

# Success Factors for New Technology Ventures

Yannick van Zantvoort

[Yannick.vanZantvoort@student.ru.nl](mailto:Yannick.vanZantvoort@student.ru.nl)

s1028952



**Radboud Universiteit Nijmegen**

**Radboud University  
FNWI  
MSc Information Sciences  
Master Thesis  
- 2020 -**

*1st Supervisor & examiner*

prof. dr. M.C.J.D. (Marko) van Eekelen

Department of Digital security

[marko@cs.ru.nl](mailto:marko@cs.ru.nl)

*2nd Supervisor & examiner*

dr. C.L.M. (Cynthia) Kop

Department of Software Science

[c.kop@cs.ru.nl](mailto:c.kop@cs.ru.nl)



## ACKNOWLEDGEMENTS

*“I want to thank Marko van Eekelen and Cynthia Kop for guiding and supporting me through this journey of making a Master Thesis. Thank you for being patient with me.*”



## SUCCESS FACTORS FOR NEW TECHNOLOGY VENTURES

### *Abstract*

*The emergence of new technology-based ventures (NTVs) broadly and positively affects economic development. The rate of New Tech Ventures that survive the first couple of years, however, is extremely low. Given the high failure rate of NTVs, it is important to identify what factors lead to the success and failure of these ventures. A 2008 study was found that identifies 24 success factors that have an influence on the success of NTVs. This study will serve as the foundation that will be further built upon in this thesis. Since it is an older and potentially outdated study, the results produced by it will be critically examined and confirmed or refuted based on the findings of this research.*

*The first goal of this thesis is to update the existing 2008 study with contemporary literature to find success factors for New Tech Ventures. The second goal is to investigate if there is a fit between literature and practice. Here the updated success factors will be submitted to real-world NTVs to see if there is a fit with the literature. The answers that will follow from these goals strive to give more insight into this research area and to serve as academically supported practical advice to entrepreneurs who own an NTV or aspire to start one.*

*To achieve the first goal contemporary literature was collected, evaluated and selected to answer the first research question. Four success factors are found that have a clear presence in contemporary literature and meet the predefined criteria for this study.*

*To achieve the second goal, a survey was conducted that provided the data needed to judge whether there is a match with theory and practice. The most interesting findings here are that for all the tested success factors there is an overwhelming fit with practice, meaning the NTVs think the contemporary success factors have a positive effect on the success of their NTV. The fit with the reasons behind this fit matches partially with the reasons given in the literature.*

*This thesis concludes with a recommendation for entrepreneurs who have NTVs or aspire to start one, derived from the knowledge obtained in this thesis. These recommendations are based on the overlap the contemporary literature has with the motivation given by the NTVs in practice.*

Keywords: Success factors, New Tech Ventures, NTV, Contemporary

## Table of contents

<b>Chapter 1 Introduction to New Tech Ventures</b>	<b>7</b>
1.1 Existing Research on NTVs	7
1.2 This Research	8
1.3 Scientific Relevance	10
1.4 Practical Relevance	10
1.5 Problem, Goal and Research Questions	10
1.6 Structure of this Research	11
<b>Chapter 2 Preliminaries</b>	<b>13</b>
2.1 Technology Entrepreneurship	13
2.2 New Technology Ventures	13
2.3 Definition of Success	13
2.4 Literary Basis for this Research on Success Factors for NTVs	14
2.4.1 Success Factors and Categories	14
2.4.2 Eight universal success factors	15
2.4.3 Eleven homogeneous success factors	15
2.4.4 5 non-significant success factors	16
<b>Chapter 3 Methodology</b>	<b>19</b>
3.1 Understanding the connection with the research by Song et al. (2008)	19
3.2 Overall Research design	20
3.3 Literary Review Methodology	21
3.3.1 Collect, evaluate and select literature	21
3.3.2 Finding connections and themes	22
3.3.3 Criteria for picking the success factors	22
3.3.4 Reliability and Validity of the Literary Review	22
3.4 Survey Methodology	23
3.4.1 Pre-test	23
3.4.2 Structure and Design	23
3.4.3 Data collection	24
3.4.4 Analysis method of the survey data	24
3.4.5 Reliability and Validity of the Survey	24
<b>Chapter 4 Literary review</b>	<b>27</b>
4.1 Four Success Factors are found	27
4.2 Success Factor 1: Industry Experience	27
4.2.1 Findings in contemporary literature on Industry Experience	27
4.2.2 Conclusion on Industry Experience	28
4.3 Success Factor 2: Non-Governmental Financial Support	29
4.3.1 Findings in contemporary literature on Non-Governmental Financial Support	29
4.3.2 Conclusion on Non-Governmental Financial Support	30
4.4 Success Factor 3: Prior Startup Experience	30
4.4.1 Findings in contemporary literature on Prior Start-up Experience	30
4.4.2 Conclusion on Prior Start-up Experience	31
4.5 Success Factor 4: Academic Background	31
4.5.1 Findings in contemporary literature on Academic Background	32
4.5.2 Conclusion on Academic Background	33
4.6 The Answer to Research Question 1	33
<b>Chapter 5 Survey</b>	<b>35</b>
5.1 Part one - general information about the NTVs	35
5.2 Part two - defining success for an NTV	35
5.3 Part three - success factor motivation and fit with NTVs	36

<b>Chapter 6 Survey Results</b>	<b>37</b>
6.1 General	37
6.2 Success factors	38
6.2.1 Prior Start-up Experience	38
6.2.2 Non-Governmental Financial Support	40
6.2.3 Academic Background	42
6.3 Key findings of the results of the survey	45
6.3.1 Prior Start-up Experience	45
6.3.2 Non-Governmental Financial Support	45
6.3.3 Academic Background	46
<b>Chapter 7 Discussion and Conclusion</b>	<b>47</b>
7.1 Conclusion and Recommendations	47
7.1.1 Summary of the work	47
7.1.2 Recommendations	48
7.2 Discussion, Limitations and Future Work	49
7.2.1 Discussion	49
7.2.2 Limitations and Further Research	50
<b>Chapter 8 References</b>	<b>51</b>
<b>Chapter 9 Appendix</b>	<b>53</b>
Appendix A - Survey	53

## Chapter 1 -- Introduction to New Tech Ventures

*This chapter will provide the reader with contextual knowledge and insight into the research area of the thesis. It will give the basic information needed to understand why the research for this thesis was done. In addition it will serve as a set up to the preliminaries presented in the next chapter, where there is a deeper dive into the success factors for NTVs. This chapter starts with a brief description of the importance of technology entrepreneurship and their survival rate, followed by briefly introducing existing research on this topic. After that it will be explained why it would be interesting to do this research, followed by its scientific and practical relevance. Finally, an introduction to the problem, goal and the research questions are stated and how this thesis is structured to answer them.*

Research in technology entrepreneurship has an important function, as it is an instrument that assists in the progress of individuals, companies and districts and countries (Bailetti, 2012). There is a broad and positive effect the rise of New Technology Venture has on economic development. New organisations, however, experience 'liability of newness'. This is also true for New Technology Ventures (NTVs), as these ventures in practice find it hard to survive the first few years (Aspelund et al., 2005). Song et al. (2008) evaluated the survival rate of NTVs. The researchers analyzed more than eleven thousand American NTVs that started between 1991 and 200. The outcome of this study shows that only 36 percent of the ventures with over five employees survive the first four years. The survival rate even drops to less than 22 percent for these NTVs in the fifth year of being in operation. It is interesting to get more insight into why this happens and what factors play a role in this.

### 1.1 Existing Research on NTVs

There is not much literature available that looks into the reasons behind the lack of success for NTVs. It would be interesting to research the factors that lead to success, given the struggle of NTVs to survive the first few years. Song et al. (2008) show that there are some studies available, but these seem fragmented and full of contradictions. The researchers give numerous examples of conflicting literature with ambivalent conclusions.

Multiple studies that tackle research and development in this research area illustrate the matter. Zahra and Bogner (2000) did not find a meaningful connection with the success of NTVs and research and development expenses. On the other hand, Dowling and McGee (1994) found a positive connection in this context, while Bloodgood, Sapienza, and Almeida (1996) identified a negative connection. Likewise, it had been found that the conclusion that is drawn regarding product innovation are questionable. Song et al. (2008) find that one-third of the literature they have evaluated show a positive connection with product innovation and the success of the NTV, while the other two-third find a negative connection. Thus, it is important to separate the wheat from the chaff.

The study by Song et al. (2008) does exactly this. The researchers empirically analyzed a multitude of studies regarding the effect success factors have on NTVs. Pearson correlations were used to examine the data of 31 studies. From this 24 success emerge that had a relation to the influence on the success of an NTV. With regards to the relationship, the researchers conclude that there are eight universal, eleven heterogenous and five non-significant success factors. These 24 success factors are elaborated upon in the second chapter. The results of their research shall function as the basis for this research.



## 1.2 This Research

The research that Song et al. (2008) conducted is a helpful distillation of the key factors that do or do not contribute to success. However, the research was done in 2008 and uses a lot of studies between the period 1993 to 2004. It is interesting to see what the frame of reference was when Song et al. (2008) conducted their research and what has happened since. Table 1 shows some relevant events and when they happened during the digital revolution.

Year	Event
1989	Tim Berners-Lee invents the World Wide Web. At this time less than 1% of the world's technologically stored information was in digital format. <sup>1</sup>
1991	In 1991 The World Wide Web became publicly accessible. Before this time only some people outside the government and universities had access to it. <sup>2</sup>
1996	By 1996 the internet expanded rapidly and became a part of mass culture. Companies started to list their website in advertisements. This growth also enabled new programming languages to emerge. JavaScript was one of the programming languages that grew quickly, as it integrated with the current web browser early on. <sup>1</sup>
1997	Computer ownership progressed from a luxury to a necessity between. The households that owned a computer increased from fifteen to thirty-five percent from 1990 to 1997. New ventures emerged with these new digital opportunities. The new economy based on information technology marked the change to the Information Age. <sup>1</sup>
2000	Text messaging became widely used, as cellphones became omnipresent. In the 2000s, the digital revolution became truly global and expanded to the masses in the developing world.. <sup>3</sup>
2005	The internet population rose to 1 billion people at the end of 2005. By the end of the decade, 3 billion people internationally used cell phones. Also, HDTV had become the standard television broadcasting format in a lot of countries. <sup>3</sup>  2005 was considered the year that humankind became able to store more information digitally, than in analog format, see Figure 1. The "beginning of the digital age". <sup>1</sup>

<sup>1</sup> Hilbert, M., & López, P. (2011). The world's technological capacity to store, communicate, and compute information. *science*, 332(6025), 60-65.

<sup>2</sup> Drury, N. (2002). Magic and Cyberspace. "[World Internet Users Statistics and 2014 World Population Stats](#)". Retrieved 15 October 2019.

<sup>3</sup> One Billion People Online!". Archived from the original on 22 October 2008. Retrieved 15 October 2019.

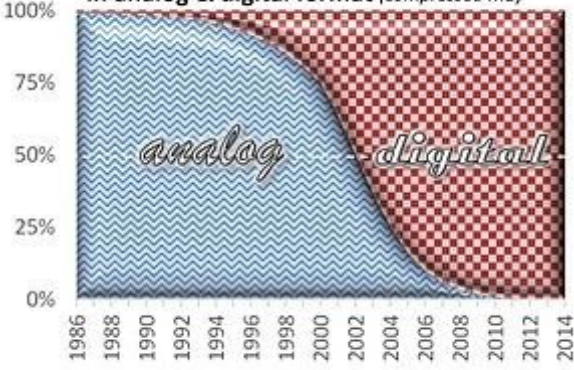
	<p style="text-align: center;"><b>World's technological capacity to store information in analog &amp; digital format (compressed MB)</b></p>  <p style="font-size: small;">Hilbert, M., &amp; López, P. (2011). The World's Technological Capacity to Store, Communicate, and Compute Information. <i>Science</i>, 332(6025), 60–65. <a href="http://www.martinhilbert.net/worldinfocapacity.html">www.martinhilbert.net/worldinfocapacity.html</a></p> <p style="text-align: center;"><i>Figure 1 - Analog to digital transition 1986 - 2014<sup>1</sup></i></p>
2007	This year Apple introduces the iPhone.
2008	On July 10 2008, the first App Store was launched with 500 applications available initially.. <sup>4</sup> This is also the year Airbnb was founded.
2009	Uber was founded and Facebook was accessible to everyone with a minimum age of 13 years old and a valid email address. <sup>5</sup>
2010	Early this year cloud computing enters the mainstream. <sup>6</sup>
2012	By 2012, more than 2 billion people made use of the Internet, this is twice as many people using the internet compared to 2007. <sup>6</sup>
2014	At this time the world's technologically stored information was for more than 99% in digital format. <sup>1</sup>
2015	There are more than 100,000 software and IT services companies in the United States alone.
2016	Half of the entire world's population is connected. The amount of internet users was 3.9 billion (which was 49.5% of world population in 2016). <sup>1</sup>
2017	As of 2017, Apple's App store features over 2.1 million apps. <sup>4</sup>

Table 1 - Brief overview of Digital Revolution & beyond

The introduction of the internet to the masses in combination with more and more computers in the household and the introduction of more and better programming languages gives interested people the power to exploit their technical skills bit by bit. From 2007 forward, with the introduction of multi-functional smartphones the world is changing rapidly. A massive network of connected people emerges. The threshold for starting a NTV is quite low nowadays: if you have a laptop and

<sup>4</sup> "Apple's App Store launches with more than 500 apps". *AppleInsider*. July 10, 2008. Retrieved 15 October 2019.

