

# Voice of the Consumer, Contextual Factors and The Impact of Business Planning on High Tech Startup Firm Survival.

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Master's Thesis

By

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## **Abstract**

This research contributes to the ongoing debate about the value of business planning by focusing on one specific part of the business plan being Voice of the Consumer [VOC] and its effect on startup survival. In addition, it incorporates the impact of the potential moderators market maturity and entrepreneurs' experience. The goal of this research is to investigate how and under which conditions VOC could increase the chances of firm survival and growth. This is important because research on business planning is fragmented, and research on VOC didn't provide significant evidence on its influence on new firm survival. In addition to theoretical relevance, it will also be beneficial for future entrepreneurs to know how and under which conditions they could benefit from using VOC in their business plan, because there are also many other important time consuming tasks when creating a new business.

Recently, an intense debate has emerged in entrepreneurship literature on the value of business planning. While results are fragmented, one thing both sides of the debate do agree upon is that business planning is a heterogeneous task (Englis et al., 2010). Therefore, the question shouldn't be if planning is beneficial for new firm success, but rather a more specific approach is required considering that different areas of the business plan could be more or less important depending on contextual factors (Gruber, 2007). VOC was chosen because customers can be a great input for planning and it could provide information about what customers value in a particular product or service. Englis et al. (2011) argue that many entrepreneurial firms focus on their technological capabilities and develop products that are taken to the market using a "push" strategy (Englis et al., 2010). This is in line with other authors such as Vohora et al. (2004) who argue that too much emphasis was placed on developing the technology and too little on identifying, accessing and targeting key customers in the value chain. Listening to potential customers can help the entrepreneur evaluate his initial idea and help to understand the true value of its opportunity.

Data was collected from one of the oldest incubation programs from the University of Twente. Founded in 1984, this program has incubated more than 350 firms. The program consists of space provision complemented with scientific and business coaching designed for high-tech knowledge intensive start-ups. Of the 350 firms in our full sample, 113 firms' business plans have been fully analyzed. Of these business plans, 35 firms included the VOC. Data was collected from 2010-2012 using a standardized form. Analysis examined differences across the groups based on the propositions. In summary it can be concluded that market maturity is the most important moderating factor given the significant result of the propositions. Firm survival chances and growth are most likely to be increased when VOC is used by firms founded in an existing market. As expected, more information about customer preferences should be available in existing markets because potential customers are more easily identified and customers should be able to provide more detailed information about their

needs and preferences. These results confirm our proposition that the effect of using VOC would be more positive for firms founded in existing markets than for firms founded in new markets. This could be explained by the quality of the information (Gruber, 2007). Another conclusion is that VOC is less valuable for firms entering a new market because there is a higher degree of uncertainty and entering a new market is often associated with novel technologies that may not be easily understood (Englis et al. 2010). This is important because the creation of university spin off firms represent a potentially important but yet under developed option to create wealth from the commercialization of research (Vohora et al., 2004). Together with the high failure rates of new firms, it is important for researchers to understand which approach to firm creation increases the chances of success (Gruber, 2007).

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## **Foreword and Acknowledgements**

This research document reports a master thesis carried out by Jeroen Reuver in the context of the Business Administration master, specialization Innovation and Entrepreneurship at the University of Twente. The central topic of thesis will be the voice of the consumer and how it can increase firm survival chances of new firms. I chose this research topic because I am interested in entrepreneurship, innovation and marketing. The Voice of the Consumer combines all these topics, which allowed me to expand my knowledge and experience on all these areas. I would like to thank my supervisors, Tiago Ratinho, & Paula Englis for their support, creative ideas and input on this research. I hope I can contribute to the existing literature about the voice of the consumer and I thank you for taking the time to read my thesis. I also want to thank my girlfriend who gave me the encouragement to keep on going, I owe you.

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# Chapter 1: Introduction and Research Design

## 1.1 Introduction

The creation of university spin off firms represent an potentially important, but yet underdeveloped option to create wealth from the commercialization of research (Vohora et al., 2004). Together with the high failure rates of new firms, this makes it of prime interest for researchers to understand which approach to firm creation increases the chances of success (Gruber, 2007). Recently an intense debate has emerged in entrepreneurship literature on the value of business planning. Yet researchers to date do not agree about the role of business planning upon new venture creation. There are those that argue that planning leads to higher chances of firm survival and better performance (for example Delmar and Shane, 2003; 2004; Gruber, 2007). An opposing group of researchers propose that planning offers no advantages to new venture founders, they even argue that planning interferes with more important firm organizing actions to develop their new firms (for example Bhide, 2000). One thing all these studies do agree upon is that business planning is a heterogeneous task (Englis et al., 2010). Therefore, the question shouldn't be if planning is beneficial for new firm success but rather a more specific approach is required, taking into account that different areas of the business plan could be more or less important depending on contextual factors (Gruber, 2007).

