014.7	2015.7	1.0	58.8%
Int. 18	2012.0	2014.4	2014.8	0.4	14.3%
Int. 19	2012.7	2016.3	2016.4	0.1	2.7%
Int. 20	2010.0	2015.1	2016.2	1.1	17.7%
Int. 21	2015.0	2016.2	2016.8	0.6	33.3%

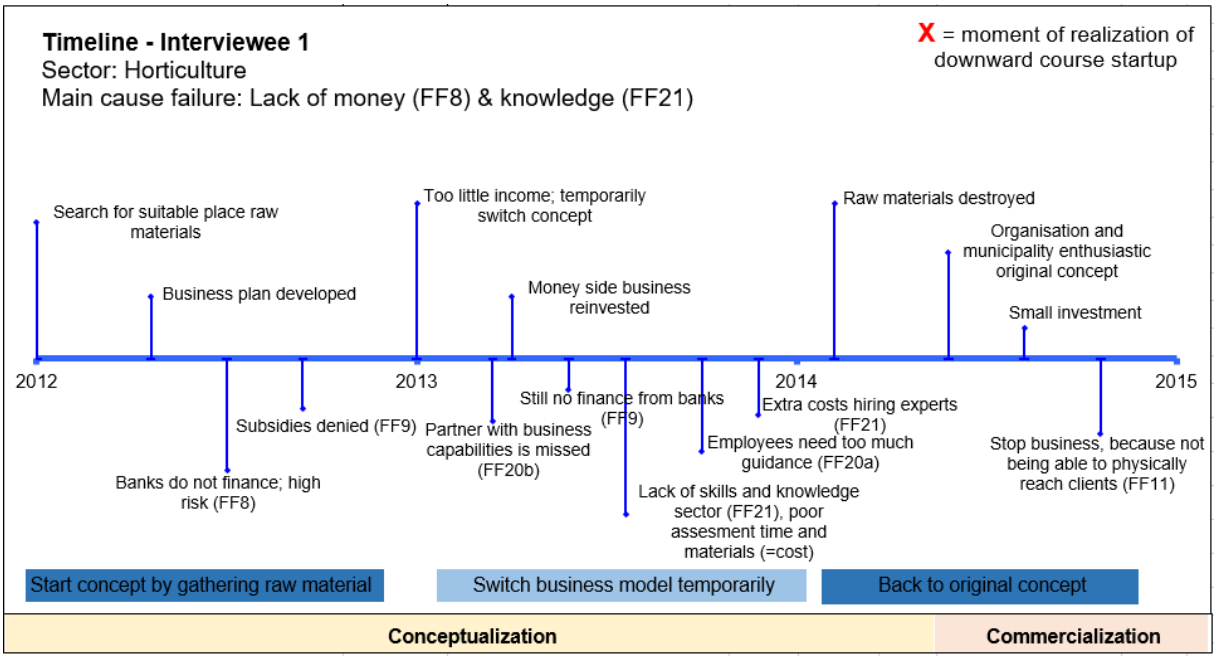


Figure 12: Timeline of interviewee 1

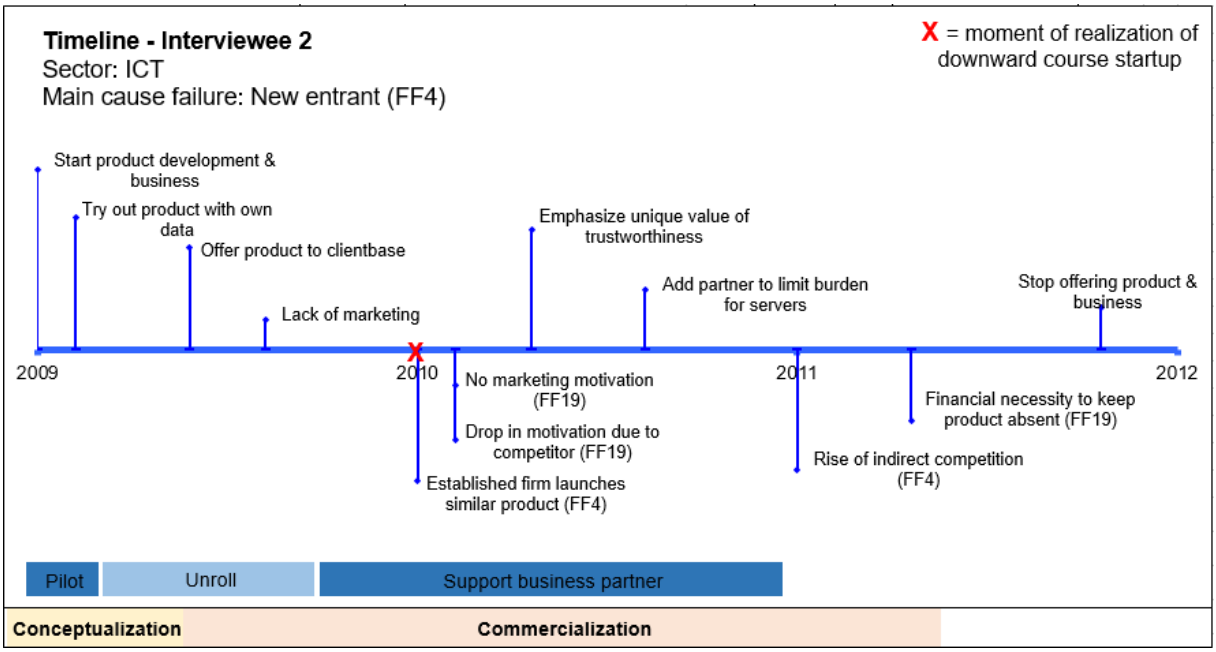