<sup>5</sup> Abram, Carolyn (September 26, 2006). "Welcome to Facebook, everyone". *The Facebook Blog*. Retrieved 15 October 2019.

<sup>6</sup> "World Internet Users Statistics and 2014 World Population Stats". Retrieved 15 October 2019.

programming skills, you could go to the Chamber of Commerce and start your own NTV. One might say that is has become easier than ever to create a tech startup or company, but it is harder than ever to succeed as mentioned above.

With all this change since the research of Song et al. (2008). It would be interesting to see if contemporary literature can validate, invalidate, update and/or can help answer the unanswered questions proposed by Song et al. (2008) in some of their further research.

The present research will validate what is applicable today and do a suggestion to update the model created by Song et al. (2008). To do this qualitative research will be conducted by gathering relevant literature from 2008 forward and comparing it to the existing research, thus creating an updated (contemporary) model. The research by Song et al. (2008) is a distillation of literature. This research will also investigate the fit of the (updated) theoretical model with practice. New Tech Ventures will be approached and compared to the theoretical model to see how much of a fit there is. The insight gained with this is also processed in the model.

### **1.3 Scientific Relevance**

This research aims to give new insights into success factors for NTVs and shed light on some of the suggested future research proposed in the research by Song et al. (2008). Song et al. (2008) argue that their research should not and must not preclude future research but rather should stimulate and direct it. This thesis will elaborate on the researchers' advice to use their framework as a basis for future research, investigating its factors and to conduct additional research into the performance of Non-Governmental Financial Support.

### **1.4 Practical Relevance**

This research is meant to give more insight into the possible key factors for a successful new tech venture. The academically supported practical advice of this research will be presented in the form of recommendations in chapter 7. This advice will be useful for people thinking of starting a business, functioning as a blueprint of important factors to keep in mind. But also for existing New Tech Ventures, it could bring some insight into what is going well and what is going wrong in the pursuit of success. Hopefully, they can better certain aspects of their company on the basis of this research or at least gain some insight into the domain they operate in.

### **1.5 Problem, Goal and Research Questions**

The rate of New Tech Ventures that survive the first couple of years is extremely low. A (more) comprehensible conceptual model and set of well sustained key factors for success for these ventures may lead to more insight into the domain they operate in and a better prospect for entrepreneurs who have NTVs or aspire to start one.

The goal of this research is to suggest a more contemporary conceptual model of success factors for New Tech Ventures by Song et al. (2008) by gathering relevant literature from 2008 forward. Next, the fit of the updated conceptual model of success factors for New Tech Ventures will be examined and processed in the model, thus resulting in the following research questions:

1. *Looking at contemporary literature, what updates can be made to the conceptual model of success factors for New Tech Ventures?*
2. *To what extent is there a fit with the (updated) conceptual model of success factors and New Technology Ventures in practice?*

The overall structure to answer these research question is presented in the following section.

## **1.6 Structure of this Research**

This study is organized in the following manner; Key concepts like Technology Entrepreneurship, New Technology Ventures and the Definition of Success are explained in chapter 2, the preliminaries. A summary of the study this thesis builds upon is presented after the preliminaries, discussing their most important findings. This chapter intends to cover the main concepts and study which the reader needs to understand and interpret the rest of this thesis.

The methodology that aims to explain what research was done for this thesis and why it was done. The overall research design is presented, explaining which chapter has which function. After this, the methodology of the Literary Review is elaborated on, explaining how the literature is collected, evaluated and selected, how the themes of the literature connect and what the criteria for picking the success factors are. Chapter 3 ends with a paragraph on the methodology of the survey for this thesis, describing the pre-test, its structure and design and how the data for it was collected. This chapter intends to clarify the function of each part of this thesis, so that the function is understood in the larger framework.

Then the literary review is presented in chapter 4. Here the contemporary literature regarding the success factors for NTVs will be discussed. Four success factors are found that have a clear presence in contemporary literature and meet the predefined criteria for this study. Each factor is introduced, the findings are presented and elaborated upon and concluded with a short summary of its findings. There are very interesting findings which include contemporary evidence that contradicts findings by Song et al. (2008). Moreover, the thesis will here reveal a success factor for NTVs newly found in contemporary studies, successfully answering the first research question.

Chapter 5 explains the survey. The survey investigates if the theory of the success factors for NTVs found in the literary review matches with the practice. In this chapter the goal of each part of the survey and method of achieving this goal is elaborated upon. The survey consists of three parts. The first two parts gather general information about the NTVs and define if the NTVs are successful or not. The third and last part aims to extract whether the entrepreneur thinks the success factors have a positive effect on the success of their venture or not. There is also room to explain the reason behind the answer. The survey provides the data needed to be able to judge whether there is a match with theory and practice. After this the data will be presented which lays the foundation to answer the second research question.

The results of the survey are presented in chapter 6. The results of the survey are presented in this chapter after collecting and analyzing the survey data. The key findings of the results of the survey are reported and it is observed how these findings relate to the research questions. The findings of this chapter answer the second research question.

Lastly, in chapter 7 the overall conclusion of this thesis is presented. After this, the practical recommendations and a discussion that elaborates upon the key findings in chapter 6 are given. The chapter concludes with the limitations of this research and makes a suggestion for future research.



## **Chapter 2 -- Preliminaries**

*This chapter provides a theoretical background of the major concepts that are relevant for the study. It will introduce Technology Entrepreneurship, New Tech Ventures and the Definition of Success, followed by a discussion of the study that serves as a basis for this thesis. The theory of the study will be discussed, introducing the success factors found by Song et al. (2008). These 24 success factors are presented in section 2.4. These success factors for NTVs will be critically questioned by analysing contemporary studies in chapter 4, keeping an open mind to new insights.*

### **2.1 Technology Entrepreneurship**

There is no universal definition for technology entrepreneurship. Bailetti (2012) most clear and comprehensively stated that technology entrepreneurship is about: “1) operating small businesses owned by engineers or scientists; 2) finding problems or applications for a particular technology; 3) launching new ventures, introducing new applications, or exploiting opportunities that rely on scientific and technical knowledge; and 4) working with others to produce technology change.”

### **2.2 New Technology Ventures**

This thesis explores the research area of NTVs instead of defining what it means. Song et al. (2008) found that the primary studies use a combination of the terms *new*, *adolescent*, *young*, *emergent* and *high technology*, *technology-intensive*, and *technology-based* to describe NTVs. As for the age, some of the primary studies had set a maximum age for NTVs at 15 years. However, a larger number of studies choose a maximum age between 6 and 8 years. This thesis will use the maximum age of 8 years for a company to be regarded as new.

### **2.3 Definition of Success**

Success is an ambiguous term that can have multiple definitions. There are various attempts in literature to define it. The term can be interpreted differently by different people. It is likely that entrepreneurs define success differently from an investor or a client (Santisteban & Mauricio, 2017). For some, it can mean personal fulfilment, while for others interpreted it as to produce wealth. Contrarily, it can be interpreted as the return to investments to a banker. However, Santisteban and Mauricio (2017) find that there is a common denominator in the objective definitions of success for NTVs: the numbers of jobs that the NTV generates and the growth of the company. Growth means that the product or service the NTV have the power to bring in clients or customers. The growth of a company and the entrepreneurial ecosystem also directly affects job creation.

## 2.4 Literary Basis for this Research on Success Factors for NTVs

The study ‘Success Factors in New Ventures: A Meta-analysis’ conducted by Song et al. (2008) serves as the basis for this thesis. Song et al. (2008) wanted to gain insight into the success factors for NTVs. To analyze the possible success factors for NTVs the researchers gathered data from academic studies. The researchers performed a meta-analysis on this data to find possible success factors.

As input for the analysis select studies were chosen. The definition of a New Technology Venture, as given above, was applied to limit the domain and age of the sample. In addition, the firm’s type was checked by using the keywords *startup*, *venture* and *firm*.

Song et al. (2008) intentionally did not limit their search for studies by only picking the top studies in this area. The researchers argue that this ‘betrayed the spirit of meta-analysis’ (Hunter & Schmidt, 1990). To counter this, the researchers decided to collect as many studies as possible. These studies were later corrected if there was a difference in quality and checked for absent data.

With these efforts, the researchers managed to collect 106 studies. After this it was ensured that the collected studies: “(1) represented the correct level of analysis, (2) significantly reflected NTVs, and (3) that at least one logical cause could be attributed leading to the performance—and that the articles at least measured performance by looking at financial growth, growth within the market or performance in general.” This process slimmed down the number of useable studies to 31.

### 2.4.1 Success Factors and Categories

Song et al. (2008) saw that there were overlapping categories in the success factors. The researchers decided to create three suitable categories in which the success factors could be placed. They checked if the categories were complete and appropriate. A classification technique to put the right success factor in the right category, which resulted in the categories: Market and Opportunity (M&O), the Entrepreneurial Team (ET) and Resources (R).

Success factors in the Market and Opportunity category had features of environmental dynamism, environmental heterogeneity and competitive strategies. The success factors in the Entrepreneurial Team category had features such as the NTVs team capabilities and experience. Lastly, the Resources category consisted of a wide range of factors, competencies and traits of NTVs.

The analysis of the study in 2008 revealed 24 success factors related to the performance of NTVs. Only the success factors that were found in three or more research studies are used and presented in the study by Song et al. (2008). The relation of each one of the success factors to the performance of the NTVs makes the success factor either a homogeneous success factor, a heterogeneous success factor or a non-significant. The definitions of this can be found below:

homogeneous success factor                      = *a universal positive significant success factor that is correlated to venture success*

heterogeneous success factor                    = *the importance of the success factor depends on the situation*

Non-significant success factor = *the success factor has no significant effect on technology venture success*

## 2.4.2 Eight universal success factors

Of the 24 success factors; 8 have a homogeneous relationship to success, 11 have a heterogeneous relationship to success and 5 have a non-significant relationship to success.

The eight homogeneous success factors that Song et al. (2008) found are presented below. Behind each factor, the corresponding category is mentioned and the definition is given:

- 1) Supply chain integration (R) = *'A firm's cooperation across different levels of the value-added chain (e.g., suppliers, distribution channel agents, or customers)'*
- 2) Marketscope (M&O) = *'Variety in customers and customer segments, their geographic range, and the number of products'*
- 3) Firm age (R) = *'Number of years a firm has been in existence'*
- 4) Size of founding team (R) = *'Size of the management team of the firm'*
- 5) Financial resources (R) = *'Level of financial assets of the firm'*
- 6) Marketing experience (ET) = *'Experience of the firm's management team in marketing'*
- 7) Industry experience (ET) = *'Experience of the firm's management team in related industries and markets'*
- 8) Patent protection (R) = *'Availability of firm's patents protecting product or process technology'*

For these eight universal success factors, five belonged to the Resources category, two to the Entrepreneurial Team category and one to the Market and Opportunity category.

## 2.4.3 Eleven heterogeneous success factors

The 11 heterogeneous success factors that were found by Song et al. (2008) are presented below in the same manner;

- 9) Internationalization (M&O) = *'Extent to which a firm is involved in cross-border activities'*
- 10) Low-Cost Strategy (M&O) = *'Extent to which a firm uses cost advantages as a source of competitive advantage'*



- 11) Market Growth Rate (M&O) = *'Extent to which average firm sales in the industry increase'*
- 12) Marketing Intensity (M&O) = *'Extent to which a firm is pursuing a strategy based on unique marketing effort'*
- 13) Product Innovation (M&O) = *'Degree to which new ventures develop and introduce new products or services'*
- 14) Firm Size (R) = *'Number of the employees in the firm'*
- 15) Firm Type (R) = *'The type of a firm's ownership (corporate ventures or independent ventures)'*
- 16) Non-governmental Financial Support (R) = *'Financial sponsorship from commercial institutes'*
- 17) R&D Alliances (R) = *'The firm's use of R&D cooperative arrangements; for NTVs they also correspond to horizontal alliances'*
- 18) R&D Investment (R) = *'Intensity of the firm's investment in internal R&D activities'*
- 19) University Partnerships (R) = *'The firm's use of cooperative arrangement with universities'*

The effect of three out of the eleven heterogeneous factors on the success of an NTV depended on the situation. For the factor firm type, this meant it depended on the measurement method of success. This factor had a positive relation to the sales of NTVs, but a non-significant relationship to NTVs profit. For the factor product innovation, this meant it depended on the origin of the NTV, as independent ventures correlated negatively with success, while firms with a mixed origin had a positive relationship with success. For the factor R&D alliances, it also depended on the origin of the NTV, as independent ventures had a negative relation with the success of the NTV, while firms with a corporate and mixed origin had a positive relationship.