While there is a an intense debate about the value of business planning and the effects upon firm survival and performance, relatively little attention is given to the content of the business plan. In their article Englis et al. (2011) are the first to investigate the impact of incorporating the voice of the consumer (VOC) into business planning on a sample of incubator spin off firms from the TOP program of the University of Twente. They propose that many high tech knowledge intensive entrepreneurial firms tend to focus on their technological capabilities and develop products that are taken to the market using a "push" strategy (Englis et al., 2011). This is in line with other authors such as for example Vohora et al. (2004), who argue that too much emphasis was placed on developing the technology and too little on identifying, accessing and targeting key customers in the value chain. To improve their chances of success, and to increase the commercialization of research, it is necessary to better align the firm's technology with the demands of the consumer. Or as Englis et al. (2011 p 8) put it; "Most products are "imperfect" solutions to a consumers problem, and it's important for firms to understand this and to calibrate product claims accordingly." In their article Englis et al.(2011) investigated whether incorporating the VOC in the business plan would enhance the chances of new firm survival. Although their results didn't provide significant evidence, it seems to be a promising field for further research.

## **1.2 Research goal**

As mentioned before Englis et al. (2011) investigated whether incorporating the VOC in the business plan would increase the chances of new firm survival. This research will contribute to their work by further examining how and under which conditions the VOC was used, and how this moderates the relationship with firm survival.

Start-up environments are typically characterized by higher levels of uncertainty. Whereas established firms are able to base their planning on past performance and historical trends, much of the decision making in start-ups is based on uncertain, incomplete or ambiguous information (Gruber, 2007).

Founding environments often also tend to be highly dynamic with fast changes in technology and competition which further complicates the decision making process (Gruber, 2003). Researchers hold opposing views on what effects this uncertainty in the startups founding environment could have on the planning performance relationship. Besides a lack of attention to contextual factors, previous research on the value of business planning mainly investigated whether or not a business plan was developed. Heriot, Campbell and Finney (2004) argue that too much emphasis has been on whether or not a business plan has been written and not enough has been focused on the content of the plan. To contribute to this ongoing debate about the value of business planning, it will be necessary to focus on one specific part of the business plan and investigate how it was done instead of only describing if it was done. This is in line with Delmar and Shane (2003) who propose that several key attributes of planning processes such as entrepreneurial information search and time spent on planning need to be studied in a planning-performance framework (Gruber, 2007).

In addition to knowing how the business plan was used, it is also important to note that not all areas of the business plan are equally important. Gruber (2007) for example argues, that planning is a heterogeneous task and different areas of the business plan could be more or less important depending on contextual factors. This could mean that for example the impact of using VOC could be influenced by factors such as the environment, the entrepreneurs experience, technology or market novelty and other factors. It is also possible that certain areas of the business plan are influenced by different factors than others. To be able to investigate whether and when VOC is a valuable endeavor for entrepreneurs to pursue, and when it increases the chance of survival it is necessary to understand which factors moderate the relation between VOC and firm survival.

## **1.3 Relevance and Contribution**

Two of the main reasons that researchers to date do not agree upon the role of business planning are a lack of focus and a lack of attention to the influence of contextual factors. Instead of determining whether or not a business plan has been finished, This research contributes to the ongoing debate about the value of business planning by focusing on one specific part of the business plan, voice of the consumer (VOC) and startup survival. In addition, it incorporates the impact of a potential moderator (market maturity). This is in line with Delmar and Shane (2003) who propose that several key

attributes of planning processes such as entrepreneurial information search and time spent on planning need to be studied in a planning-performance framework.

The goal of this research will be to investigate how and under which conditions VOC could increase the chances of firm survival. The focus of the research will be on one part of the business plan. This research will try to gain a deeper understanding about how the VOC was used, and which contextual factors influence the relation between VOC and new firm survival. Gruber (2007) for example argues that planning is a heterogeneous task and different areas of the business plan could be more or less important depending on contextual factors. This is important because research on business planning is fragmented, and research on VOC didn't provide significant evidence on its influence on new firm survival. In addition to the theoretical relevance it will also be beneficial for future entrepreneurs to know how and under which conditions they could benefit from using VOC in their business plan, because there are also many other important time consuming tasks when creation a new business. But also for economy in general it will be important to know how VOC could increase the survival chances of new firms, because as Souder, Buisson and Garret (1997) argue "Although high tech, entrepreneurial firms may be small in size, they often play a large role in developing innovative products and thus spurring economic growth" (p.1).