Figure 13: Timeline of interviewee 2

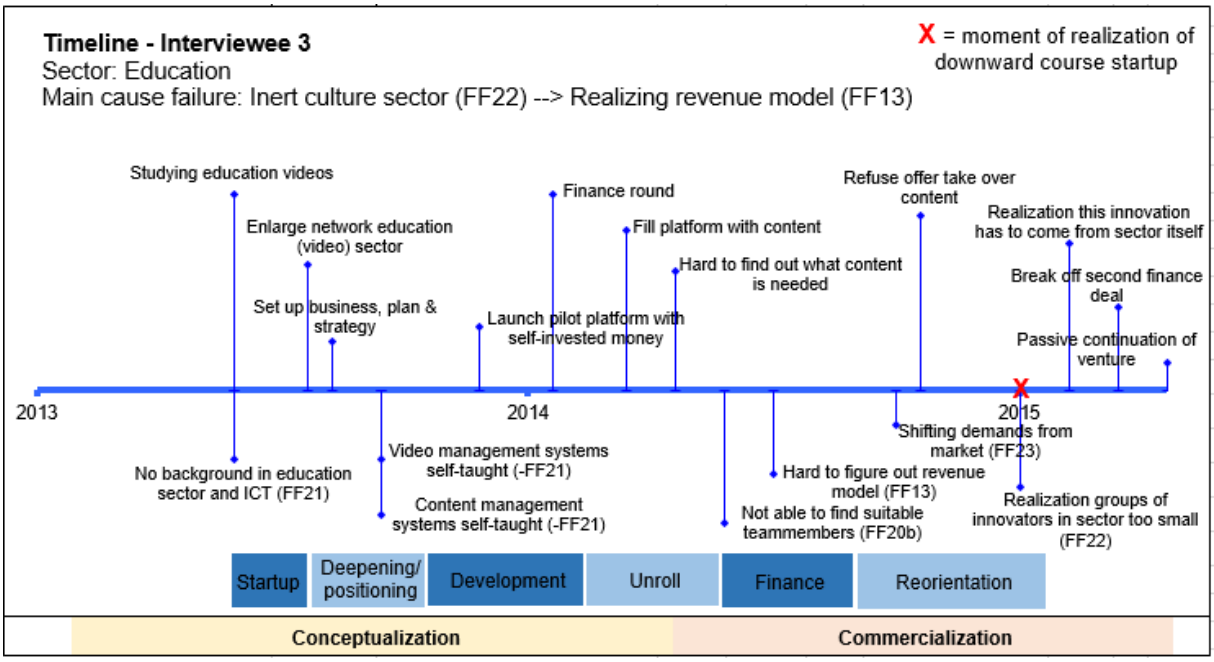


Figure 14: Timeline of interviewee 3

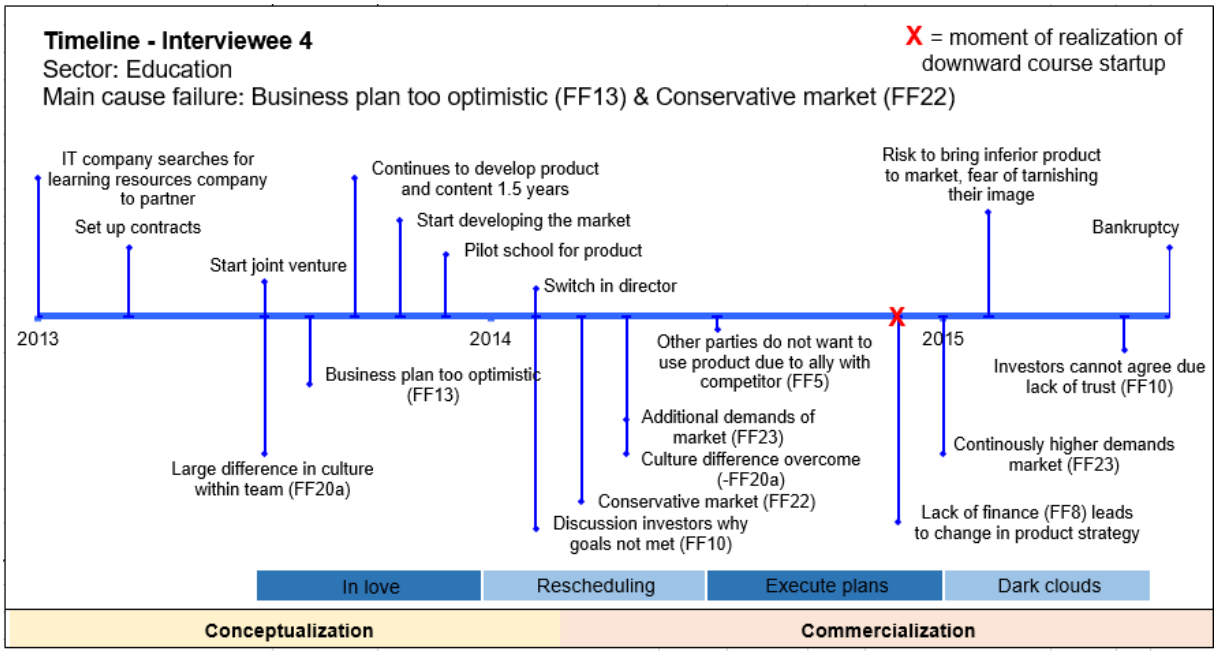


Figure 15: Timeline of interviewee 4

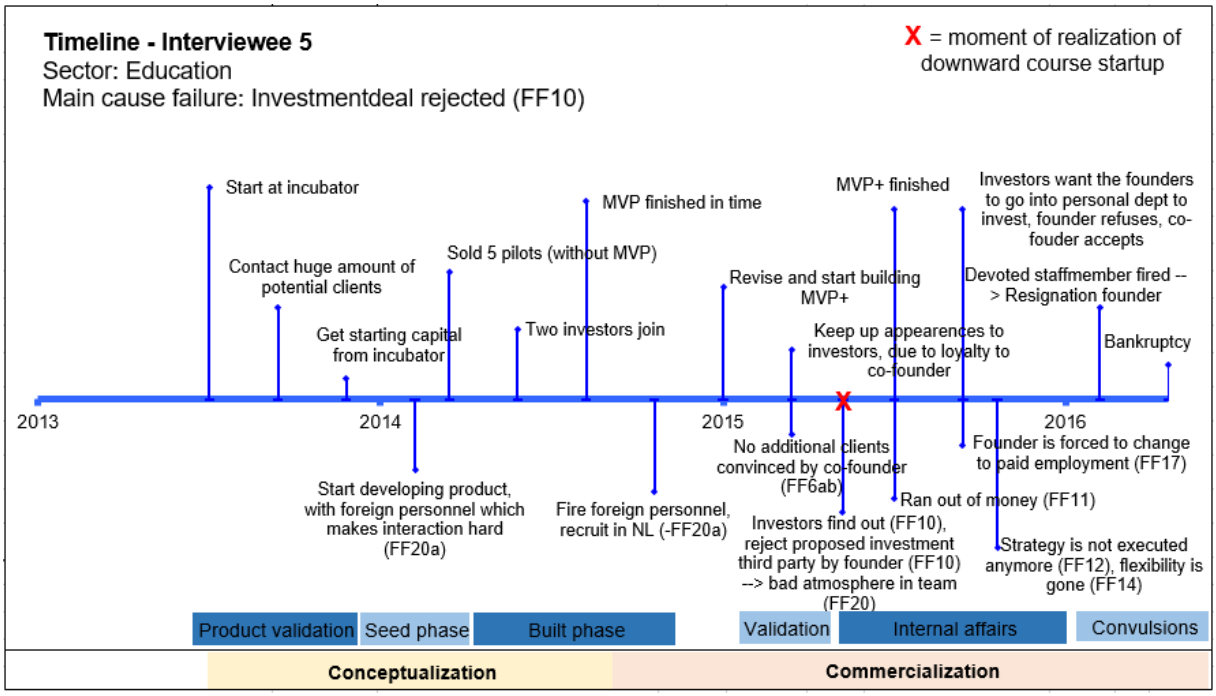


Figure 16: Timeline of interviewee 5