#### **2.4.4 Five non-significant success factors**

Lastly, the five non-significant success factors that were found by Song et al. (2008) are presented below in the same manner;

- 20) R&D experience (R) = *'Experience of the firm's management team in R&D'*

- 21) Prior start-up experience (ET) = *'Experience of the firm's management team in previous start-up situations'*
- 22) Environmental dynamism (M&O) = *'High pace of changes in the firm's external environment'*
- 23) Environmental heterogeneity (M&O) = *'Perceived diversity and complexity of the firm's external environment'*
- 24) Competition intensity (M&O) = *'Strength of interfirm competition within an industry'*

For these five non-significant success factors three belonged to the Market and Opportunity category and two to the Entrepreneurial Team category.

All in all, there was a pretty even distribution of the success factors over the categories. Most of the factors belonged in the Resource category, while the least belonged to the Entrepreneurial Team category. All factors in the Entrepreneurial Team category were homogeneous, with the exception of Prior Startup Experience. More than half of the factors in the Resources and Market and Opportunity category were heterogeneous.

The results of Song et al.'s (2008) study show that a mere eight out of the twenty-four factors are universal success factors for the success of an NTV. Five of the universal success factors are in the Resources category, two are in the Entrepreneurial Team category and one in the Market and Opportunity category. The heterogeneous factors had an even distribution over the Resources and Market and Opportunity categories. The other five were non-significant.

Song et al. (2008) plead that more research is necessary on the heterogeneous success factors and that more study should be done on possible additional universal success factors.

This chapter served as a foundation to further understand the definitions that are used in this thesis. The summary of the study by Song et al. (2008) is meant to give insight into the literature of success factors for NTVs in the period of 1993 to 2008. To answer RQ1 this research will critically check Song et al.'s (2008) findings and investigate if they are still relevant. To accomplish this, relevant literature published after 2008 will be collected and analyzed. After this, the findings that emerge will be tested in a survey to judge whether there is a match with theory and practice to answer RQ2. In the following chapter, the methodology for both will be discussed respectively..



## Chapter 3 -- Methodology

*This chapter aims to explain the chosen research methods. The connection with the preliminaries is explained, the overall research design is discussed, followed by the methodology of the Literary Review and the Survey. Both the methodology of the Literary Review and the Survey are presented in this chapter because they are connected, as explained in chapter 1.6. By the end of this chapter, it should also be clear what the relationship is between the different chapters and the overall research structure of this thesis.*

Firstly, section 3.1 explains how the literature discussed in the preliminaries is used in this thesis. This is necessary to understand the connection between that study and this thesis. Secondly, section 3.2 explains the structure of this research in consecutive steps. In this section, the relationship between the different chapters and the overall research structure of this thesis will also become clear. Thirdly, section 3.3 will discuss the methods used to research contemporary literature. And lastly, the methodology for the survey is discussed in section 3.4.

### 3.1 Understanding the connection with the research by Song et al. (2008)

This thesis looks at the 24 success factors that Song et al. (2008) found and critically examines if they still apply in this day and age. To do this it is important to see the difference and overlap of this thesis and the research conducted by Song et al. (2008). Table 2 shows this and the following paragraph elaborates upon the meaning of what is presented in the table.

	Song et al. (2008)	This thesis (2019)
Type of research	Quantitative meta-analysis to analyse the findings of 31 studies	Thematic analysis of 15 contemporary studies
Publishing dates of the literature used	1978 - 2004	> 2008
Success factors	<u>24 success factors</u> 8 universal 11 heterogeneous 5 non-significant	<u>4 success factors</u> 1 universal ( <b>confirmed</b> ) 1 heterogeneous ( <b>add insights</b> ) 1 non-significant ( <b>contradicted</b> ) 1 not mentioned ( <b>newfound</b> )
Validation	3 researchers	predetermined criteria

Table 2 - Comparing the research

Table 2 shows the different approach to the research that has been done and states some relevant facts to understand the connection between this thesis and the study by Song et al. (2008). This thesis was not meant to repeat the research done by Song et al. (2008) but rather to have a critical look at its findings. This study was conducted to find out whether the success factors found by Song et al. (2008) still apply, looking at the insights of contemporary literature.

Song et al. (2008) used a quantitative meta-analysis of 106 collected studies, which was reduced to 31 due to missing quantitative data in the other studies. The quantitative meta-analysis by

Song et al. (2008) analyzed the empirical findings from previous studies. The researchers applied statistical procedures that are specifically designed to integrate the results of a set of empirical studies. To do a study that massive was not feasible for a master thesis. Therefore a thematic analysis was done that used the same search terms and themes as research of Song et al. (2008). Thematic analysis is a method of analyzing qualitative data by examining the data to identify common themes, topic or patterns of meaning that come up repeatedly (Braun & Clarke, 2006).

The research by Song et al. (2008) used studies from 1978 to 2004, while in this thesis practically all the literature used to back up the success factors is published after 2008. There were two studies that partially used pre-2008 literature and were, therefore, debatable section 3.3.1. elaborates on this. It is interesting to see if the digital revolution that took place has changed the contemporary findings on the topic of success factors for NTVs.

Song et al. (2008) produced 24 success factors; 8 universal, 11 heterogenous and 5 non-significant. This thesis found four success factors with enough evidence in contemporary studies providing solid support. Three of the four success factors that have been found by this thesis respectively confirm, complement and contradict the findings by Song et al. (2008). And as shown in the table, this thesis presents one newfound success factor that has not been mentioned in the 2008 study at all.

The last comparison is the validation of the research. Song et al. (2008) used three researchers that checked each other and in some cases independently sorted lists. This thesis used predetermined criteria. The criteria can be found in section 3.3.3.

### 3.2 Overall Research design

The research done for this thesis is divided into two main parts, each part answering a Research Question (RQ). This section explains for each step what is happening and how it relates to the bigger picture of the research. In Figure 2 the steps are presented as visual support of this research's structure. Below the figure, each step and part is explained.

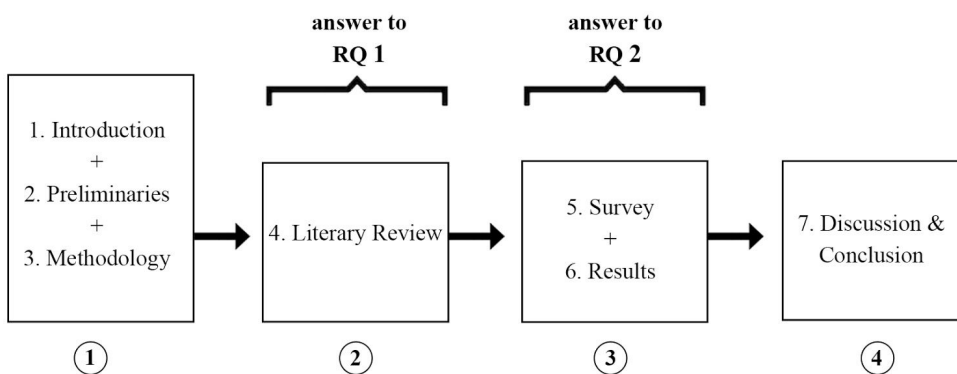


Figure 2 - Research structure

To understand figure 2 and thus the design and structure of this research each of the four steps is explained below. The main research of this thesis is divided into two parts: The Literary Review and the Survey, each answering a research question;

1. The first step is laying a foundation for the Literary Review, so the first research question can be answered. This is done by first giving insights into the research area of this research in the

introduction, followed by introducing topics as NTVs and technology entrepreneurship in the preliminaries. In the chapter of the preliminaries, the fundamental research by Song et al. (2008) is also presented, stating the key findings of the research, namely the 24 success factors that will be examined in the Literary Review. Lastly, this chapter, the methodology explains the research structure and design for the overall thesis, the first part of this research, namely the Literary Review and the second part of this research, namely the Survey.

2. The second step is the Literary Review, the first part of the main research of this thesis. The aim of the Literary Review is to answer the first RQ; ' *What updates can be made to the conceptual model of success factors for New Tech Ventures to make it more contemporary?* The Literary Review will present a number of success factors which showed the clearest and strong evidence in contemporary literature. The methodological approach of reviewing the literature is discussed in section 3.3.
3. After the Literary Review is conducted the most interesting contemporary success factors are used in the third step. Here the second part of the main research begins with the Survey. The survey gathers the data to answer the second RQ. The methodological approach of the survey can be found in section 3.4. The most interesting findings of the results of the survey are then presented, answering the second RQ; ' *To what extent is there a fit with the (updated) conceptual model of success factors and New Tech Ventures in practice?*'
4. Finally, in the fourth and last step, the thesis will present the overall conclusion of the thesis. After this, the practical recommendations are presented and the key findings are elaborated upon. Chapter 7 will conclude with the limitations of this research and makes a suggestion for future research.

### **3.3 Literary Review Methodology**

The Literary Review was conducted to see if contemporary literature would confirm, contradict or complement the success factors found in the research of Song et al. (2008). In section 3.3.1 to 3.3.4 the methods used to review and analyse the contemporary literature will be discussed.

#### **3.3.1 Collect, evaluate and select literature**

To find the success factors in contemporary literature two criteria had to be met by the studies when collecting them:

- 1) the studies had to be post-2008 (and pre-2020)
- 2) the studies had to regard NTVs

The first criterion was to make sure it regarded contemporary literature. This was done by using the filter options when searching for the literature. The second criterion was met by searching with a variety of keywords, to make sure it regarded NTVs. Combinations of the keywords *young*, *new* and *adolescent* and *company*, *venture* and *business* were used to find relevant literature. These keywords were also used in the 2008 study by Song et al.

Practically all literature met these requirements. However, there were two debatable studies. One study only partially used pre-2008 literature to substantiate the motivation behind the success

factor. This study was included nonetheless, as in this study the researchers mention further contemporary prove to back up the legitimacy of their claims. The other study was debatable because it did not explicitly mention the positive effect the success factor has was specifically for NTVs. In spite of that, the study was included because NTVs were mentioned among the possible ventures that could benefit from implementing the success factor.

### **3.3.2 Finding connections and themes**

After this, the relationships between the found literature were identified. In the selected literature the key findings and arguments were highlighted, to make identifying common ground between the studies easier. This way there was a clear overview of the success factors mentioned in the different studies, the effect the success factor had on the NTV and the argument behind it. A thematic analysis was used, categorising the recurring success factors together.

### **3.3.3 Criteria for picking the success factors**

To answer the first RQ, contemporary literature was collected, evaluated and selected. After this the thematic analysis was conducted. This presented a list of possible contemporary success factors and the number of studies stating the positive effect they have on the success of NTVs. The list showed an obvious gap between four of the success factors and the rest. This brought forth the last criterium:

- 3) the contemporary success factor had to have a minimum of nine studies that backed up the positive effect it has on the success of an NTV

This third criterium came forth from the clear gap between the number of studies that backed up the possible contemporary success factors. Four success factors had nine or more studies backing them up, the other success factors only had one or two and in a single case three.

### **3.3.4 Reliability and Validity of the Literary Review**

Terms such as ‘success’ and ‘new’ are open to multiple interpretations. To tackle this, a clear definition is given to these ambiguous terms at the beginning of chapter 2. Most studies were aligned with the predefined terms. Some studies, however, failed to explicitly define success. In these studies it nonetheless is contextually implied that the success is regarding the number of jobs generated and the growth of the company. Success is at least not defined differently in these studies.

Moreover, the list that emerged from the thematic analysis showed an obvious gap between four of the success factors and the rest. Because of this, small variations in the criteria will not give significantly different results.

It has to be noted however that it is impossible that all relevant studies have been read and collected for this. It is, however, doubtful that an important success factor is missed, as this would mean nine or more studies regarding a success factor in this research area were missed during this research.

## **3.4 Survey Methodology**

### **3.4.1 Pre-test**

After making an initial concept of the survey and revising it with the feedback of one of the supervisors a pre-test was conducted. Hale (2010) argues that by correctly pre-testing, the survey will produce better results. The researcher explains it helps accomplish a trustworthy format for your questions and organize the phrasing in a logical order.

For the pre-test, it was important to find assessors who had an academic background as well as entrepreneurial affinity so that they certainly possess the contextual knowledge to critically evaluate the initial concept. Two qualified candidates were kind enough to help. One is a professor of Large Scale Software Systems who also owns an NTV and the other a graduated master student who also owns an NTV. Both helped through a participating pre-test, meaning that the assessors are informed and aware that they are evaluating a survey rather than to ask the assessors to plainly fill out the survey.

The process of asking questions and giving answers back and forth helped to make understandable questions, a logical structure and formulation that the respondents would understand.

### **3.4.2 Structure and Design**

The survey began with a small introduction stating that the survey concerned questions about the success factors of New Technology Ventures. It was clearly mentioned that all data from the survey would be treated anonymously and confidentially. In addition the time the survey would approximately take was mentioned and that it is important for the research that the questions are filled in completely and truthfully.

The survey was made to answer the second research question. To see if there is a fit with contemporary literature and the NTVs in practice the following questions had to be answered in the survey:

1. Is this participant an NTV?
2. Is this NTV successful?
3. If present, does the NTV think the four success factors found in contemporary literature positively influenced their NTV?