#### **1.4. Research Questions**

The goal of this research is to uncover under which conditions VOC could increase the chances of new firm survival and growth. Therefore the central question of the thesis will be:

"Under which conditions could VOC be used to increase the chance of new firm survival and growth?"

Previous research already examined the influence of the startups founding environment on the planning performance relationship. Although researchers hold opposing views of what effects the founding environment could have on the effectiveness of business planning in general, a more specific approach is advocated in which different parts of the business plan could have been influenced by different factors than others. Since this research focuses one part of the business plan being VOC, those factors that were most likely to influence the effectiveness of VOC were selected. Since the main goal of using VOC is to identify consumer needs and preferences, market maturity and the entrepreneurs' industry experience are chosen as most likely moderators of the relation between VOC and the firms survival chances and average annual personnel growth (growth). Market maturity was chosen because mature markets are typically characterized by lower levels of uncertainty and munificence than emerging markets, which is likely to influence to effectiveness of VOC. The entrepreneurs' industry experience was chosen because it is expected that entrepreneurs with industry experience are likely to have closer contacts to potential consumers, which is also likely to influence

the effectiveness of VOC. Therefore the research questions that will help answer the central question are:

1. What influence does market maturity have on the use and impact of VOC?
2. What influence does entrepreneurs industry experience have on the use and impact of VOC?

Both research questions will be answered using the propositions derived from the theoretical framework. The answers of these research questions will be used to answer the central question.

### **1.5. Research Approach, Strategy and Methodology**

To answer the central question it was necessary to study all the relevant literature about the subject and to integrate this in a theoretical framework. The research for literature started with defining search criteria, reading literature that was found and making a critical analysis of the literature that was of added value for answering the research question.

This research contains a central question, supported by two research questions. The first research question; *What influence does market maturity have on the use and impact of VOC?* will be answered by testing three propositions. These propositions contain the subjects extensiveness of VOC, the relation of VOC and firm survival and the relation of VOC and growth.

The second research question; *What influence does entrepreneurs industry experience have on the use and impact of VOC?* is also divided into three propositions, with the subjects, the relation of industry experience with extensiveness of VOC, the influence of industry experience on the relation between VOC and firm survival and on the relation between VOC and growth. To answer these research questions a sample of 113 firms' business plans have been fully analyzed. Of these 113 business plans, 35 firms included the VOC in their business plan. Analysis will be conducted on the sample of 35 firms. The statistical analysis will be conducted with various measurement instruments and this results will be presented as a descriptive text and in table form.

When the research questions are answered, the central question ; *“Under which conditions could VOC be used to increase the chance of new firm survival and growth?”* can be answered by inserting the results of the data analysis and combining them with the theoretical framework. This will lead to the final conclusion, the discussion and the limitations of the study.

### **1.6. Outline of the Thesis**

In this current Chapter 1 the introduction to this thesis was described by explaining the research goal, research questions, the relevance and contribution of this research. In the previous section the research approach, strategy and methodology are described. Chapter 2 contains the theoretical framework and therefore the conducted literature review will be described in this section. The overview of the literature leads us to the propositions, which will be tested in chapter 3 of this thesis. Chapter 3 conducts the methodology part of this research. It describes the data collection method, the

measurements and the validity and reliability. Chapter 4 describes the data analysis and the test results, which will be used to answer the research questions set out in chapter 1. Finally, chapter 5 will be used for the purpose of drawing conclusions and describing the discussions points of this study. Also chapter 5 discusses the limitations and implications of this thesis.

## **Chapter 2: Theoretical Framework**

### **2.1 The planning debate**

Researchers to date do not agree about the role of business planning upon new venture creation. There are those that argue that planning leads to higher chances of firm survival and better performance (for example Delmar and Shane, 2003; Gruber, 2007). An opposing group of researchers propose that planning offers no advantages to new venture founders, they even argue that planning interferes with more important firm organizing actions to develop their new firms (for example Bhide, 2000).