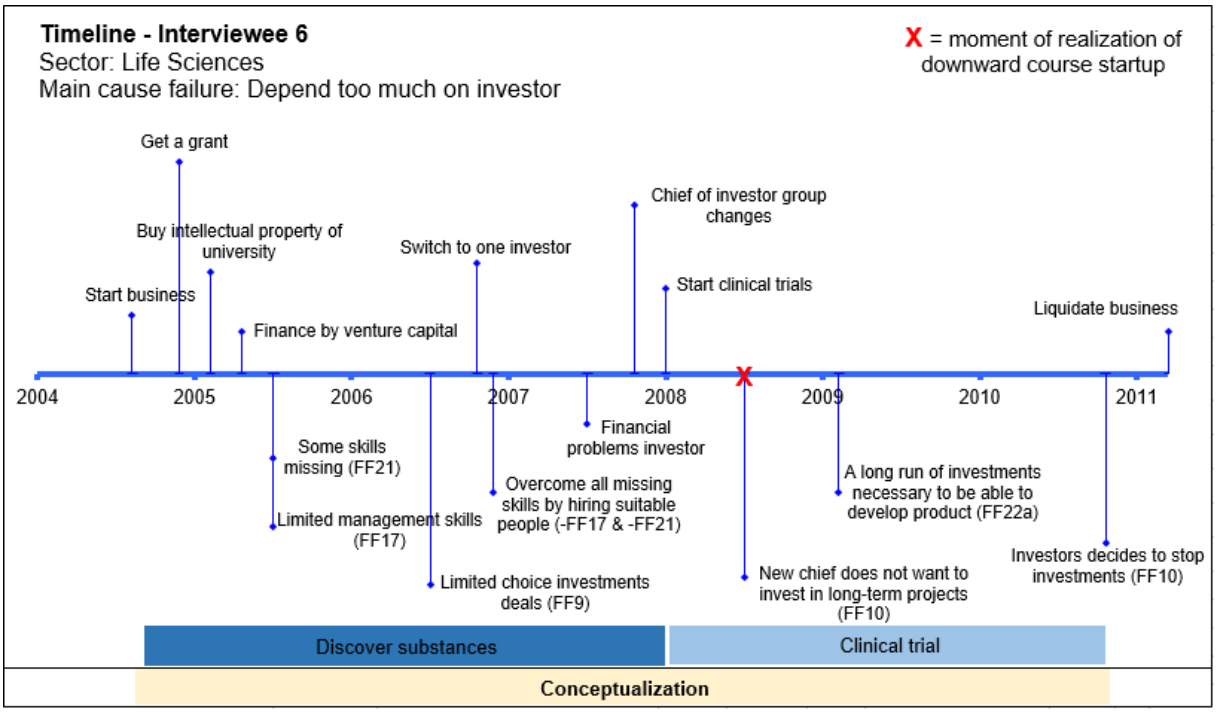


Figure 17: Timeline of interviewee 6

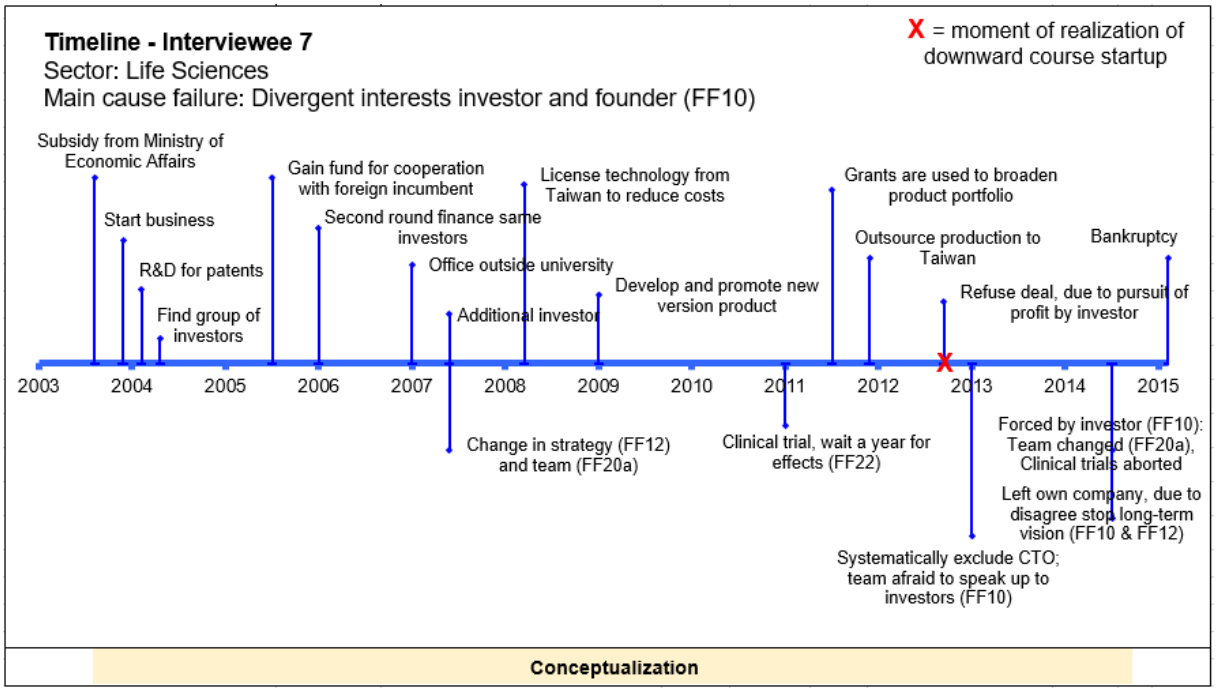


Figure 18: Timeline of interviewee 7

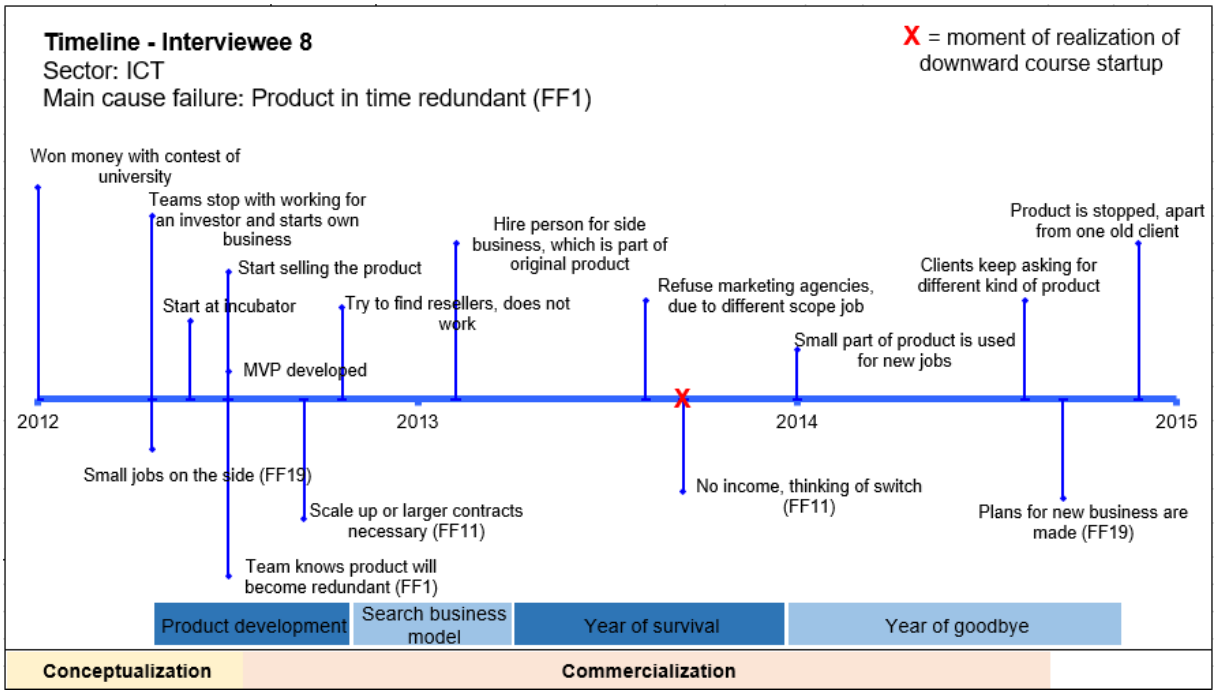


Figure 19: Timeline of interviewee 8

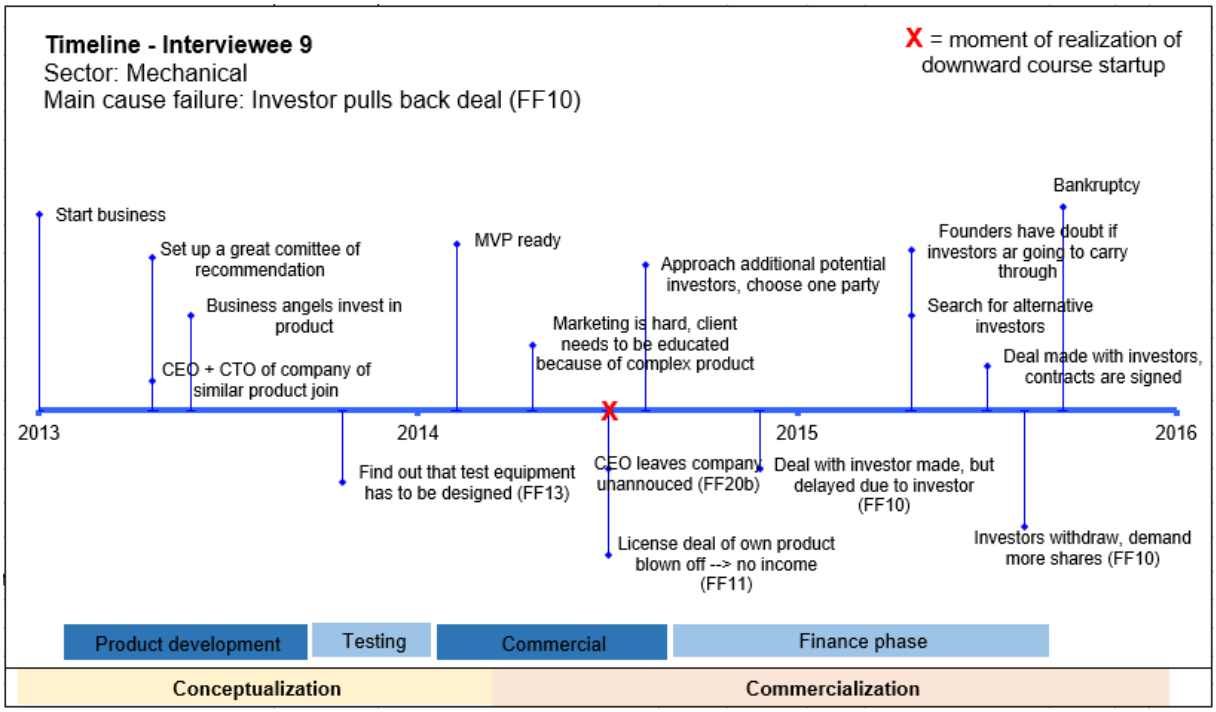


Figure 20: Timeline of interviewee 9