The answers to these key questions were answered in several sub-questions. The first question could be checked manually from the general information the participants provided. The answer to the second question could also be derived from the information provided by the first two sections of the survey. Growth was a key metric that was measured objectively in the survey, as it could be calculated with the quantitative data the participants provided. The participants answered the third question after a definition of the success factor was presented. The survey is elaborated upon in chapter 5. The complete survey can be found in the appendix.



### 3.4.3 Data collection

To investigate whether the most interesting success factors that were found in the theory match with the NTVs in practise a digital survey was conducted. The survey was made with Google Forms and spread via e-mail. For this research the desired sample set consisted of participants with the criteria of being New Tech Ventures, meaning the ventures were a maximum of 8 years old and active in the technology sector. Ventures that had a high probability of meeting these requirements were contacted. Most NTVs were found through locating general online technology hubs, as well as academic technology hubs such as Mercator Launch of Nijmegen University. These hubs were located in the areas of Nijmegen, Delft, Eindhoven and Amsterdam, most of them linked to a university one way or another.

The survey was conducted in a period of 2,5 weeks in which 136 NTVs have been approached. Completed surveys were received from 48 respondents, rendering the total response rate to 35,6%. The respondents knew what to expect, as the mail sent to them stated what questions they could expect and that it would take about 10 minutes to finish the survey. If there was no response it turned out to be highly effective to phone the NTV and ask them about the mail, resulting in more respondents.

### 3.4.4 Analysis method of the survey data

With the survey, both quantitative and qualitative data were collected. The first part, to find out if the participant was a successful NTV, was analysed in the following manner:

- The qualitative data to find out if the participant was a tech venture was manually assessed. If the venture of the participant was not explicitly linked to technology, the sample was removed
- The quantitative data to find out if the participants met the age limit of eight years was a static number the participants had to give. All companies that were more than eight years active were removed.
- The participants had to answer how many people they founded the company and how many people work there now. To find out the growth in jobs generated, the two were subtracted.
- To find out the growth in number of customers or clients the participants had to agree or disagree on a Likert scale. This gives the answer to growth in clientage.

The second part of the survey collected data on contemporary success factors. This part was analysed in the following manner:

- Per factor, the participants could answer whether the presented factor had a positive influence on the success of the NTV or not. The answer had to be selected from a 5-point Likert Scale. This data was bundled and put in graphs that best presented the reaction of the NTVs
- There were also blank boxes for the participants to further explain themselves. This qualitative data was evaluated through a thematic analysis to identify common themes.

### 3.4.5 Reliability and Validity of the Survey

The questions presented in the survey explain the outcome this thesis wants to research because:

- There is a pre-test on the questions by academic representatives of NTVs
- The definition of each success factor was clearly defined before answering questions about it, preventing any ambiguity in interpretation.
- A fixed structure is used to answer the questions in a logical order

The results of this research can be generalized to the target population the survey represents if there is a decent sample size. This is true for this research, with the exception of one success factor.

Contemporary literature namely only provides information specifically on one subject within the success factor. Because of this the subject, unfortunately, is underrepresented in the sample set of the survey. The subject is nevertheless present, so something can be said about it. Plus, the success factor itself is present in various subjects, so some general information can be extracted.

When the research is repeated under the same conditions, reproducing the same results cannot be guaranteed. Other participants could feel differently about subjects and produce different answers to the third question.

To improve the validity a larger team of experts should review the survey. The survey could also have been longer to collect more information. This could improve the results of the survey. It was not possible for this research, given the time and resources. In addition, it should be noted that the 48 participants are all living in the Netherlands and are almost all linked to the academic world as (former) students or academic staff. This is an important part of the results, as a different context could give different results.



## **Chapter 4 -- Literary review**

*The aim of this chapter is to answer the first research question; 'Looking at contemporary literature, what updates can be made to the conceptual model of success factors for New Tech Ventures?'*

*First, the four success factors with the clearest and strong evidence found by diving into the contemporary literature are presented. Each success factor begins with a small introduction explaining the link to this research, followed by the findings of contemporary literature, and ends with a small conclusion of that success factor. This will provide contemporary theoretically substantiated success factors which will be tested in the survey to see if they work in practice. After collecting relevant contemporary studies, categorising them with thematic analysis and filtering them by the criteria described in the methodology, four success factors were found.*

### **4.1 Four Success Factors are found**

It is interesting to see that of the success factors that were found, all factors have a different link with Song et al.'s research. This means that one factor is in line with the research of Song et al. (2008) and confirms it, one factor contradicts the findings, one reveals the moderator that influences the success factor and there is one newfound factor that is not mentioned by the 2008 research at all. The four factors are presented below.

### **4.2 Success Factor 1: Industry Experience**

This success factor is in line with the research by Song et al. (2008). Contemporary research confirms that the factor Industry Experience has a significant and positive effect on the success of NTVs. This may seem like a dull finding, however interestingly this is the only success factor that has strong and clear contemporary evidence out of the eight homogeneous (universal) success factors mentioned by Song et al. (2008). The seven other success factors are not convincingly found in contemporary literature with the methods used for this thesis. More contemporary research should be done on the other universal success factors presented by Song et al. (2008).

#### **4.2.1 Findings in contemporary literature on Industry Experience**

Rojas and Huergo (2016) researched the function of entrepreneurial features as the cause of commercial financial support for New Technology-Based Firms (NTBFs). They used a database that contained the characteristics of technology entrepreneurs. The findings from their study suggest that success is positively influenced by people with management experience, as they have better access to resources for the NTBF. Moreover, studies by Ganotakis (2012) and Vivarelli (2013) remark that founders that have professional expertise from a previous venture directly positively influence the success of NTBFs. Experience by founders in the same sector also contributes to this.

Ganotakis (2012) also indicates that experience in similar sector by members of the NTBF's team positively influence the success of the firms in the UK. The researcher argues that the entrepreneur is accountable for making critical decisions within the firm. To do this the entrepreneur has to examine the information at hand and use it to make the best decision. So entrepreneurial teams with same-sector experience will have the appropriate skills to make the best decisions based on their prior experience in the sector. This will ultimately positively define a firm's performance.

In line with this is Kim and Heshmati's (2010) research. Based on Feeser and Willard (1990) they argue that a team with management experience are capable of performing a market assessment which will give insight into the possible hazards and conveniences. This assessment will help make the best strategic choices in the firm's advantage. Because of this, the experience of the team can directly positively influence the success of a new firm. Kim and Heshmati (2010) argue that because of this the entrepreneurs have a shorter startup time to Initial Public Offering (IPO). This means that the presence of experience in the same field could make a new firm IPO sooner. Stating that the presence of experience makes a new firm IPO sooner is not directly related to the performance of the start-up. However, Financial Resources as well as Non-Governmental Financial Support, which are both enabled by a successful IPO of a company, are success factors stated by the research of Song et al. (2008). The indirect connection of the experienced entrepreneur having a shorter time to the IPO, gaining Non-Governmental Financial Support, and having secured their Financial Resources seems to positively reinforce three factors.

Evidence that prior industry experience has a positive relation to performance can also be found in literature that focuses on new ventures in general. For example, Preisendorfer et al. (2012) researched the chance of success for new business ventures. The researchers state that industry experience brings useful human capital to a firm. The network of relationships the entrepreneur has of people in the same industry enables him to function effectively in that particular playing field. This is another reason why entrepreneurs with industry experience in their playing field are more successful.

Another interesting study by Vliamos and Tzeremes (2012) was found. These researchers examined factors influencing the entrepreneurial process. Vliamos and Tzeremes (2012) examined the results of more than 150 surveys in a region in central Greece. The researchers identify and stress the importance of factors that are acquired over the years, like previous experience because through this you can achieve success. What is found in the questionnaire is in line with older literature confirming that specific factors and familiarity with the sector (Vivarelli, 1991) influences entrepreneurial activity because "a person working in an industry is more likely to identify a market gap" (O'farrell & Crouchley, 1984).

## **4.2.2 Conclusion on Industry Experience**

The literary foundation dating back to around 1997 as well as the contemporary research confirm Industry Experience to have a significant and positive effect on the success of NTVs. This is the only one out of the eighth homogeneous success factors found by Song et al. (2008). It seems that entrepreneurs with industry experience have greater access to resources, more appropriate skills to make the best decisions based on their prior experience in the sector, are more capable to perform a market assessment for possible threats and opportunities and therefore are more likely to identify a market gap. This will ultimately positively define a firm's performance. In addition, the presence of experience in the same field could make a new firm IPO sooner, which in turn will enable Non-Governmental Financial Support with which the venture secures Financial Resources to grow.

Finally, the network of relationships the entrepreneur has of people in the same industry seems to enable him to function effectively in that particular playing field. This network of relationships is why entrepreneurs with industry experience in their playing field are more successful.

### **4.3 Success Factor 2: Non-Governmental Financial Support**

This success factor was labelled as a heterogeneous success factor by Song et al. (2008) but was not further elaborated upon. The researchers mentioned further research was needed. This thesis sheds light on the success factor, as contemporary research shows that support, especially by Venture Capitalists, positively influences the success of the NTV. The next subsection elaborates in this statement.

#### **4.3.1 Findings in contemporary literature on Non-Governmental Financial Support**

The research by Kim and Heshmati (2010), mentioned earlier, states that venture capital (VC) can significantly affect the durability of a startup by providing capital through financial support. Receiving VC financial support indicates a performance milestone because this means that the firm has now gathered the means to ramp up operations. It made the firm ready for further growth, one of the common denominators of success.

Colombo et al. (2010) state that new and innovative ventures, such as NTVs have an important part in job creation and the advancement of new technologies. These ventures, however, have a hard time to get external financial resources. The absence of these external financial resources negatively influences the progress of these ventures. The researchers argue that it may even be threatening to the continuation of these ventures. They argue that external financial resources have an important advantageous effect on the success of the NTBFs.

Colombo et al. (2010) stress the significance VC financial support has on the progress of these ventures. This is substantiated by the fact that the people or instances who supply the VC financial support will help the chosen NTBF to grow. The researchers argue that it is important that the NTBF get financial support as soon as they are founded and in the period after that. Moreover, it is argued that VC financial support directly contributes value to the NTBF in the form of coaching. The NTBFs are given support in a wide variety of subjects the firms have to tackle. They argue that the firms lack this knowledge in the early stages and that that is why Non-Governmental Financial support is important for the NTBFs performance.

Bertoni et al. (2011) analyzed how the growth of an NTBF is influenced by VC financial support. To analyse this the researchers examined a dataset of more than five hundred NTBFs that was gathered over a period of 10 years. The study also used growth to measure the success of the firm. The results of the study show that VC financial support has a significant positive influence on NTBFs job creation and sales. This is attributed to the fact that VC financial support enables a huge growth in job creation for the NTBF directly after supplying the support. They estimate a job growth of more than one hundred percent in NTBFs with VC financial support versus the NTBFs that do not get the support. The growth of employment, sales and portfolio that the Non-Governmental Financial Support can bring about is massive evidence of its positive relation to the success of NTBFs.

Grilli and Murtinu (2014) researched the effect that independent venture capital (IVC) has on NTVs. The researchers specifically looked at the effect IVC had on sales job growth. They found that IVC

can positively affect the growth in sales of NTVs. The main reason for this is that IVC not only contributes capital, but also contributes more benefits like developing business ideas (Luukkonen et al., 2013).

Rojas and Huergo (2016) furthermore note that these types of ventures are mostly not externally financed, but are financed available capital of the founding team and loans. Hall and Lerner (2010) argue that another possibility could be to obtain VC financial support. By doing so the progress of the venture can be positively influenced, as VCs supply useful information about the area the venture is active in. VCs can provide the knowledge to supervise the venture in several ways which positively influences the success.

### **4.3.2 Conclusion on Non-Governmental Financial Support**

The success factor Non-Governmental Financial Support needed further research, the 2008 study by Song et al (2008) argued. Contemporary research indicates that the findings on Non-Governmental Financial Support are not about the success factor in general, but most specifically in the case of VC financial support. VC financial support is only one of many forms of Non-Governmental Financial Support but is most dominantly present in contemporary literature about this success factor. It seems that receiving VC financial support indicates a performance milestone because this means that the firm has now gathered the means to ramp up operations, making it ready for further growth. The absence of these external financial resources negatively influences the progress of a firm and may even threaten survival. External investors also seem to contribute value to the NTBF in the form of coaching. The NTBFs are given support by VCs in a wide variety of subjects. Finally, VC financial support enables a huge growth in job creation for the NTBF directly after supplying the support. This growth shows evidence of the positive influence it has to the success of NTVs.

## **4.4 Success Factor 3: Prior Start-up Experience**

This success factor was labelled as non-significant by Song et al.'s (2008) research, but evidence in contemporary literature suggests this is no longer the case. This is one of the most interesting findings of this research, as it directly contradicts the research by Song et al. (2008). Prior Start-up Experience as a success factor for NTVs seems to be relevant after all.

### **4.4.1 Findings in contemporary literature on Prior Start-up Experience**

Oghuvwu and Okuwhere (2018) researched the features of entrepreneurs and the effect they have on the success of a firm. The researchers argue that prior entrepreneurial experience is important for business performance. This because an experienced entrepreneur is very proactive when it comes to problem-solving and it also reduces the probability of encountering problems. Entrepreneurs with experience are found to be creative and tend to experiment with existing cases. Businesses with entrepreneurs who have gained experience before venturing into business have a sprout of growth. Following this assertion, the researchers recommend that aspiring and existing entrepreneurs acquire experience before embarking on new ventures.