Although some empirical evidence is given that pre-venture planning leads to for example higher chances of firm survival, this evidence isn't conclusive. The current debate about the value of business planning in emerging firms has a lot of similarities with planning literature in strategic management. The planning performance relationship in established firms has gained extensive attention in strategic management literature. The literature can be divided into two schools of thought, being the planning school and the learning school. The planning school, with Ansoff as its captain advocate that formal planning is beneficial in both stable and unstable environments. While the learning school, with Mintzberg as its captain advocates incrementalism, especially in unstable environments (Brews & Hunt, 1999). Although both groups have strong arguments, empirical evidence has brought clarification that there is a positive relation between planning and performance in established firms, however the relation is moderated by contextual factors. So it is important to have formal and specific plans, though these plans should also be flexible, especially in unstable environments (Brews & Hunt, 1999). These findings from strategic planning in established firms should not be neglected and could possible help solve the current debate on business planning in new firm creation. Although not to be neglected, start-ups face other challenges than established firms, which could cause other outcomes for the planning-performance relationship.

Start-up environments are typically characterized by higher levels of uncertainty. Whereas established firms are able to base their planning on past performance and historical trends, much of the decision making in start-ups is based on uncertain, incomplete or ambiguous information (Gruber, 2007). Founding environments often also tend to be highly dynamic with fast changes in technology and competition which further complicates the decision making process (Gruber, 2003). Researchers hold opposing views on what effects this uncertainty in the startups founding environment could have on the planning performance relationship. Many prior researchers have argued that business planning is not very helpful under the uncertain conditions that surround new venture formation (Delmar & Shane 2003). The most often mentioned and widespread arguments made by researchers who believe that business planning is not very helpful for new venture founders will discussed here. First, planning takes time away from more important organizing actions such as buying facilities and equipment (Carter et al., 1996). Second, planning can hinder flexibility and adaptability which are necessary for

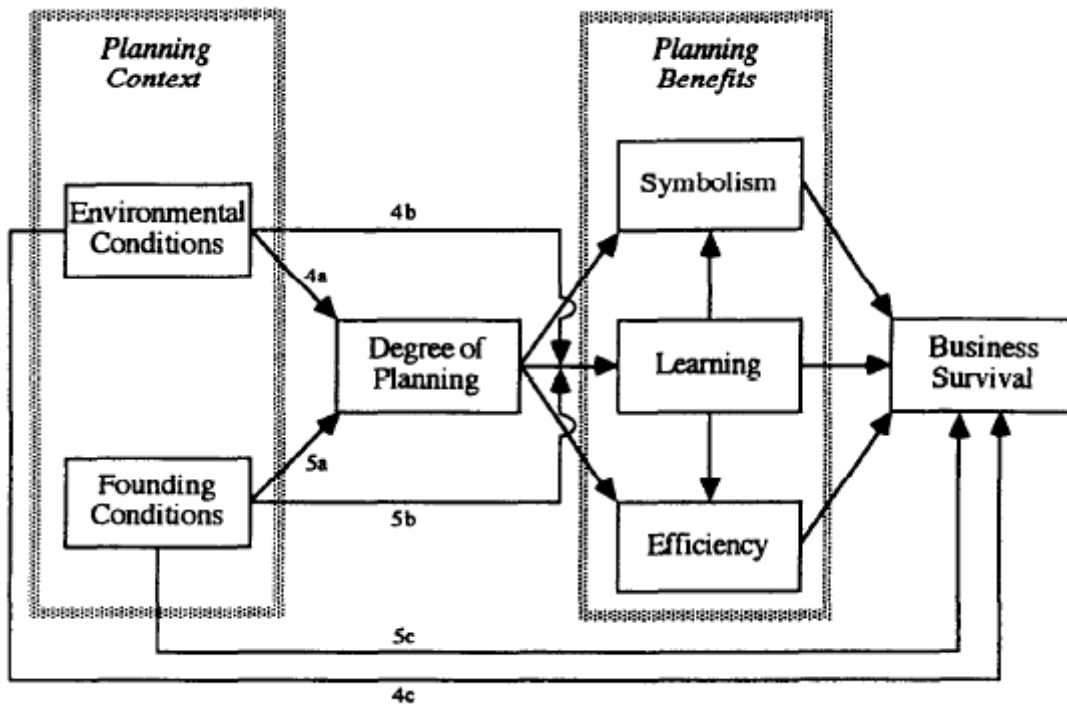
new venture founders when entering an uncertain market (Bhide, 2000; Bird, 1988) Third, Planning is not necessary because entrepreneurs possess attributes which make them better at relying on their intuition (Allinson, Chell & Hayes 2000).