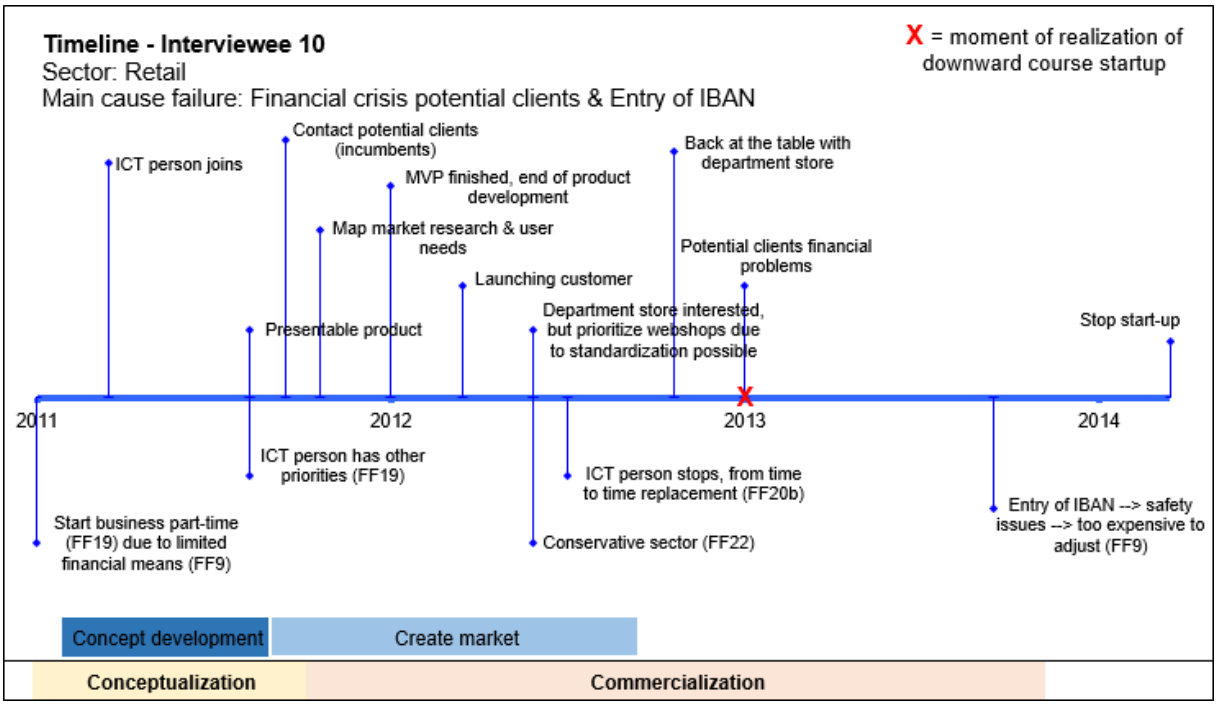


Figure 21: Timeline of interviewee 10

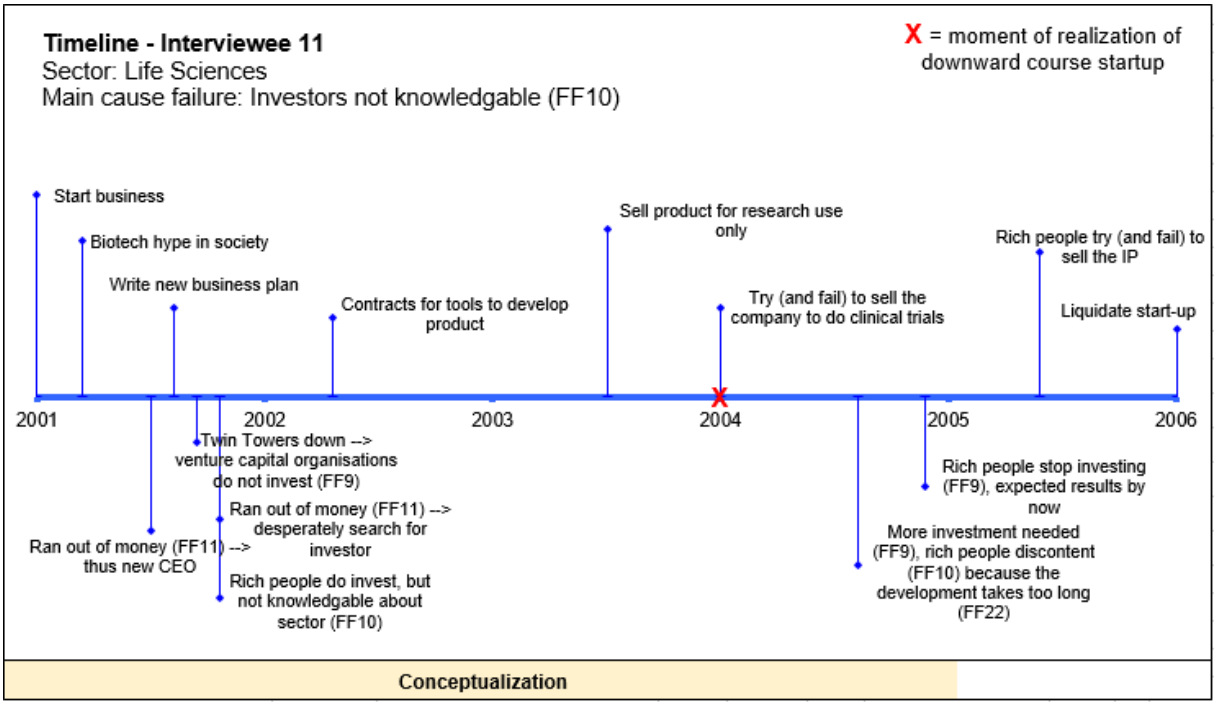


Figure 22: Timeline of interviewee 11

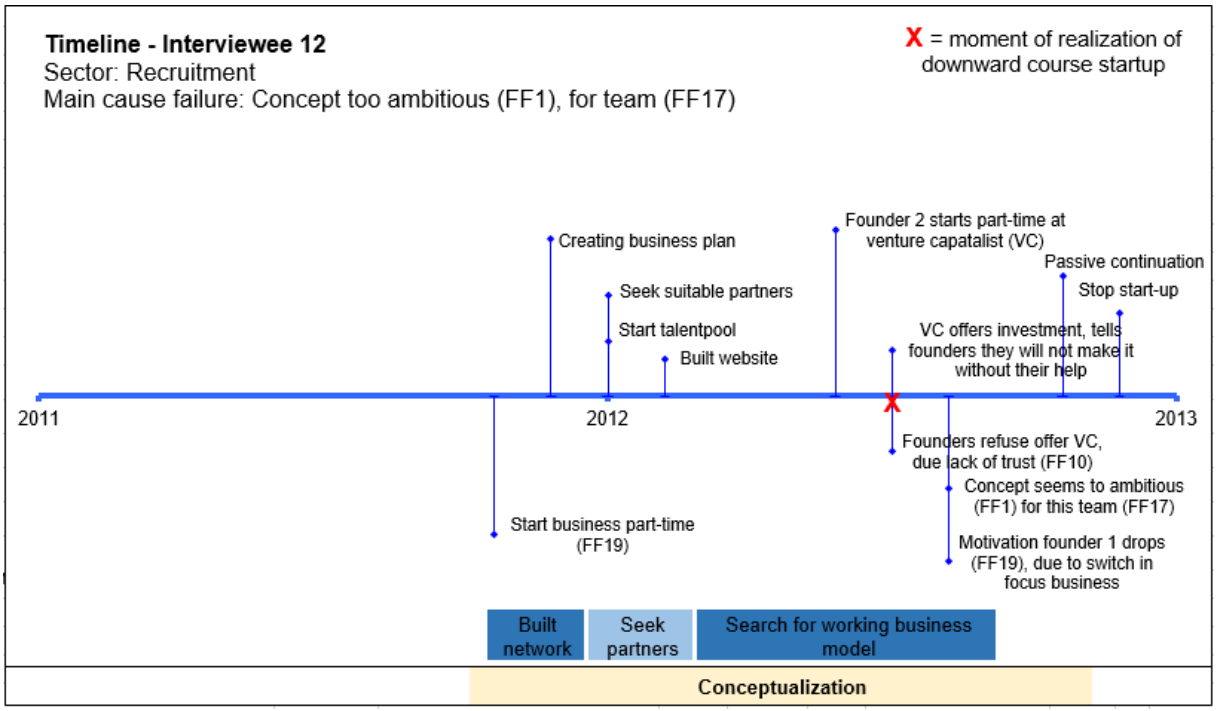


Figure 23: Timeline of interviewee 12

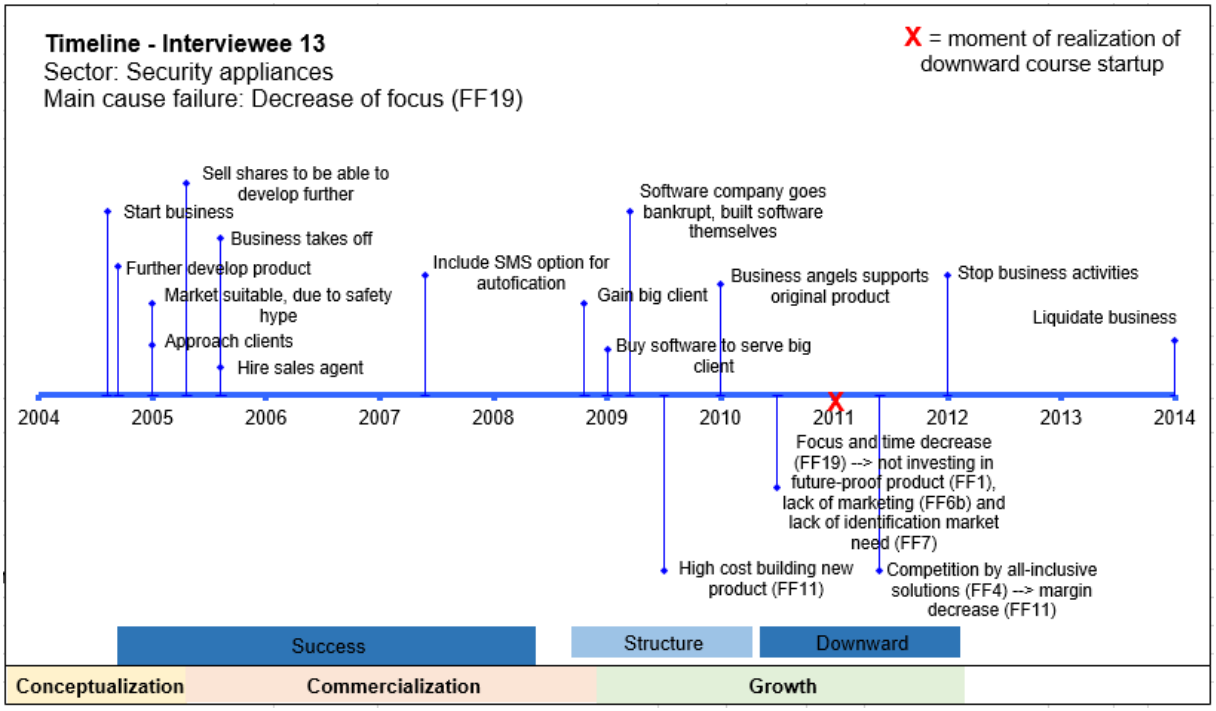