Correspondingly, Gottschalk et al. (2014) investigated the connection between experience and the success of their firm using success stories of entrepreneurs. The findings from the study revealed that

prior start-up experience is a significant determinant of firm performance it gives the entrepreneur a collection of useful abilities and understanding that allows them to exploit opportunities.

Likewise, Wekesaat et al. (2016) argue the positive influence the experience of an entrepreneur can have on the success of a venture. They support this by explaining that ventures give evidence of better achievements when it is operated by an experienced entrepreneur.

Moreover, Park, Park and Kim (2017) argue that the prior experience in business of the people in charge of a venture positively influences the success. The study clarified that entrepreneurs who have experienced failure in their previous ventures tend to perform better, given the lessons they draw from their failures. This way they become more competent in running their businesses. Consistent with this view is the study of Kabir et al. (2017) that posits that entrepreneurial competencies which are acquired from experience are positively associated with business performance.

In addition, Sefiani (2013) researched more than three hundred fifty Small and Medium Enterprises (SMEs) working in the industry and new technologies through a survey. The researchers' study confirms the previous conclusion: the prior experience of the people in charge of SMEs has an important effect on the success of an SME. The study shows that prior experience had a clear connection with the positive influence it has on SMEs. It had a stronger connection with successful SMEs than with the unsuccessful ones. The reason for this is that the people in charge of these SMEs accumulate knowledge through the decisions and their outcomes every day. Sefiani (2013) acknowledges these are difficult subjects and that more research should be done that delved deeper into the subject matter.

#### **4.4.2 Conclusion on Prior Start-up Experience**

Contemporary literature directly contradicts the research by Song et al. (2008), which makes this an interesting finding. Song et al. (2008) state that Prior Start-up Experience seems to be non-significant as a success factor for NTVs. Contemporary literature, however, substantiates that it is a significant determinant of firm performance. Entrepreneurs with Prior Start-up Experience tend to be proactive when it comes to problem-solving, creative and experiment with existing cases. The entrepreneur with Prior Start-up Experience has a collection of useful abilities and understanding that allows them to exploit opportunities, experienced failure in their previous ventures from which they draw lessons and acquire competencies. These all seem to help the entrepreneur record better performance.

#### **4.5 Success Factor 4: Academic Background**

This success factor is interestingly enough not mentioned by Song et al's (2008) research at all. It is a completely newfound success factor with strong evidence that it positively influences the success of NTVs. Recall that his thesis evaluated success factors for NTVs through the approach of the systematic literature review where post-2008 studies regarding NTVs were evaluated. Because attention was paid to spot new potential factors in contemporary studies that could be interesting to add to the research, this success factor emerged and will be discussed in the next subsection.



### **4.5.1 Findings in contemporary literature on Academic Background**

Colombo and Grilli's (2010) argue that ventures that are founded by people who have an academic education in the economic or management fields directly positively influence the growth of the firm. This is because people who have an academic education in the economic or management fields can use their unique abilities related to the understanding and skill of a founder. This will contribute to a growth that is greater than firms who do not have academic background present in their team. However, interestingly, Academic Status or Background is not mentioned at all by Song et al. (2008).

Oghuvwu and Okuwhere (2018) researched the effect of entrepreneurial characteristics on firm performance. Their research indicates that an entrepreneur's demographics, such as educational background, enhance the entrepreneurial competencies (Piperopoulos & Dimov, 2015; Malach & Kristova, 2017; Subrahmanya, 2018) to aid a successful venture. Entrepreneurs who do not have the mental competency through educational background may be faced with the inadequacies of running a new venture. The shortcoming of such an entrepreneur will be ranging from family pressure, poor preparation, lack of expertise and funding. The study explains that the academic competences of an entrepreneur positively influences the success of a venture because educated entrepreneurs are furnished with sufficient expertise and competencies needed to perform and obtain resources.

Hence, entrepreneurs who are well educated tend to perform better than the lesser educated entrepreneurs. Also, Entrepreneurs with higher education tend to create more creative solutions when faced with business challenges.

Similarly, Machirori and Fatoki (2013) ascertained the effect of entrepreneurs' educational level on firm performance. The study concludes that entrepreneurs' educational level affects firm performance. The researchers address that it is more likely that entrepreneurs with a higher academic background will network than entrepreneurs with lower academic background. The entrepreneurs with a higher education possess the ability to see the advantage of having a network.

Consistent with the earlier studies, Tu and Diem (2016) investigate the effect an entrepreneur's educational background has on the success of the firm. The findings from the study revealed that entrepreneurial demographic characteristics such as academic background have a positive influence on business survival. Specifically, the studies showed that firms with educated entrepreneurs performed better. The researchers argue this might be due to the fact that individual characteristics. Addition, to managers related specific values, attitude and strategic decision making could also ultimately positively influences firm performance.

Preisendorfer et al. (2012), also mentioned earlier, find that the human capital the founder of a firm has positively influences the changes of success. Entrepreneurs that have an academic background are more successful than the ones who do not. The study states that academic background especially improves the survival chances of the venture.

In addition, Ganotakis (2012) argues that it seems that a formal academic background in business has a positive effect on the success of a venture. This is because the academic background in business has the competence to recognize suitable markets for the firm and it provides the capacity to manage a firm. This contributes significantly to the performance of a firm.

## 4.5.2 Conclusion on Academic Background

Contemporary literature revealed a success factor not mentioned by Song et al. (2008). Academic background turns out to be a success factor with strong evidence that it positively influences the success of NTVs. It seems that educated entrepreneurs are furnished with sufficient expertise and competencies needed to perform and obtain resources. Educated entrepreneurs also find more creative solutions when faced with business challenges and are likely to network more because they know the benefits it brings. It provides entrepreneurs with the capacity to manage a firm and the competence to recognize suitable markets. Finally, people who have an academic education in the economic or management fields can use their unique abilities related to the understanding and skill of a founder. This will contribute to a growth that is greater than firms who do not have academic background present in their team.

## 4.6 The Answer to Research Question 1

This chapter answers the first research question;

*“Looking at contemporary literature, what updates can be made to the conceptual model of success factors for New Tech Ventures?”*

To answer this question dozens of studies have been collected, evaluated and selected. Recall the criteria that the studies had to be post-2008 to be considered contemporary and that they had to concern NTVs. A thematic analysis was used to categorise these studies per success factor. Here it became clear that there was a big gap between four success factors and the rest. The four chosen success factors had considerably more studies that confirmed their positive influence on the success of NTVs. The gap was nine-plus studies for the four success factors that were chosen versus around one or two and in one case three. After analysing these studies, the most interesting findings that update the conceptual model success factors for New Tech Ventures are;

1. In **confirmation** with the study by Song et al. (2008), contemporary research confirms that Industry Experience has a significant and positive effect on the success of NTVs.
2. In **contradiction** to the study by Song et al. (2008), contemporary research shows that Prior Start-up Experience is a significant determinant of firm performance.
3. In **addition** to the study by Song et al. (2008), contemporary research shows that Non-Governmental Financial Support has a positive influence on the success of an NTV, especially support by Venture Capitalists.
4. A **new found** success factor revealed by contemporary research, not mentioned in the study by Song et al. (2008), is Academic Background.

The answers of the first research question provide the contemporary success factors which will be tested in the survey. The next chapter will explain the survey.



## Chapter 5 -- Survey

The aim of the survey is to investigate if the most interesting success factors that were found in the theory match with the practice. To be able to investigate this, both quantitative and qualitative research was done in the form of an online survey. This chapter will clarify the survey that was conducted. It helps to briefly examine the survey in the appendix before reading this chapter to get a better understanding. The survey provides data that is presented in the results. The most interesting results are analysed and interpreted in the discussion and conclusion.

### 5.1 Part one - general information about the NTVs

In the first part of the survey general information about the NTV was collected. In this part, the respondents had to tell what their main activities are, how many years they are active, with how many people they founded the company and how many people there work full time now. This part collected the data to check whether it was actually in the technology sector, the age to check if it qualified as a *new* tech venture and the change in full-time employees from founding to now to measure the growth of the company and the number of jobs generated. These questions all concerned quantitative data and were mandatory to answers or the respondent could not proceed. At the end of this part, a text box is presented to give room for potential further explanation or elaboration to one or more of these questions by the respondent, generating qualitative data.

### 5.2 Part two - defining success for an NTV

The aim of the second part was to determine whether the respondent was successful or not. First qualitative data was collected, asking the respondents what they think success is and if they are successful with their company. This is meant to give more insight into the matter if the subjective definition of the entrepreneurs is in line with the objective definition defined by the growth of the company and the number of jobs generated. After this, the respondent had to select the sector in which they operate, Business to Business (B2B), Business to Customer (B2C) or both. This is the result of pre-tests because that was where it came to light that when measuring the growth of the company there is a significant difference in the B2B and B2C market with respect to having clients or customers. A B2C oriented business could e.g. grow their platform client base with tremendous numbers which indicate a strong growth. On the other hand, B2B could e.g. grow from one client to five clients in a couple of years, which doesn't seem like much but is significant in the B2B sector as having one good client here could mean prosperous business.

After this, the respondents were asked if their NTV has significant growth in clients or customer since the start of the company. A selection could be made from a 5-point Likert scale which had a range from 'strongly disagree', 'disagree', 'agree' to 'strongly agree', with the option to answer 'this doesn't apply' if B2B or B2C were not applicable. The conscious choice for a Likert scale without a neutral answer was made to force the respondent to consider if they agree or didn't agree with the statement. Here the respondent also had to place its financial health on this scale, as a controlling factor for success and the last question.

For the last question, the respondent had to compare this year's profit to last year's and has to choose from a 5-point Likert scale ranging from 'the profit declined significantly' to 'the profit grew

significantly'. This time there was a neutral option 'the profit stayed the same' in the middle, as this can be the case. Finally, there was some room for potential further explanation or elaboration to one or more of these questions.

### **5.3 Part three - success factor motivation and fit with NTVs**

The third and last part aims to extract whether the entrepreneur thinks the success factors have a positive effect on the success of their venture or not. There is also room to explain the reason behind the answer. The four success factors that were found, Prior Start-up Experience, Non-Governmental Financial Support and Academic Background were presented to the respondent. The factor Prior Industry Experience was left out of consideration as both the foundation literature and the contemporary literature showed significant evidence that it should be considered a valid success factor for NTVs thus, it was not worth including this in the survey as it would only make the survey longer. This would increase the risk of getting fewer respondents, hence this design choice.

Each success factor was presented with a short description to clarify the definition of the factor for the respondent. In addition, each success factor contained the straight forward question asking if the factor had a positive effect on the success of the NTV. Again a selection could be made here from a 5-point Likert scale which had a range from 'strongly disagree', 'disagree', 'agree' to 'strongly agree', with the option to answer 'this doesn't apply' in the case, there was no Prior Start-Up Experience, Non-Governmental Financial Support or Academic Background present in the team. For each success factor, this quantitative data was combined with a qualitative closing question of 'why' this did or did not positively influence the success of the company. For each question, one or two questions were added to gather additional quantitative information to better place the venture in context and to see if there are similarities with the literature. This combination of quantitative and qualitative data gathering is the perfect cocktail for answering the research questions, as it answers whether the success factor is present or not, whether it positively influenced the company or not and why it positively influenced the company or not.

This chapter explained how the data was collected and what choices were made to provide the right data to answer RQ2. The next chapter will present the most interesting and relevant outcomes.

## 6 -- Survey Results

*This chapter aims to present the most interesting and relevant data collected by the survey. Here the data is presented, which is interpreted in the next chapter to answer the second research question. First, some of the demographic information is presented, which is followed by relevant data regarding the success factors that were tested.*

### 6.1 General

	N	Percentage
<b>Years active</b>		
0-2	12	25%
2-4	21	43,8%
4-6	9	18,8%
6-8	5	10,4%
8+	1	0,02%
<b>Job created</b>		
decreased	1	0,02%
static	9	18,8%
increased	38	79,2%
<b>Growing clientage</b>		
no	7	14,6%
yes	41	85,4%

Table 4 - Demographics

Table 4 shows the demographics of the companies that participated. The first two parts of the survey provide this data. The table shows that most companies (N=21) that participated are relatively young. The lion's share of the companies (N=38) has more people now than when they were founded. Growth in customers or clients by the companies is also strongly present (N=41).