Other researchers believe that business planning could be of great value for new venture founders, even or especially in these founding environments characterized by high uncertainty which are typical for startups. The most often mentioned and widespread arguments made by researchers who believe that business planning is helpful for new venture founders will be discussed here. First, planning allows faster decision making than with trial and error learning, because planning facilitates discovering missing information without first having to spend a lot of resources. (Delmar & Shane, 2003). Second, planning can help to manage resources and avoid bottlenecks. Third, planning helps to set objectives and to set specific milestones that help to achieve these objectives in a timely manner. (Delmar & Shane, 2003). It has become clear that both sides of the debate have valid theoretical arguments that underpin their beliefs. Unfortunately empirical evidence is also conflicting and can't seem to resolve this debate. There are however scholars that believe they have the key to resolving this debate, the next chapter will discuss the factors that influence the planning- performance relation, which could have caused the conflicting results from previous research discussed so far.

## **2.2 A contingency perspective**

Castrogiovanni (1996) was one of the first entrepreneurship scholars to propose that contextual factors may have important moderating effects on the business planning-performance relationship in start-ups (Gruber, 2007). There seems to be an emerging view that the value of business planning is context dependent. Castrogiovanni (1996) makes a distinction between environmental conditions and founding conditions. Environmental conditions are described as uncertainty, munificence, and industry maturity and the two founding conditions are knowledge and capital. Especially environmental conditions have gained a lot of attention from researcher studying the planning performance relationship. There are however more contextual factors that could influence this relationship. In their meta-analysis, Schwenk and Shrader (1993) concluded that contextual factors such as industry structure, uncertainty and organizational lifecycle stage could also have considerable moderating effects (Castrogiovanni, 1996). This chapter aims to give an overview of the most important contextual factors that influence the planning-performance relationship. Figure 1 shows Castrogiovanni's model on how contextual factors influence the pre-startup planning – survival relationship. This model will be used as a starting point for developing this overview.

**Figur 1: Planning Context, Pre-startup planning and Small Business Survival**



As can be seen in the model, environmental conditions influence business survival both directly and indirectly. Indirectly through influencing the degree of planning, but also through moderating the relationship between the degree of planning and learning. These relationships can be better understood by dividing environmental conditions into uncertainty, munificence and industry maturity. To begin with environmental uncertainty, one could imagine that more learning is required under uncertain conditions than under certain conditions. This would in turn stimulate planning, however at the same time uncertainty hinders the possibility of learning derived from planning (Castrogiovanni, 1996). Another environmental condition is environmental munificence, which describes the magnitude of the opportunity, or in other words the extent to which the environment supports the new business. It seems logical to assume that startups which are founded in environments that support their new venture are more likely to survive. Environmental munificence however could negatively influence the necessity to plan, which could cause one to believe that less planning is beneficial for firm survival. Castrogiovanni (1996) describes one more environmental condition, being industry maturity. A distinction is made between emerging and mature industries, which tend to have very different levels of uncertainty and munificence (Castrogiovanni, 1996). Mature industries are typically characterized by both lower levels of uncertainty and munificence this seems to be the opposite for emerging industries. This is mainly caused by the existence of competitors which negatively influences the



magnitude of the opportunity on the one hand, on the other hand it can reduce uncertainty because industry trends and customer preferences are generally better known (Castrogiovanni, 1996).

Besides the environmental conditions, Castrogiovanni (1996) also mentions founding conditions. A distinction is made between the founders knowledge and the founders capital investment. The founders knowledge could have both direct and indirect effects on the business survival chances. For an experienced entrepreneur with preexisting knowledge of the market there is an reduced need to learn, but there is also less to learn than for an inexperienced entrepreneur. So there will most likely be a negative relation between founder knowledge and the amount of planning, and a positive relation with business survival (Castrogiovanni, 1996). The other founding condition is the founder's capital investment. Castrogiovanni (1996) argues that the amount of capital is negatively related to the amount of planning, but positively related to the survival chances.

Although not empirically tested, these insights have proven to be of great value in resolving the ongoing debate on the value of business planning in new ventures. Not only because of the consideration of the impact of contextual factors, but also by distinguishing between direct and indirect effects of planning upon new firm survival. Although these insight could be of great value, it definitely doesn't make the debate easier. We now know that finding a direct relation between planning en performance will be nearly impossible. As pointed out before an experienced entrepreneur with existing knowledge about the industry could have higher survival chances without ever developing a formal business plan than would an inexperienced entrepreneur who did finish an formal business plan, despite environmental conditions. Future research should therefore control for these contextual conditions when trying to test the planning-performance relation.