Figure 24: Timeline of interviewee 13

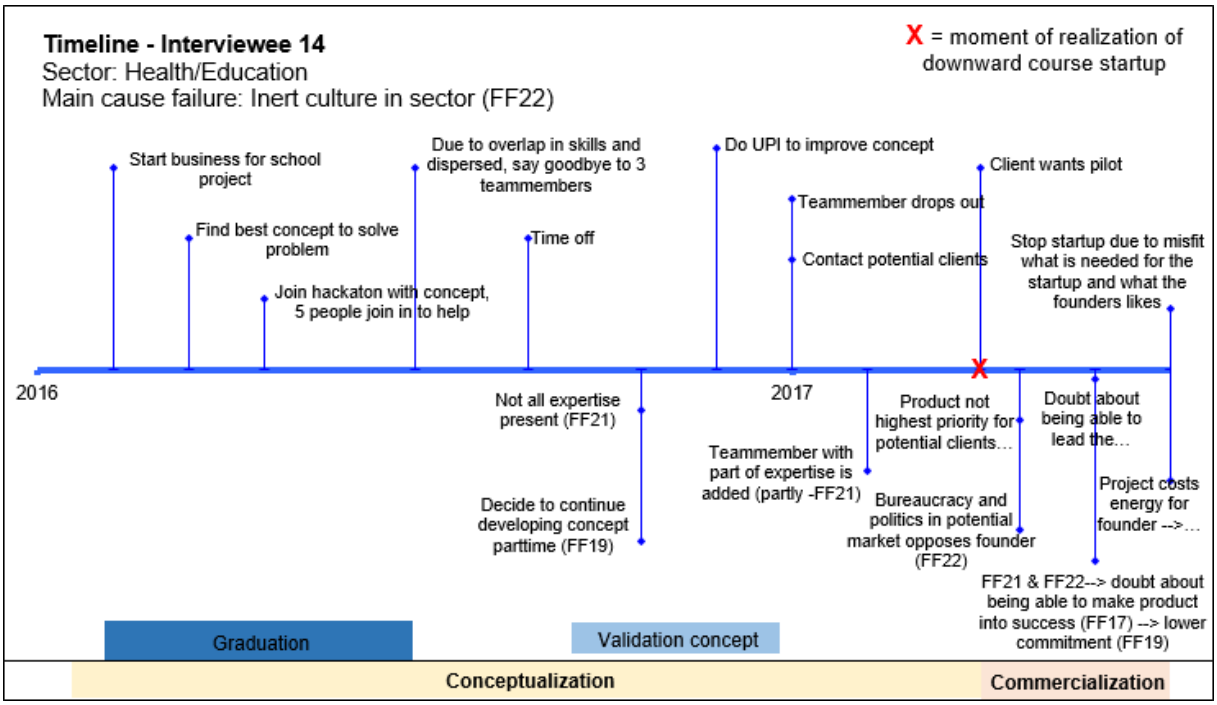


Figure 25: Timeline of interviewee 14

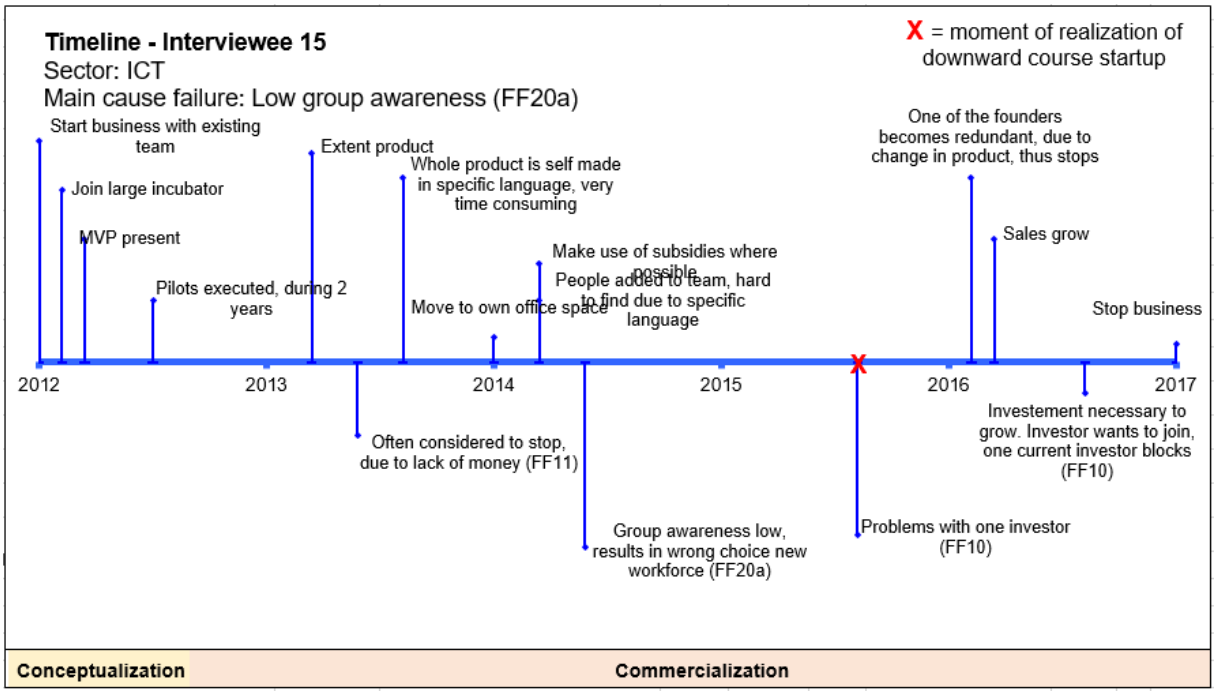


Figure 26: Timeline of interviewee 15

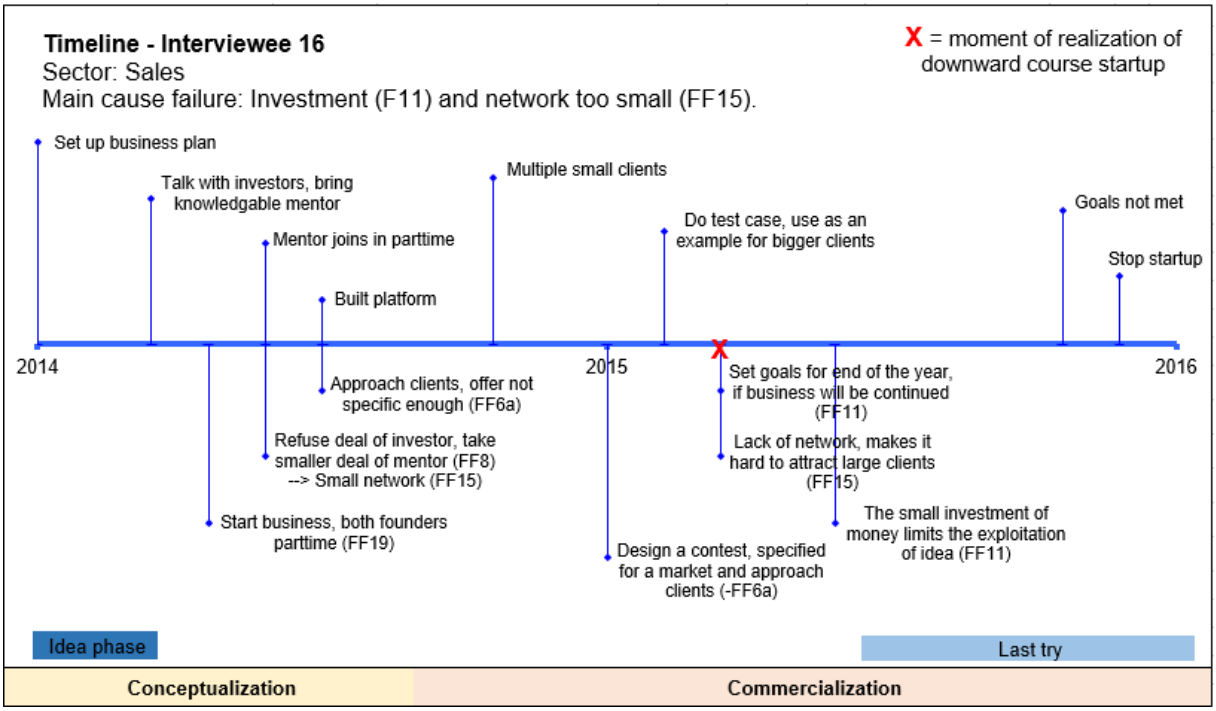


Figure 27: Timeline of [Interviewee 16]