There are 8 companies that do not meet the predetermined requirements because they are either too old (N=1) or had decreasing or static job creation in combination with no growth in clients or customers (N=5). Table 5 shows the five companies that did not meet the requirements, either because they are too old, don't have growth or have not created jobs. So, from the 48 participating companies 43 are to be labelled as successful NTVs. These are the 43 NTVs discussed in this chapter. This is not an exceptionally large set, but it was definitely reasonable enough to draw information from. The set turned out to be a great sample as more than 80% of the NTVs that participated have a similar view of success as defined in this thesis. The other NTVs described success not explicitly as defined this thesis, but they did meet the requirements to be labelled as successful

#	Years active	Job created	Growing clientage
1	0-2	static	no
2	0-2	static	no
3	2-4	static	no
4	2-4	decreased	yes
5	8+	increased	yes

Table 5 - Explanation of companies that did not meet the requirements

<b>Main themes</b>	<b>Examples</b>	<b>N</b>
Financial growth	<i>“To annually create recurring financial growth”</i>	39
Growth of clientage	<i>“...growing the users that use our service and keeping them happy”</i>	35
Growth in jobs created	<i>“...which allows us to hire more people to gain more of the market and create a better product”</i>	23
Stable company	<i>“To have a stable company that will provide for everyone working for it”</i>	10
Having fun	<i>“...but it is also about having fun with your employees and customers”</i>	8
Deliver on promises	<i>“Delivering on the promises we make to our clients”</i>	2

Table 6 - Coding of open question of what success is according to the participants

Table 6 shows that the vast majority (N=39) of participants mentioned financial growth as the definition of success. In addition growth in clientage (N=35) and growth in jobs created (N=23) are mentioned, mostly together. The definition of success the participation NTVs have is in line with the definition used in this thesis.

In the following section presents the most interesting results of the last part of the survey. Note that the success factor Industry Experience is not tested and thus not included in the results, as mentioned in section 5.3.

## **6.2 Success factors**

### **6.2.1 Prior Start-up Experience**

The first success factor that was tested in the survey was Prior Start-up Experience. Figure 1 shows that little less than one third (N=14) of the respondents did not have Prior Start-up Experience present in their NTV versus two thirds (N=29) that have. Most (N=19) of the NTVs had between 1% and 40% of their team consisting of people with Prior Start-up Experience.

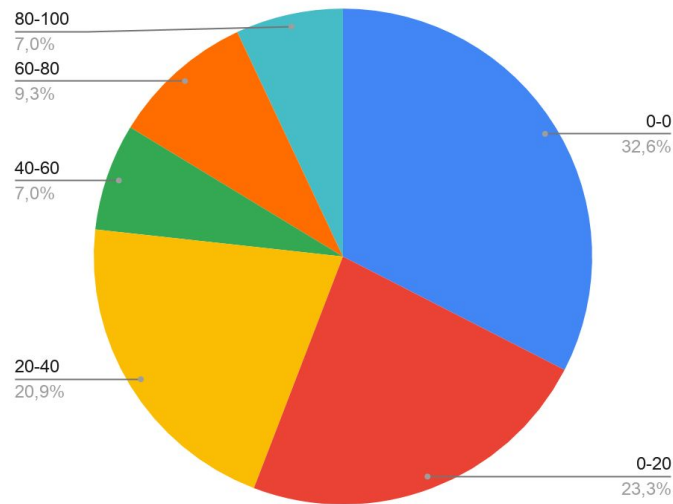


Figure 1 - Percentage of the firm's team with prior start-up experience

The two thirds that have Prior Start-up Experience present in their team all (100%) agree or strongly agree that Prior Start-up Experience had a positive effect on the success of their firm (figure 2). The vast majority of more than 88% (N=23) even strongly agrees on this fact.

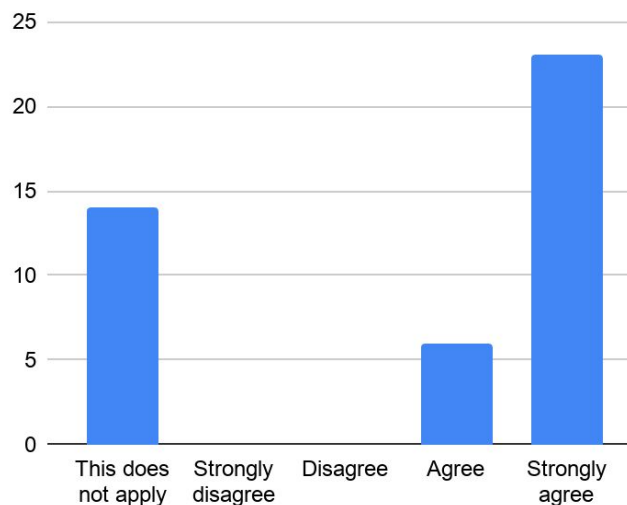


Figure 2 - Prior Star-tup Experience had a positive effect on the success of the firm

The contemporary literature presented the following themes as motivation for Prior Start-up Experience to be of a positive influence to NTVs;

- Entrepreneurs with Prior Start-up Experience tend to be proactive when it comes to problem-solving, creative and experiment with existing cases.
- The entrepreneur with Prior Start-up Experience has a repertoire of skills and knowledge to identify and exploit opportunities and experienced failure in their previous ventures from which they draw lessons and acquire competencies.



Main themes	Examples	N
Knowing the tricks of the trade	<i>“One of the founders had already founded a company once...which left more time for other tasks”</i>	9
Smoother start	<i>“We had a smooth(er) start because of it”</i>	3

Table 7 - Coding of main themes in the further explanation on Prior Start-up Experience

The main motivations given by the respondents are presented in table 7. The employees with experience knew the tricks of the trade (N=9), which paved a way for the companies to grow faster as they could focus on other tasks. This is in line with the contemporary literature, as knowing the tricks of the trade overlaps with the majority of the motivation given by contemporary literature. It was also mentioned that Prior Start-up Experience made it less of a pain or easier to start the company up (N=3). This theme is not merged with 'Knowing the tricks of the trade' because it is not implied that the smooth start is a result of knowing the tricks of the trade. Some motivations are not mentioned however. The entrepreneurs with Prior Start-up Experience being more creative and proactive problem solvers are not mentioned by the participants.

## 6.2.2 Non-Governmental Financial Support

The second success factor that was tested in the survey was Non-Governmental Financial Support. Figure 3 shows that the majority (N=15) did not receive support at all. From the NTVs that did receive financial support, more than half (51,2%) received between €0 and €10.000. Only some (N=6) of the participants received €25.000 or more. All of the NTVs that got €25.000 or more received it from a Venture Capitalist (figure 4).

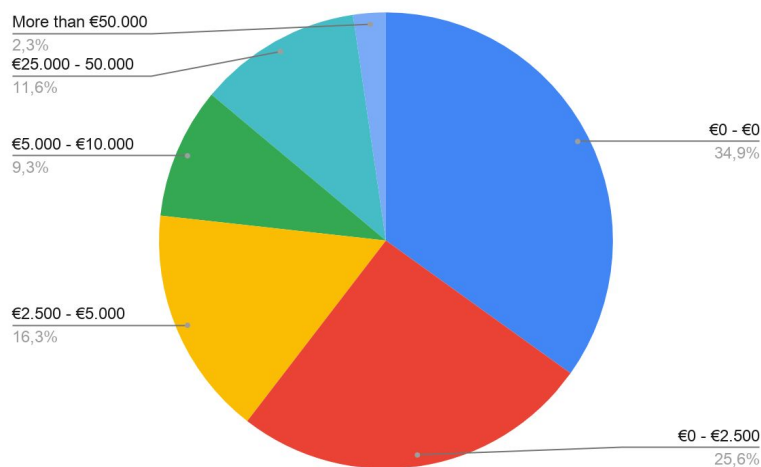


Figure 3 - Amount of Non-Governmental Financial Support the NTVs received

Figure 4 shows that family is the most popular (26,9%) form of Non-Governmental Financial Support followed by banks and VCs (23%) and loans from banks (15,4%). The participants that chose 'different' on the survey (N=8) had a different origin for their Non-Governmental Financial Support. Here widespread answers were given consisting of awards, donations, university support and Kickstarter campaigns.

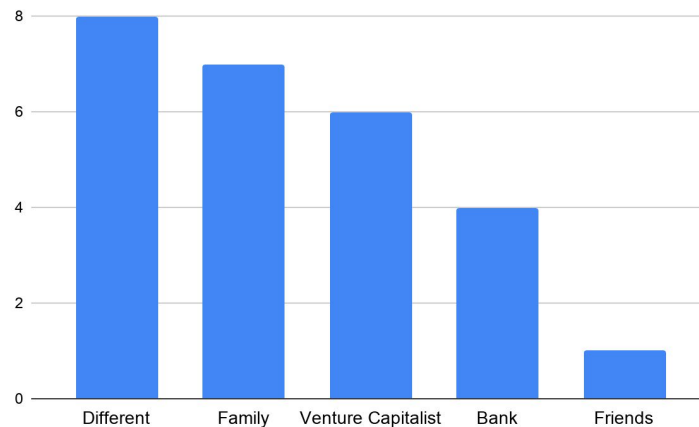


Figure 4 - Origin of Non-Governmental Financial Support

Figure 5 shows that for the NTVs that received Non-Governmental Financial Support more than 92% agrees or strongly agrees that it has a positive influence on the success of their company. From the six NTVs that received Non-Governmental Financial Support from VCs, one third (N=2) disagrees and two thirds (N=4) agree on the positive effect. The NTVs that received Non-Governmental Financial Support from VCs are the only ones who chose ‘disagree’.

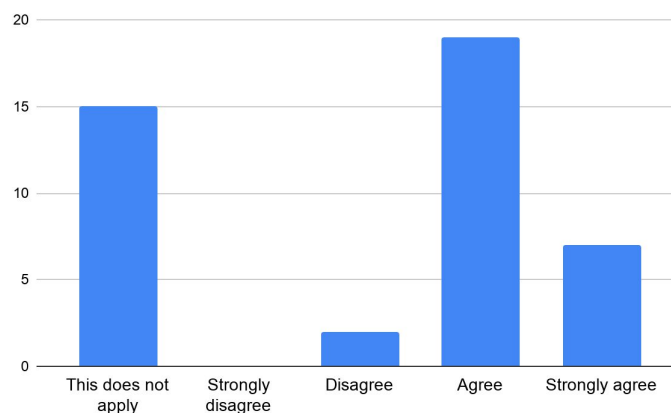


Figure 5 - Non-Governmental Financial Support had a positive effect on the success of the firm

The contemporary literature presented the following themes as motivation for Non-Governmental Financial Support to be of a positive influence to the success of NTVs;

- Receiving VC financial support means that the firm has now gathered the means to ramp up operations, making it ready for further growth.
- The lack of means hurts the development of a firm and may even threaten its survival.
- External investors seem to directly add value to the firm by coaching
- VC investments boost employment growth of the firm. This growth shows evidence of the positive influence it has to the success of NTVs.

<b>Main themes</b>	<b>Examples</b>	<b>N</b>
Means are helpful	<i>“With the money we received, we could buy the equipment we needed to start the company”</i>	11
Growth	<i>“It enables us to expand our user base”</i>	5
Interference	<i>“...because they (VC) own stake they get to participate in the decision making of the direction you go as a company...”</i>	2
Coaching	<i>“...and we learned a lot from the people who helped us”</i>	1

Table 8 - Coding of main themes in the further explanation on Non-Governmental Financial Support

The main motivations given by the respondents are presented in table 8. Most (N=11) of the NTVs that received Non-Governmental Financial Support tell us that the support, or means, given to them were helpful to realize a certain goal. Various goals are mentioned such as buying equipment to start, money for advertising and means to better their product. In addition, some (N=5) mention the financial support to be positive for the growth of their user base or company in general. This is in line with contemporary literature. In the literature, there is a focus on the VC and their complementary aspects these instances could bring to NTVs. However, in practice, there are only some (N=6) cases of VCs providing capital from which two represent the negative theme of interference in Table 8. One of the other NTVs backed by a VC did, however, mention the positive effect the coaching the VC had which is in line with the contemporary literature. Growth in employment was not mentioned as motivation by the participants.

### **6.2.3 Academic Background**

The third success factor that was tested in the survey was Academic Background. Figure 8 shows that the overwhelming majority (93%) of the NTVs have one or more employees with an Academic Background. Almost 70% (N=30) of NTVs has a team that consists of 80% to 100% of employees with an Academic Background. However, because the NTVs that were contacted were found on digital and physical places that served as nerve centres for companies with academic ties, most were ventures started by students during or after their academic endeavours on universities across the Netherlands. That is why the sample is biased, as NTVs that are not linked to academia were not equally likely to have been selected.

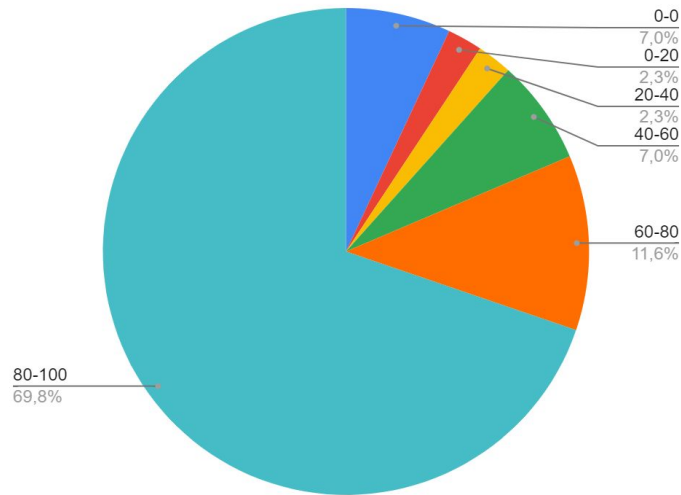


Figure 6 - Percentage of the the firm's team with an Academic Background

Figure 7 shows the field the members of the NTVs studied. Most (N=34) had one or more people in their team that had a technical background. The second-largest (N=24) field of study that is represented is business. The participants that chose 'different' on the survey (N=22) had a different field of study as Academic Background. Here widespread answers were given consisting of fields like physics, psychology, sociology, chemistry and (neuro)biology.