### **2.3 Business planning Heterogeneity: A Process and Content perspective**

While the contingency perspective definitely was a good first step in resolving the planning - performance debate, empirical evidence is still conflicting. This chapter will discuss the heterogeneity of business planning, as a possible cause for these conflicting results. Bhide (2000) was one of the first researchers to caution that business planning is a heterogeneous task, and he argues that future research should better account for this heterogeneity and should take into consideration that not all areas may be of equal importance to venture success. Despite these warnings, researcher have continued to use a dichotomous approach to investigate the planning – performance relation for years. For example Delmar & Shane (2003) who did find a positive relation between completing a business plan and firm survival, while they didn't measure the content of the information contained in the plans, the quality of implementation efforts, the percentage of information gathered or the amount of time spent on planning (Delmar & Shane, 2003). However they did mention that the content of business plans and the implementation of these plans could have a more important role than the simple act of

planning (Delmar & Shane, 2003). Other researchers such as Heriot, Campbell and Finney (2004) argue that too much emphasis has been on whether or not a business plan has been written and not enough has been focused on the content of the plan. So both sides of the debate seem to agree that instead of a dichotomous approach, and simply looking whether or not a written plan has been developed more attention has to be given to the content of the business plan. Instead of assuming that every plan presents a good plan, a distinction can be made between effective and non effective planners. Gruber (2007) suggests an adaptive “toolkit” approach to business planning. Gruber (2007) as many others, tries to uncover the value of business planning in new ventures. However unlike many others, Gruber doesn’t neglect the previously mentioned conditions that caused the conflicting empirical evidence in earlier research. By employing an contingency perspective, Gruber (2007) controls for contextual factors such as environmental uncertainty and dynamism. Instead of the dichotomous approach discussed before, his research used a process perspective which allowed to investigate the type of information used and the amount of time spent on planning. Finally to control for heterogeneity, one area of the business plan was chosen. Although his findings are in line with Delmar and Shane (2004) who suggest that planning can be of great value to emerging firms, even in highly dynamic environments. The results also emphasize that the value received from planning varies with the type of activities, with the effort devoted to specific activities and with the time spend on planning (Gruber, 2007). Gruber (2007) therefore suggest an adaptive perspective on planning, in which different areas or planning activities could be more or less valuable depending on contextual and firm specific factors. Since his research focused on only area of the business plan, additional research on the other areas of the business plan will be needed to see under which conditions these will be most valuable. One of the most recent studies trying to resolve the ongoing debate was conducted by, Brinckmann, Grichnik and Kapsa (2010). In their meta analysis they focused on contextual factors moderating the planning performance relationship. Although their findings did confirm that business planning increases firm performance, they found different contextual factors that moderate the strength of the relationship. Their results indicate that contingencies as uncertainty, prior information, and an absence of business planning structures and procedures can limit the return of business planning. Based on their evidence they proposed a concomitant and dynamic approach that combines planning and learning (Brinckmann, Grichnik and Kapsa, 2010).

#### **2.4 VOC and firm survival**

Several researchers have argued that the content of the business plan could have a more important role than whether or not a business plan has been completed (Delmar & Shane, 2003; Heriot, Campbel and Finney,2004; Gruber, 2007). However most research till now examined whether or not a plan has been completed and how this influences firm survival or performance. As mentioned before, Gruber (2007) focused on one area of the business plan. His results indicate that the value of planning varies with the type of activities persuaded and also with the amount of effort and time devoted to specific activities.

Gruber (2007) focused on marketing planning and the sources of information used to create these plans. In his article Gruber makes a distinction between two types of content that are typically present in a marketing plan, being customer relationships and the marketing mix. Planning customer relationships are important for several reasons, for one because you need customers to be able to sell products. However for the business planning process, customer relations can be especially important as a source of information. Customers can be a great input for planning because it provides information about what customers value in a particular product or service.