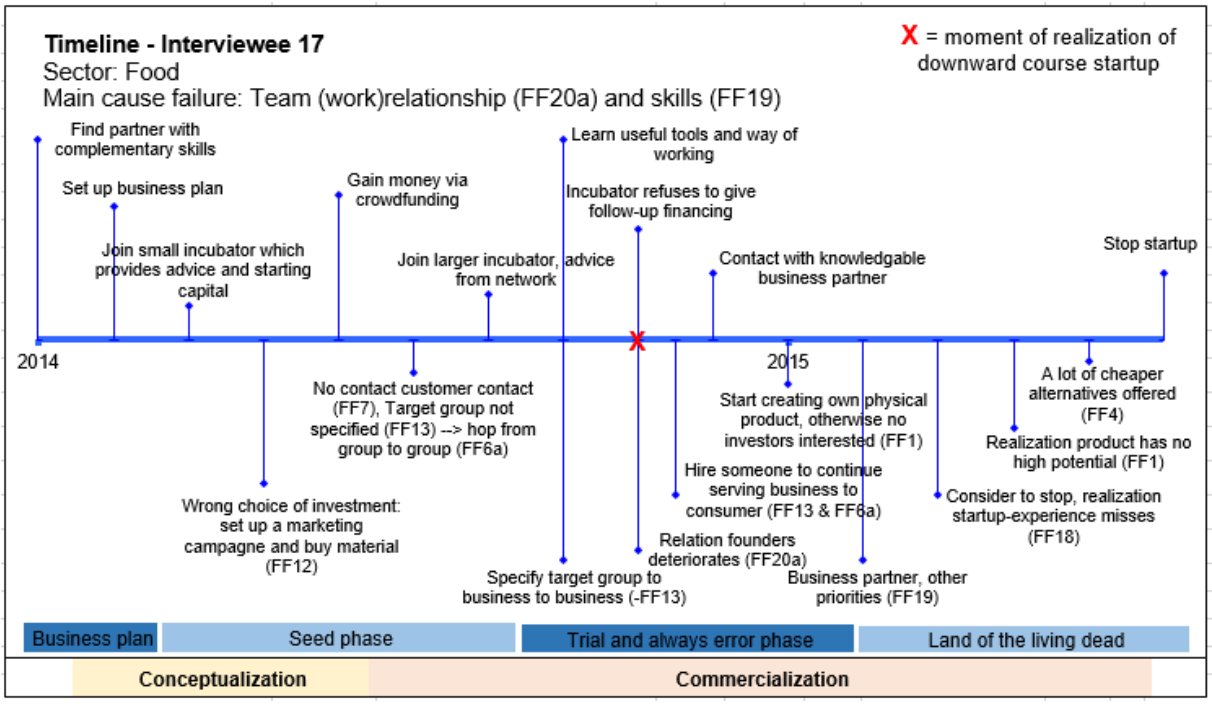


Figure 28: Timeline of interviewee 17

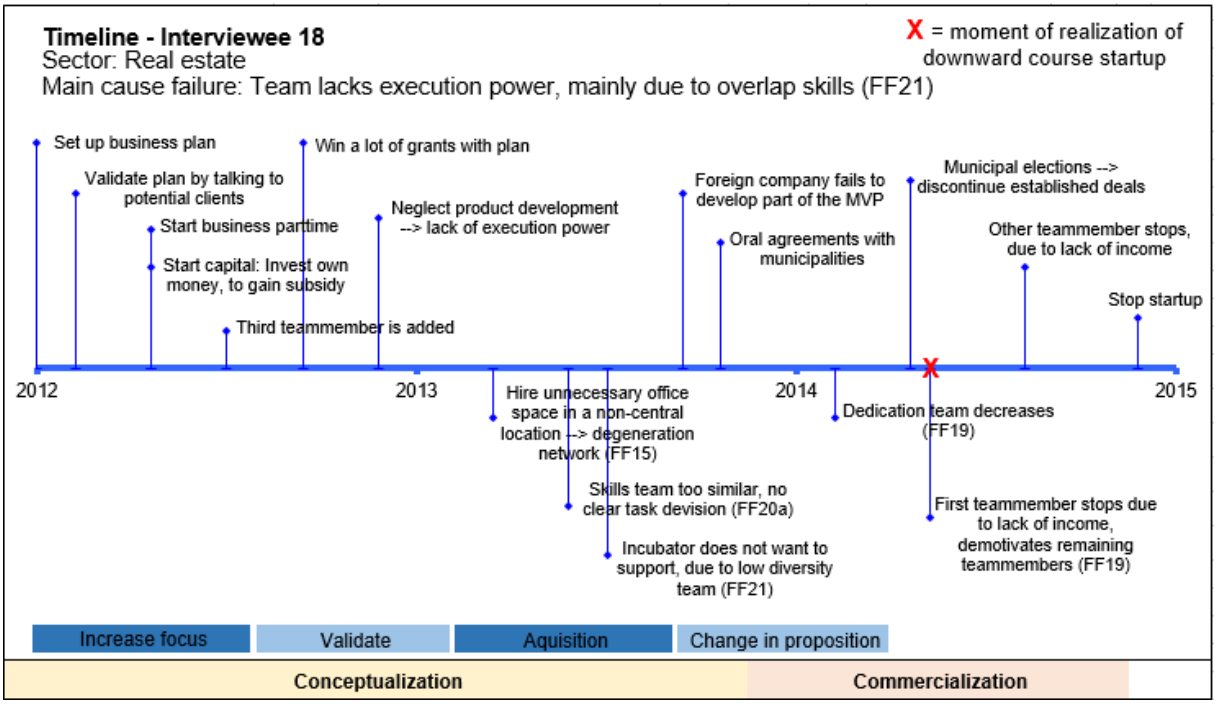


Figure 29: Timeline of interviewee 18

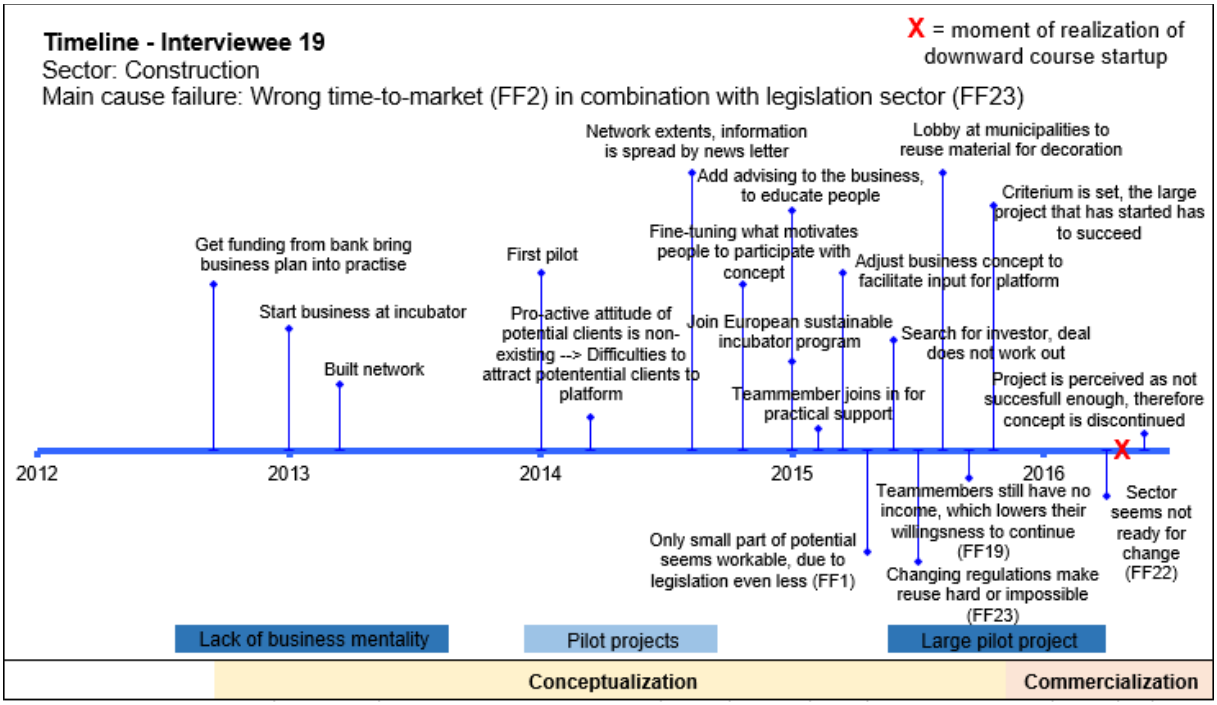


Figure 30: Timeline of interviewee 19

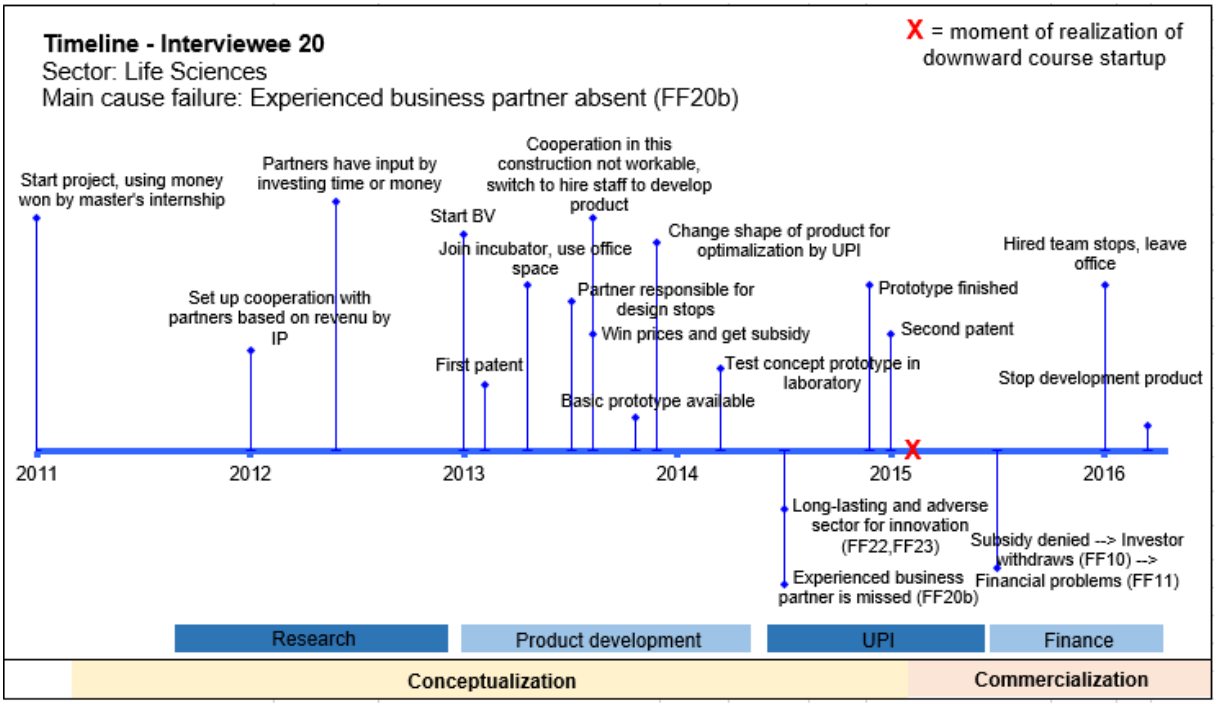


Figure 31: Timeline of interviewee 20

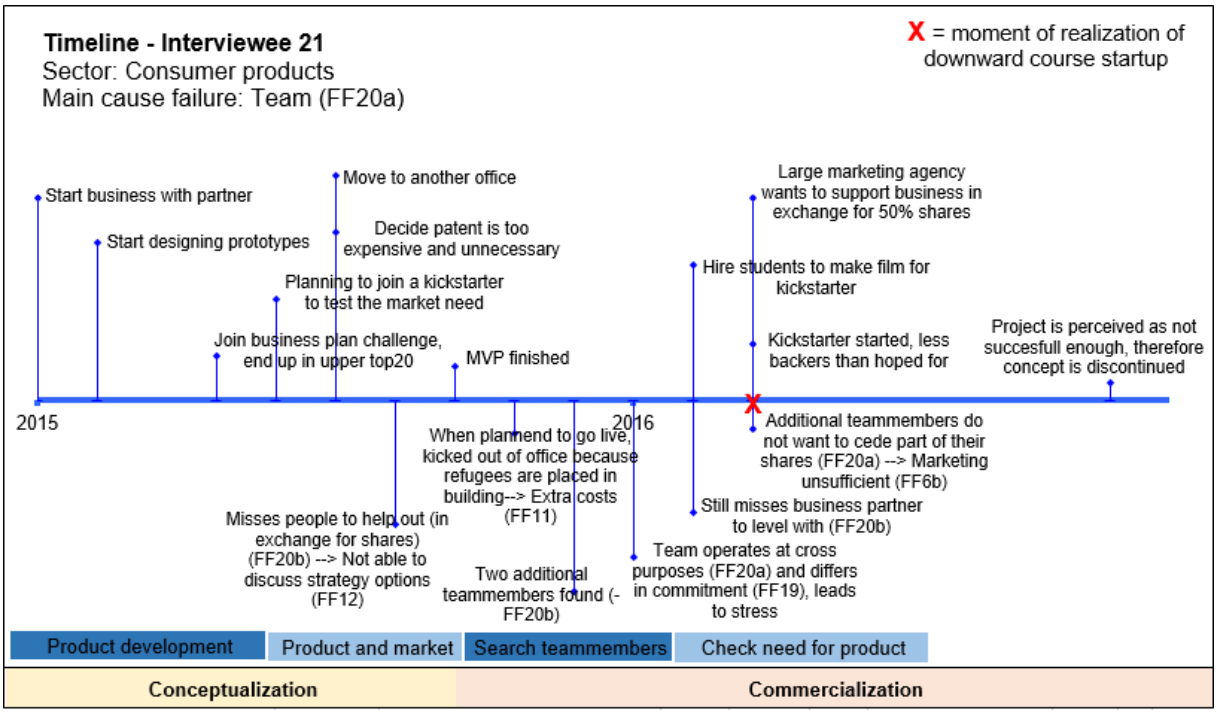


Figure 32:Timeline of interviewee 21

14.3 Causal relations

During interviews founders have indicated causal relations between failure factors, meaning one factor causes another failure factor. In Table 15 an overview is given of the causal relations mentioned per interview, where the first one mentioned caused the following. When three factors are shown, it means the second factor resulted in the third factor as a chain reaction. Furthermore, sometimes the combination of two factors causes a reaction, in these cases both factors are indicated by the color blue and the following factors are the same for both colored factors.

Table 16 shows an overview of the causal pairs mentioned. In this table an addition per row is shown if a causal pair is present.

Table 15: An overview of the causal relations indicated by interviewees

Int.	Sector	FF causal		