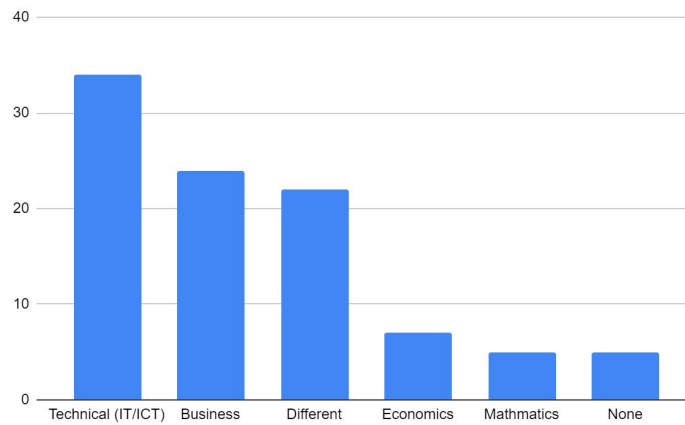


Figure 7 - Fields of study

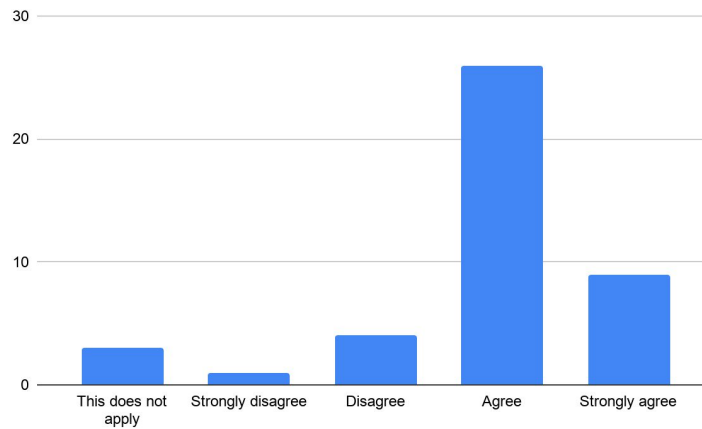


Figure 8 - The Academic Background had a positive effect on the success of the firm

Figure 8 shows that the majority (N=35) of more than 87% agrees or strongly agrees with Academic Background having a positive effect on the success of their NTV. There are some (N=4) that disagree and one (N=1) that strongly disagrees. Note that for this success factor there are the most (12,5%) disagreements relative to the other two factors.

The contemporary literature presented the following themes as motivation for Academic Background to be of a positive influence to the success of NTVs;

- Educated entrepreneurs have sufficient expertise and competencies needed to perform and obtain resources.
- Educated entrepreneurs find more creative solutions when faced with business challenges and are likely to network more because they know the benefits it brings.
- It provides entrepreneurs with the ability to manage a firm and identify appropriate markets for the product or service.

Main themes	Examples	N
Managing skills	<i>“Strongly agree, because it taught me to deal with large projects”</i>	15
Creative solutions	<i>“With academic thinking, we try to solve problems in the most efficient way”</i>	8
Self Taught	<i>“The skills we use in our company are self-taught”</i>	2
Waste of time	<i>“My study was a waste of my time”</i>	1

Table 9 - Coding of main themes in the further explanation on Academic Background

The main motivations given by the respondents are presented in table 9. What is mentioned most (N=15) is that the presence of Academic Background helps with managing various task like coordinating projects, making schedules, meet deadlines and managing in general. This is equally present among all studies, there is no strong correlation with one or more study in particular. Also, some (N=8) participants argue that the Academic Background helped with solving problems and

tackling challenges in a methodical manner. Of the few (N=4) that disagreed, two gave a further explanation that their skills were self-taught or that their Academic Background had nothing to do with the practices in their NTV. Among these studies were medicine, physics and law. The one (N=1) participant who strongly disagreed argues his study was a waste of time. This participant studied Social Sciences. Not mentioned as motivation by the participants, are that with Academic Background one could obtain more resources, would network more because they know the benefits it brings and that they could identify appropriate markets for the product or service.

### 6.3 Key findings of the results of the survey

The most interesting findings from this survey are presented here. Per success factor, this section first presents the general fit per success factor. This fit is the average opinion the NTVs have towards success factor. Next, the overlap with contemporary literature and the motivation given by the NTVs in practice is discussed. Lastly, the key insights that were obtained are presented.

#### 6.3.1 Prior Start-up Experience

General fit	There is a great general fit of the literature with practice because <b>literally 100%</b> of the NTVs that have Prior Start-up Experience present in their company <b>agreed</b> that the Prior Start-up Experience has a positive effect on the success of their NTV.
Overlap	The NTVs motivate their choice by saying that with having Prior Start-up Experience one knows the <b>tricks of the trade</b> . This positively influences the success of the NTV and overlaps with the majority of the motivation given by contemporary literature.
Insights	In addition to this the some of the NTVs argue it gave them a <b>smoother start</b> , which is an addition to the motivations given in contemporary literature.

#### 6.3.2 Non-Governmental Financial Support

General fit	With Non-Governmental Financial Support there a great general fit of the literature with practice. <b>Almost 93%</b> of the NTVs that received Non-Governmental Financial Support for their company <b>agreed</b> that it has a positive effect on the success of their NTV.
Overlap	The NTVs motivate their choice by saying that the <b>means are helpful and enable growth</b> . This positively influences the success of the NTV and overlaps with the motivation given by contemporary literature.
Insights	Contemporary literature emphasizes the positive influence that especially VCs provide, praising the value the VCs give to the NTV. <b>In practice this is only partially supported and even partially contradicted</b> . In fact, the only NTVs that disagreed with the positive influence of Non-Governmental Financial Support were those who received support from VC's

### 6.3.3 Academic background

General fit	The survey shows that there is a good general fit of the literature with practice; <b>87,5% agrees</b> and <b>12,5% disagrees</b> with Academic Background having a positive effect on the success of their NTV.
Overlap	The results show that there is a partial overlap in themes. There is a fit with the themes of <b>finding creative solutions</b> and <b>being better able to manage a firm</b> .
Insights	An important note is that the results clearly show that the <b>sample is biased</b> , as almost 70% of NTVs had a team that consists of 80% to 100% of employees with an Academic Background.

## 7 -- Discussion and Conclusion

*This chapter aims to discuss the most interesting finding and draw conclusions for the research that was conducted. The results will be interpreted, the limitations and further research will be discussed and an overall conclusion will be presented.*

### 7.1 Conclusion and Recommendations

#### 7.1.1 Summary of the work

This research was conducted because the rate of NTVs that survive the first couple of years is extremely low. It is important to identify what factors lead to the success of New Technology Ventures. The study by Song et al. (2008) served as a starting point for this thesis. However, because the study comes from 2008, the relevance of it can be questioned. For this reason, the results produced by Song et al. (2008) were critically examined and confirmed or refuted based on the findings of this research. The first goal of this thesis was to update the existing 2008 study with contemporary literature to find success factors for New Technology Ventures. The first research question was formulated as followed:

*1) Looking at contemporary literature, what updates can be made to the conceptual model of success factors for New Tech Ventures?*

To answer this question dozens of studies have been collected, evaluated and selected. The criteria were that the studies had to be post-2008 to be considered contemporary and that they had to concern NTVs. A thematic analysis was used to categorise these studies per success factor. Here it became clear that there was a big gap between four success factors and the rest. The four chosen success factors had considerably more studies that confirmed their positive influence on the success of NTVs. The gap was nine-plus studies for the four success factors that were chosen versus around one or two and in one case three. After analysing these studies, the most interesting findings that update the conceptual model success factors for New Tech Ventures are;

1. In **confirmation** with the study by Song et al. (2008), contemporary research confirms that Industry Experience has a significant and positive effect on the success of NTVs.
2. In **contradiction** to the study by Song et al. (2008), contemporary research shows that Prior Start-up Experience is a significant determinant of firm performance.
3. In **addition** to the study by Song et al. (2008), contemporary research shows that Non-Governmental Financial Support has a positive influence on the success of an NTV, especially support by Venture Capitalists.
4. A **newfound** success factor revealed by contemporary research, not mentioned in the study by Song et al. (2008), is Academic Background.

The second goal is to investigate if there is a fit between literature and practice. The above-updated success factors were submitted to real-world NTVs to see whether there was a fit with the literature. The following research question was formulated to answer this:

*2) To what extent is there a fit with the (updated) conceptual model of success factors and New Technology Ventures in practice?*



To answer this question a survey was conducted that provided the data needed to judge whether there is a match with theory and practice. The most interesting findings here are:

- For all the tested success factors there is an **overwhelming fit with practice**, meaning the NTVs think the contemporary success factors have a positive effect on the success of their NTV.
- The fit with the reasons behind this fit **matches partially with the motivations given in the contemporary literature**. Some addition to the motivations given in contemporary literature is found, like with Prior Start-up Experience where some of the NTVs argue the presence of the factor gave them a **smoother start**.
- It stands out that the **contemporary literature emphasizes on the positive influence that especially VCs provide**, praising the value the VCs give to the NTV, **whilst in practice, this is only partially supported and even partially contradicted**. In fact, the only NTVs that disagreed with the positive influence of Non-Governmental Financial Support were those who received support from VC's.
- An important note is that the results clearly show that the **sample is biased**, as almost 70% of NTVs has a team that consists completely or almost completely of employees with an Academic Background.

It should be noted however that the size of this study was rather small. Especially in researching the Non-Governmental Financial Support success factor this meant the results were less conclusive. This because only six out of the 43 participants represented NTVs who received funding from VCs. More research should be conducted on this success factor on a larger scale to give more conclusive answers about the fit of literature with practice.

### 7.1.2 Recommendations

The following recommendations serve as academically supported practical advice to entrepreneurs who own an NVT or aspire to start one. They consist of the findings in contemporary literature that overlap with the motivations giving by the NTVs in practice. These are the only strongly substantiated findings in both contemporary literature and practice:

1. **The team of your NTV should include people with Industry Experience**, as people with Industry Experience have greater access to resources, more appropriate skills to make the best decisions based on their prior experience in the sector, are better able to assess the market for opportunities and threats and are more likely to identify a market gap. Furthermore, the network of relationships the entrepreneur has of people in the same industry seems to enable him to function effectively in that particular playing field, which is why entrepreneurs with industry-specific experience in their field of business are more successful.
2. **The team of your NTV should include people with Prior Start-up Experience**, as people with Prior Start-up Experience know the tricks of the trade. This repertoire of skills and knowledge can be used to identify and exploit opportunities and experienced failure in their previous ventures from which they draw lessons and acquire competencies. It also contributes

to a smoother start of the company, as it makes it less of a pain and easier to start up your company.

3. **Your NTV should secure Non-Governmental Financial Support**, as Non-Governmental Financial Support provides you with helpful means which could help to ramp up operations to make your NTV ready for growth. Note that Non-Governmental Financial Support received from VCs has mixed reactions. It could provide you with helpful coaching that directly adds value to your firm, but it is also mentioned that the interference of the VCs can be undesirable.
4. **The team of your NTV should include people with an Academic Background**, as people with an Academic Background are good at managing various task like coordinating projects, making schedules, meeting deadlines and managing in general. Furthermore, it is argued that the Academic Background helped with solving problems and tackling challenges in a methodical manner.

The findings of this research suggest that all these recommendations will positively affect the success of your NTV, based on the overlap the contemporary literature has with the motives given and supported by the NTVs in practice.

## **7.2 Discussion, Limitations and Future Work**

### **7.2.1 Discussion**

An important note to the findings of the second research question is that there is a sample bias with Academic Background. Most of the contacted NTVs were found on digital and physical places with academic ties. The answers to the second research question will be more relevant for NTVs with a high percentage of academics in the team. This furthermore means that different results might be obtained when a different set, with fewer academic ties, is collected. The upside of this biased sample is that more information is obtained on this newfound success factor. This makes the results valuable for gaining insight into this new factor.

When looking at Prior Start-up Experience, all participants agreed that it has a positive influence on the success of their NTV. This could be explained because of the NTVs regard 'New' Tech Ventures. The youthfulness of the companies might be why Prior Start-up Experience is so unanimously regarded as a positive influence on the success of the NTV, as the team still has a fresh memory of the helpfulness of having someone with Prior Start-up Experience in their team paving the way. And as the majority is only 0 to 4 years old, this might explain it. The other themes mentioned in the literature are not mentioned by the NTV in practice however, the limitations and future work section elaborate on this. The fact that NTVs that had Prior Start-up Experience in their team unanimously regarded it as a positive influence on the success of their company is a strong indicator that it would be smart to have at least one or more individuals in your team with Prior Start-up Experience, especially if you are yet to start an NTV.