Englis et al. (2011) saw an even greater need to bring the consumer's voice into the business planning process. In their 2010 article Englis et al. argue that many entrepreneurial firms focus on their technological capabilities and develop products that are taken to the market using a "push" strategy. This is in line with other authors such as for example Vohora et al. (2004), who argue that too much emphasis was placed on developing the technology and too little on identifying, accessing and targeting key customers in the value chain. According to Von Hippel and Katz (2002) "Research has consistently shown that new products and services must accurately respond to user needs if they are to succeed in the marketplace" (p. 1). Instead of just guessing whether or not potential customers will value your product or service, listening to the voice of the consumer can help the entrepreneur understand the true value of an opportunity. This knowledge can help the entrepreneur make the decision whether or not to commercialize his idea, without first having to spend a lot of resources. It could also help the entrepreneur to change his initial idea in a way that it does reflect the customers' expectations. Englis et al. (2011) investigated the impact of "voice-of-the-consumer" (VOC) on the survival chances of startup firms. They argue that VOC could increase the chances of firm survival because it helps to match resources and perceived needs and discover problems much earlier. Instead of first having to spend a lot of resources to develop products that are possibly not in line with the consumer expectations. The decision to exploit the opportunity should be based on the information gained from using VOC. This information could also be used to refine the initial idea so that it does match the customers' expectations. Englis et al. (2011) tested these assumptions on a sample of 92 incubator spin off firms from the TOP program of the University of Twente. Although they did find a positive relation between firms that incorporated VOC in their business planning process and survival chances, their results are not significant.

A number of reasons could be accountable for not finding a significant result. As been discussed in the previous chapters, research on the relationship between business planning and survival chances has been biased for several reasons. These could also have moderated the results found by Englis et al. in their research on the impact of VOC on new firm survival chances. When viewing VOC as a part of the business plan, it will be necessary to take these factors in account. As mentioned before different parts of the business plan could be influenced by different contextual factors, therefore it will be necessary to know which factors are most likely to influence the relationship between VOC and new

firm survival chances. Besides neglecting the contextual factors another limitation in the research of Englis et al. is the dichotomous approach. More attention should be paid to the extensiveness/quality and the source of information used by the entrepreneur. The following chapter will discuss which of these factors that are most likely to have influenced the VOC-survival relationship, and propositions will be developed.

## **2.5 The VOC – survival relationship**

So far the literature review has brought clarification on several points. We can say that there is strong evidence that a positive relationship exists between planning and new firm survival. However this relation seems to be dependent on contextual factors, the content and quality of the plan. The value received from certain planning activities is also likely to be influenced by different contextual factors. This chapter will describe these factors that are most likely to influence the VOC-survival relationship, and propositions will be developed on what their influence will be. This will hopefully lead to a better understanding on the value of using VOC in the business planning process, and the conditions under which it is most effective.

### *Industry maturity*

One of the environmental conditions that influences the value received from planning is industry maturity. Castrogiovanni (1996) made a distinction between emerging and mature industries, which as he argues tend to have very different levels of uncertainty and munificence. This difference is mainly caused by the existence of competitors which negatively influences the magnitude of the opportunity, but also reduces uncertainty because industry trends and customer preferences are generally better known (Castrogiovanni, 1996). Industry maturity is also likely to influence the relation between VOC and survival. To use VOC the entrepreneur has to be able to identify potential customers. This could be problematic in an emerging market, where it is not immediately clear who is going to be the end user of the product or service. Besides finding potential customers, entering a new market is often associated with novel technologies that may not be easily understood by the market (Englis et al. 2011). This could decrease the possibility of gaining information from using VOC. In an existing market however, potential customers are more easily identified and customer should be able to provide more detailed information about their needs and preferences regarding the products or services in question. This leads me to posit the following proposition:

*Proposition 1: Firms founded in an existing market are likely to have used VOC more extensive than firms founded in an new market.*

Besides the effect of market maturity on the extensiveness of using VOC, it could possibly also affect the impact of using VOC on firm survival. As mentioned before it will be easier to identify possible customers in an existing market, and these customers should be able to provide more detailed

information about their needs and preferences. This information will help the entrepreneur evaluate his initial idea, and if necessary make changes so that his product does match the customers' expectations. Since the success of an product will largely depend on the satisfaction of the customer, the quality of the information about the customers' expectations gained from using VOC will also influence the survival chances of the company. This leads me to posit the next proposition

*Proposition 2: The effect of using VOC on firm survival chances will be more positive for firms founded in existing markets, than for firms founded in new markets.*

Although it seems logical to assume that if the firms survival chances are higher these firms will automatically grow faster, this will not always be true. According to Hills And LaForge (1992) "Creating value ultimately depends on customer feedback and a constant reappraisal of customer needs relative to product/service offering" (p.6). Where making a business plan is a onetime task for most companies, a true VOC orientation involves integrating a consumer-orientation throughout the firm and adapting to changes along the way (Englis et al. 2011). This means changing your products or services to the changing expectations of customers. This leads me to the following proposition.