1	Horticulture	8	12	
2	ICT	4	19	
3	Education	n.a.		
4	Education	5	6a	
5	Education	10	20a	
		6ab	11	10
		6ab	11	20a
		20a	14	
6	Life Sciences	n.a.		
7	Life Sciences	n.a.		
8	ICT	1	11	
9	Mechanical	n.a.		
10	Retail	9	19	
11	Life Sciences	9	11	10
		22	10	
12	Recruitment	n.a.		
13	Security appliances	19	1	
		19	6ab	
		19	7	
		4	11	
14	Health/education	21	17	19
		22	17	19
15	ICT	n.a.		
16	Sales	8	15	
		11	19	
17	Food	7	6a	
		13	6a	
18	Real Estate	5	6a	
		11	19	
19	Construction	2	1	
		23	1	
20	Life Sciences	10	11	
		11	19	
21	Consumer Products	20b	12	
		20a	6b	

Table 16: Causal pairs of failure factors

FFX	FFY	Freq	Additional info
1	11	1	
2	1	1	Together with 23
4	19	1	
4	11	1	
5	6a	2	
6ab	11	1	
7	6a	1	
8	12	1	
8	15	1	
9	19	1	
9	11	1	
10	11	1	
10	20a	1	
11	19	3	
11	10	1	
13	6a	1	
17	19	1	
19	1	1	
19	6ab	1	
19	7	1	
20a	14	1	
20a	6b	1	
21	17	1	Together with 22
22	10	1	
22	17	1	Together with 21
23	1	1	Together with 2
23	12	1	

14.4 Failure factors in phases

In this section the failure factors per phase are presented. The timelines are used to induce the order of the failure factors per phase. The factors that have been overcome are considered factors that were a problem and therefore are included in the overview.