This success factor is extra interesting because it was found to be non-significant in the 2008 study by Song et al. It is curious because one could argue that the positive influence of Prior Start-up Experience is something of all times. Both the motivations mentioned in the literature and practice would not suggest a contemporary explanation for this. A possible explanation could be that Song et

al. (2008) labelled the success factor non-significant because of deviating results. The researchers explain that deviating results could exist if significant differences in correlation coefficients for various subsamples between the factor and the dependent variable they used in the meta-analysis.

The factor Non-Governmental Financial Support has some interesting remarks. The first is the dominant presence of VC financial support in contemporary literature as a form of Non-Governmental Financial Support. The presence of this factor is not prominently found in the NTVs in practice, as there is more variation in forms of Non-Governmental Financial Support. The interesting note here is that these other forms of Non-Governmental Financial Support partially provide the same motivations for the positive effect the factor has on the success of the NTV. NTVs that received Non-Governmental Financial Support by friends, family and banks mention that the means the financial support provide are helpful and enable growth. This is interesting because the contemporary literature suggests these motivations solely in the context of VC financial support. From this could be deduced that the findings in contemporary literature that specifically focus on VC financial support could be more broadly adopted to the success factor of Non-Governmental Financial Support in general.

## **7.2.2 Limitations and Further Research**

As with all research, this thesis had several limitations. The most notable one is the bias in the data sample, as 93% of all the participants have academic background present in their NTV and almost 70% have a team that almost entirely consists of members with an academic background. It would also be interesting to repeat this survey on a set of participants that resemble a distribution of academics in NTVs that is closer to reality. Comparing how the results of that study differ with the ones from this thesis could give more insight into what it means to have more Academic Background present in the team of your NTV, and what it means for the success of the NTV.

In future research, it would also be wise to make the further explanation part of the survey mandatory as it provides the motivations of the NTVs. Because now there are only partially overlaps with the motivations of the NTVs in practice and the literature. This study can not give a conclusive answer on why the missing themes are not present. It can be speculated that the themes were just not mentioned by the NTVs or that the motivation was actually not present at all. The design flaw here is that the further explanation part of the survey was not mandatory, causing a low response rate in this area of less than half of the respondents most of the time. In addition, it is also possible that the participants did not notice that a certain aspect of a success factor helps their NTV, which could be why it is not motivated upon in the further explanation of the survey.

It was a design choice to keep the survey a bit on the surface with general questions about the success factors. The intention was that more information could be extracted this way about the factors. In retrospective, the survey should have been more focussed on the motivations the contemporary literature presented then the more general tone it had. This was especially true for Non-Governmental Financial Support, as for the dominant presence of VC financial support in contemporary literature. Furthermore, the sample size for this factor was rather small, as only six out of the 43 participants had VC support present. Because of this, the findings on VC financial support are less conclusive. More research should be conducted on this success factor on a larger scale to give more conclusive answers about the fit of literature with practice.

Another important limitation is the survivors bias that applies in this study. This means that this thesis does not shed light on the reasons for the possible failure of the NTVs, but only focuses on the success.

## 8 -- References

- Aspelund, A., Berg-Utby, T., & Skjevdal, R. (2005). Initial resources' influence on new venture survival: a longitudinal study of new technology-based firms. *Technovation*, 25(11), 1337-1347.
- Bailetti, T. (2012). Technology entrepreneurship: overview, definition, and distinctive aspects. *Technology Innovation Management Review*, 2(2).
- Bertoni, F., Colombo, M. & Grilli, L. (2011). Venture capital financing and the growth of high-tech start-ups: Disentangling treatment from selection effects. *Research Policy*, 40, 1028-1043
- Bloodgood, J. M., Sapienza, H. J., & Almeida, J. G. (1996). The internationalization of new high-potential US ventures: Antecedents and outcomes. *Entrepreneurship theory and practice*, 20(4), 61-76.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Cantner, U., & Kösters, S. (2012). Picking the winner? Empirical evidence on the targeting of R&D subsidies to start-ups. *Small Business Economics*, 39(4), 921-936.
- Colombo, M. G., & Grilli, L. (2010). On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital. *Journal of business venturing*, 25(6), 610-626.
- Colombo, M. G., Luukkonen, T., Mustar, P., & Wright, M. (2010). Venture capital and high-tech start-ups. *Venture Capital*, 12(4), 261-266.
- Dowling, M. J., & McGee, J. E. (1994). Business and technology strategies and new venture performance: A study of the telecommunications equipment industry. *Management Science*, 40(12), 1663-1677.
- Feeser, H. R., & Willard, G. E. (1990). Founding strategy and performance: A comparison of high and low growth high tech firms. *Strategic management journal*, 11(2), 87-98.
- Ganotakis, P. (2012). Founders' human capital and the performance of UK new technology based firms. *Small Business Economics*, 39(2), 495-515.
- Gottschalk, S., Greene, F. J., Hower, D., & Muller, B. (2014). If you don't succeed, should you try again? The role of entrepreneurial experience in venture survival, ZEW Discussion Papers, No. 14-009, Zentrum für Europäische Wirtschaftsforschung (ZEW), Mannheim
- Gimmon, E., & Levie, J. (2010). Founder's human capital, external investment, and the survival of new high-technology ventures. *Research Policy*, 39, 1214-1226
- Grilli, L., & Murtinu, S. (2014). Government, venture capital and the growth of European high-tech entrepreneurial firms. *Research Policy*, 43(9), 1523-1543.
- Hall, B. H., & Lerner, J. (2010). The financing of R&D and innovation. In *Handbook of the Economics of Innovation* (Vol. 1, pp. 609-639). North-Holland.
- Kabir, M., Ibrahim, H. I., & Shah, K. A. M. (2017). Entrepreneurial competency as determinant for success of female entrepreneurs in Nigeria. *Indonesian Journal of Business and Entrepreneurship (IJBE)*, 3(2), 143.
- 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.
- Luukkonen, T., Deschryvere, M., & Bertoni, F. (2013). The value added by government venture capital funds compared with independent venture capital funds. *Technovation*, 33(4-5), 154-162.
- Machirori, T., & Fatoki, O. (2013). The impact of firm and entrepreneur's characteristics on

- networking by SMEs in South Africa. *Journal of Economics*, 4(2), 113-120.
- Malach, J., & Kristová, K. (2017). The impact of school education and family environment on pupils' entrepreneurial spirit and attitude to entrepreneurship. *The New Educational Review*, 49(3), 101-114.
- O'farrell, P. N., & Crouchley, R. (1984). An industrial and spatial analysis of new firm formation in Ireland. *Regional Studies*, 18(3), 221-236.
- Oghuvwu, M.E., & Okuwhere, M.P. (2018). Entrepreneurial characteristics and firm performance. *Accounting and Taxation Review*, 2 (4), 75-85.
- Park, M., Park, J., & Kim, J. (2017). The effect of small and medium scales CEO's entrepreneurial experience on corporate performance. *Academy of Entrepreneurship Journal*, 23(2), 111- 141
- Piperopoulos, P., & Dimov, D. (2015). Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. *Journal of Small Business Management*, 53(4), 970-985.
- Preisendörfer, P., Bitz, A., & Bezuidenhout, F. J. (2012). Business start-ups and their prospects of success in South African townships. *South African Review of Sociology*, 43(3), 3-23.
- Rojas, F., & Huergo, E. (2016). Characteristics of entrepreneurs and public support for NTBFs. *Small Business Economics*, 47(2), 363-382.
- Santisteban, J., & Mauricio, D. (2017). Systematic literature review of critical success factors of information technology startups. *Academy of Entrepreneurship Journal*. Saravathy, S. D., Menon, A. R., & Kuechle, G. (2013). Failing firms and successful entrepreneurs: Serial entrepreneurship as a temporal portfolio. *Small business economics*, 40(2), 417-434.
- Sefiani, Y. (2013). *Factors for success in SMEs: a perspective from Tangier* (Doctoral dissertation, University of Gloucestershire).
- Song, M., Podoynitsyna, K., Van Der Bij, H., & Halman, J. I. (2008). Success factors in new ventures: A meta-analysis. *Journal of product innovation management*, 25(1), 7-27.
- Subrahmanya, M. B. (2018). Graduation from SSIs to SMEs in India: policies, performance, and challenges. *International Journal of Entrepreneurship and Small Business*, 33(2), 241-264.
- Tu, P. A., & Diem, N. H. (2016). Entrepreneurial characteristics and private firm performance in the Mekong river Delta. *Can Tho University Journal of Science*, 3, 38-48.
- Vivarelli, M. (1991). The birth of new enterprises. *Small Business Economics*, 3(3), 215-223.
- Vivarelli, M. (2013). Technology, employment and skills: an interpretative framework. *Eurasian Business Review*, 3(1), 66-89.
- Vliamos, S. J., & Tzeremes, N. G. (2012). Factors influencing entrepreneurial process and firm start-ups: evidence from central Greece. *Journal of the Knowledge Economy*, 3(3), 250-264.
- Wekesa, L.1., Maalu, J.K., Gathungu, J., & Wainaina, G. (2016). Effect of entrepreneur characteristics on performance of non-timber forest products small and medium enterprises in Kenya. *DBA Africa Management Review*, 6 (3), 16-26.

## 9 -- Appendix

### 9.1 Appendix A - Survey

# Survey "Success factors for New Tech Ventures"

For my Master's thesis I have prepared this questionnaire.

This survey concerns questions about the success factors of New Tech Ventures (NTVs). The survey is intended to see whether interesting findings found in the literature hold true in practice.

The survey will be treated ANONYMOUSLY and CONFIDENTIALLY! Completing the survey takes approximately 10 minutes of your time and consists of 3 small parts. It is important for the research that the questions are filled in completely and truthfully.

Thank you for your cooperation!

Yannick van Zantvoort  
[yannick\\_vz@hotmail.com](mailto:yannick_vz@hotmail.com)  
Radboud University

**Radboud Universiteit**



Thank you for your cooperation, click on 'next' to start the survey

**Volgende**



## 1. General information about your company

What sector does your company operate in and what are your main activities?

Jouw antwoord \_\_\_\_\_

How many years is your company active?

Jouw antwoord

With how many people did you found the company (in total)?

Jouw antwoord \_\_\_\_\_

How many people work at your company now?

Jouw antwoord \_\_\_\_\_

How many people work fulltime?

Jouw antwoord \_\_\_\_\_

Further explanation (optional);

Jouw antwoord \_\_\_\_\_

Vorige

Volgende



## 2. Success

What is success according to your company

Jouw antwoord

---

Do you consider your company successful (and why)?

Jouw antwoord

---

My firm is mainly active in the;

- Business to Customer (B2C) sector
- Business to Business (B2B) sector
- Both B2B and B2C
- Anders: \_\_\_\_\_

Please check which applies most

	This doesn't apply	Strongly disagree	Disagree	Agree	Strongly agree
The number of customers (B2C) grew since founding your firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The number of clients (B2B) grew since founding your firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company is in good financial health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	The profit declined significantly	The profit declined	The profit stayed the same	The profit grew	The profit grew significantly
When comparing this year's profit to last year's profit:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Further explanation (optional);					
Jouw antwoord					
<a href="#">Vorige</a>		<a href="#">Volgende</a>			

### 3. Success Factors

#### 1. Prior start-up experience

"Concerns the experience of the team in previous start-up/small business venture situations"

Please check which applies most

	0%	0 - 20%	20 - 40%	40 - 60%	60 - 80%	80 - 100%
What percentage of your firm's team has prior start-up experience?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

This doesn't apply      Strongly disagree      Disagree      Agree      Strongly agree

Prior start-up experience had a positive effect on the success of my firm

Further explanation (optional);

Jouw antwoord

## 2. Non-Governmental Financial Support

"Concerns all financial support besides financial government support (Venture Capital, Family, other investments and/or loans)"

Please check which applies most

None      €0 - €2.500      €2.500 - €5.000      €5.000 - €10.000      €10.000 - €25.000      €25.000 - 50.000      More than €50.000

How much Non-Governmental Financial Support did you receive?

What was the origin of the financial support?

- This does not apply
- Family
- Friends
- Bank
- Venture Capitalist
- Anders: \_\_\_\_\_

This does not apply      Strongly disagree      Disagree      Agree      Strongly agree

Receiving Non-Governmental Financial Support had a positive effect on the success of my firm

Further explanation (optional);

Jouw antwoord \_\_\_\_\_

### 3. Academic Background

"Concerns the educational background of the team"

Higher education is seen as a study on the University of Applied Sciences (HBO) or higher.

Please check which apply most

0%      0 - 20%      20 - 40%      40 - 60%      60 - 80%      80 - 100%

What percentage of your firm's team has a background in higher education?

What field(s) of study in higher education is represented in your company?

- None
- Mathematics
- Technical (IT/ICT)
- Business
- Economics
- Anders: \_\_\_\_\_

This does not apply

Strongly disagree

Disagree

Agree

Strongly agree

The high academic background of the team had a positive effect on the success of my firm



Further explanation (optional);

Jouw antwoord

Vorige

Volgende

## Survey "Success factors for New Tech Ventures"

The End

Thank you for completing this survey, you are helping me tremendously!

Please click on 'verzenden' before closing your browser.

Yannick van Zantvoort  
[yannick\\_vz@hotmail.com](mailto:yannick_vz@hotmail.com)  
Radboud University

Vorige

Verzenden