14.4.1 Failure factors in pre-set phases

The phases conceptualization, commercialization and growth, mentioned in the theory section, are added to the constructed timelines. An overview is made to show what factors are present in which phases (Table 17). To have a clearer overview of the absolute and relative occurrence of factors per phase Table 18 is constructed.

Table 17: Overview of failure factors in pre-set phases

Int	Conceptualization	Commercialization	Growth
1	8 9 20b 9 21 20a 21	11	
2		4 19 19 4 19	
3	21	20b 13 23 22	
4	20a 13 10	22 20a 23 5 8 23 10	
5	20ab	6ab 10 10 20a 11 17 12 14	
6	21 17 9 10 22 10		
7	12 20a 22 10 10 20a 20 12		
8	19 1	11 11 19	
9	13	20b 11 10 10	
10	19 9	19 22 20b 9	
11	11 9 11 10 9 10 22 9		
12	19 10 1 17 19		
13			11 19 1 6ab 7 4 11
14	21 19 1	22 19 17 17 19	
15		11 20a 10 10	
16	19 8 15 6a	11 15 11	
17	12	7 13 6a 20a 13 6a 1 19 18 1 4	
18	15 20a 21	19 19	
19	1 23 19	22	
20	22 23 20b	10 11	
21	20b 12	11 20a 19 20b 20a 6b	

Table 18: An overview of the absolute and relative occurrence of failure factors per phase

FF	Conc (freq)	FF (relative)	Com (freq)	FF (relative)	Grow (freq)	FF (relative)
1	4,00	0,50	2,00	0,25	2,00	0,25
2	0,00	#DEEL/0!	0,00	#DEEL/0!	0,00	#DEEL/0!
3	0,00	#DEEL/0!	0,00	#DEEL/0!	0,00	#DEEL/0!
4	0,00	0,00	3,00	1,00	0,00	0,00
5	0,00	0,00	1,00	1,00	0,00	0,00
6a	1,00	0,20	2,00	0,40	2,00	0,40
6b	0,00	0,00	1,00	1,00	0,00	0,00
7	0,00	0,00	1,00	1,00	0,00	0,00
8	2,00	0,67	1,00	0,33	0,00	0,00
9	7,00	0,88	1,00	0,13	0,00	0,00
10	8,00	0,47	8,00	0,47	1,00	0,06
11	2,00	0,17	10,00	0,83	0,00	0,00
12	4,00	0,57	1,00	0,14	2,00	0,29
13	2,00	0,40	3,00	0,60	0,00	0,00
14	0,00	0,00	1,00	1,00	0,00	0,00
15	2,00	0,67	1,00	0,33	0,00	0,00
16	0,00	#DEEL/0!	0,00	#DEEL/0!	0,00	#DEEL/0!

17	2,00	0,40	3,00	0,60	0,00	0,00
18	0,00	0,00	1,00	1,00	0,00	0,00
19	7,00	0,39	11,00	0,61	0,00	0,00
20a	5,00	0,42	6,00	0,50	1,00	0,08
20b	3,00	0,43	4,00	0,57	0,00	0,00
21	6,00	1,00	0,00	0,00	0,00	0,00
22	3,00	0,38	5,00	0,63	0,00	0,00
23	1,00	0,17	3,00	0,50	2,00	0,33
Total:	59	-	69	-	10	-

14.4.2 Failure factors in phases of interviewee

During the interview the founders were asked to add phases to the timeline. An overview is given of the names they ascribed to the phases (Table 19) and the factors that occurred in the phases (Table 20).

Table 19: Overview of the phases mentioned by interviewees

In	Phase A	Phase B	Phase C	Phase D	Phase E	Phase F
1	Start concept by gathering raw material	Switch business model temporarily	Back to original concept			
2	Pilot	Unroll	Support business partner			
3	Startup	Deepening/positioning	Development	Unroll	Finance	Reorientation
4	In love	Rescheduling	Execute plans	Dark clouds		
5	Product validation	Seed phase	Built phase	Validation	Internal affairs	Convulsions
6	Discover substances	Clinical trial				
7						
8	Product development	Search business model	Year of survival	Year of goodbye		
9	Product development	Testing	Commercial	Finance phase		
10	Concept development	Create market				
11						
12	Built network	Seek partners	Search for working business model			
13	Success	Structure	Downward			
14	Graduation	Validation concept				
15						
16	Idea	Last try				
17	Business plan	Seed phase	Trial and always error	Land of the living dead		

18	Increase focus	Validate	Aquisition	Change in proposition		
19	Lack of business mentality	Pilot projects	Large pilot project			
20	Research	Product development	UPI	Finance		
21	Product development	Product and market	Search team members	Check need for product		

Table 20:Overview of the failure factors per phase mentioned by interviewees

Int	a	b	c	d	e	f	g	h	i	j	k	l
1	8	9	20b	9	21	20a	21	11				
2	4	19	19	4	19							
3	21	20b	13	22b	22							
4	20a	13	10	22	20a	22b	5	8	22b	10		
5	20ab	6ab	10	10	20a	11	17	12	14			
6	21	17	9	10	22	10						
7	12	20a	22	10	10	20a	20	12				
8	19	1	11	11	19							
9	13	20b	11	10	10							
10	19	9	19	22	20b	9						
11	11	9	11	10	9	10	22	9				
12	19	10	1	17	19							
13	11	19	1	6ab	7	4	11					
14	21	19	1	22	19	17	17	19				
15	11	20a	10	10								
16	19	8	15	6a	11	15	11					
17	12	7	13	6a	20a	13	6a	1	19	18	1	4
18	15	20a	21	19	19							
19	1	22b	19	22								
20	22	23	20b	10	11							
21	20b	12	11	20a	19	20b	20a	6b				

15 Appendix F – Comparison failure and success factors

In this appendix the success factors that are linked to the failure factors are shown in Table 21. The factors and the definition of the success factors which the failure factors are linked to have been incorporated in Table 21 as well.

Table 21: Failure factors linked to success factors (Corner, 2013; Groenewegen & De Langen, 2012; Marino & De Noble, 1997; McGee, Dowling, & Megginson, 1995; Song et al., 2008; Toganel & Zhu, 2017)

Failure factors	Success factor	Definition
Initial undercapitalization	Financial resources	Level of financial assets of the firm
Mismatch between skills founder(s)/team and business market	Founders' marketing experience	Experience of the firm's management team in marketing
	Founders' industry experience	Experience of the firm's management team in related industries and markets
Product protection	Existence of patent protection	Availability of firm's patents protecting product or process technology
External event	State of the economy	State of the economy at the time of start up
Low potential product	Uniqueness of concept	The uniqueness of the advantages of the innovation

The factors that are not yet discussed in section 6.3, are discussed here. Firstly, the *marketing experience* (Marino & De Noble, 1997; McGee et al., 1995; Song et al., 2008) and *industry experience* (Marino & De Noble, 1997; Song et al., 2008; Toganel & Zhu, 2017) of the founder can be perceived as an opposite of the failure factor mismatch between skills founder/team and business market, which includes the market skills and industry know-how. Secondly, low potential of the product can be linked to the success factor *uniqueness of concept* (Groenewegen & De Langen, 2012). If the uniqueness of the concept is high, the potential of the product is high. In addition, some success factors are studied that do not have an opposite failure factor, such as the size of the founding team and supply chain integration cannot be linked to failure factors from this research and did not come up during this research.

16 Appendix G – Concluding overview factors

A final overview is provided of the factors that influence the failure process of startups including the score (Table 22). One factor, the lack of product protection, is colored grey. The grey color shows the irrelevance of this factor in this research. However, since it may be possible the factor is relevant in the growth phase, the factor has not been removed from the overview table.

Table 22: Concluding overview failure factors influencing the failure process

Category	Failure factor	Subfactor	Score
Product 	**Low potential of product**		3.0
	Wrong time-to-market		3.5
	Lack of product protection		0.5
Market 	**High market dynamics**		3.5
	Lack of market research		4.0
	Inappropriate marketing	Addressing market inappropriately	5.5
		Lack of marketing	3.5
	Limited user producer interaction		2.0
Financial resources €	**Initial undercapitalization**		4.5
	Limited availability funding		6.0
	Problematic relationship with (potential) investor		7.5
	Not being able to make both ends meet		4.0
Strategy 	**Absence of a clear strategy**		2.0
	Limited business plan		3.5
	Low flexibility		0.5
	Lack of network(ing)		6.0
	Lack of professional advice		1.5
Founder(s)/ Team 	**Lack of management(knowledge)**		7.0
	Little or no entrepreneurial experience		6.5
	Low commitment		8.5
	Ineffective team	Operates at cross purposes	8.5
		Incomplete team	4.5
	Mismatch between skills founder(s)/team and business market		7.5
Culture in sector 	**Inert conservative culture**		8.0
	Shifting or high demands		4.5
-	**External events**		-
-	**Dutch culture**		-