*Proposition 3: The effect of using VOC on firm personnel growth will be more positive for firms founded in existing markets, than for firms founded in new markets.*

#### *Entrepreneurs industry experience*

Besides the environmental conditions Castrogiovanni (1996) also mentions founding conditions. Castrogiovanni (1996) argues that an experienced entrepreneur with existing knowledge about the industry could have higher survival chances without ever developing a formal business plan than would an inexperienced entrepreneur who did finish an formal business plan, despite the environmental conditions. To investigate the VOC – survival relationship, one should control for this fact. Although the entrepreneurs experience about the industry is likely to correlate with the industry maturity, this will not necessarily be the case. Logically it will be impossible to have experience in an industry that does not yet exists, however for existing industries the entrepreneurs experience can widely differ, and this could very well influence the possibility and the effectiveness of using VOC. The Entrepreneurs experience could have both direct and indirect effects on survival chances. Castrogiovanni (1996) expects the following to be true for the planning – performance relation. For an experienced entrepreneur with preexisting knowledge of the market there is an reduced need to learn, but there is also less to learn than for an inexperienced entrepreneur. So there will most likely be a negative relation between entrepreneurs experience and the amount of planning, which leads to state the following proposition.

*Proposition 4: Firms with industry experience are likely to have used VOC more extensive than firms without industry experience*

This will not necessarily be the case for the relation between VOC and business survival. Since a true VOC orientation involves integrating a consumer-orientation throughout the firm (Englis et al. 2011), VOC could still create a significant advantage for the entrepreneur, despite of his previous experience. Besides, it could also help the entrepreneur to identify potential customer and gain more advanced information from using VOC. In addition to the effect of industry experience on the extensiveness of VOC, it will likely also influence the effect of using VOC on firm survival changes. Since the entrepreneur already has relations with potential customers it should be easier to gain information about their preferences and expectation regarding the firms products of services. This leads me to the following proposition.

*Proposition 5: The effect of using VOC on firm survival chances will be more positive for entrepreneurs with industry experience.*

The entrepreneurs experience will likely also influence the effect of VOC on firm growth for the same reasons mentioned at the previous proposition. However in addition to these arguments VOC helps to align the firms products and technologies to consumers expectation and preferences, not only at the foundation of the firm but during its entire existence. As mentioned before a true VOC orientation involves integrating a consumer orientation throughout the firm. Firms that are consumer focused are likely to spot opportunities faster than their competitors. Because industry trends and customer preferences are generally better known, decision making will be faster and bottlenecks can be avoided which will give the firm an advantage to market introduction, which could lead to higher margins and faster growth than firms that didn't use VOC. This leads to final proposition

*Proposition 6: The effect of using VOC on firm growth will be more positive for firms with entrepreneurs with industry experience, than for firms with entrepreneurs without industry experience.*

## **3 Methodology**

### **3.1 Introduction**

The structure of this chapter is as follows: paragraph 3.2 will cover the design of the research and state the research questions and propositions. Paragraph 3.3 describes the research sample and its characteristics. Paragraph 3.4 will discuss the various tool that are used and their validity/reliability. Paragraph 3.5 will focus on the manner in which the data was collected and which variables are used. And finally, Paragraph 3.6 will describe how the collected data will be analyzed and which statistical test were used. The chapter will be concluded with a reference to the results which will the topic of the next chapter

### **3.2 Data collection**

Data was collected from one of the oldest incubation programs based at the University of Twente. Founded in 1984, this program has incubated more than 350 firms. The program consists of space provision complemented with scientific and business coaching designed for high-tech knowledge intensive start-ups. Selected start-ups enrolling the program gain access to several important resources through the network managed by the university. One of the requirements for firms to gain access to the program is the examination of a written business plan as well as its oral presentation in front of a board of experts. This makes the setting excellent for the analysis of archival records of written business plans which may detail contact with the voice of the consumer. The sample includes both surviving and failed firms. The database includes more than 5,000 pages of business plans and 10,000 of other documents (i.e., meeting notes, progress reports). From the 113 firms in the initial sample 35 firms included VOC in their business plans. Analysis will be conducted on the sample of 35 firms that used VOC. Data was collected from 2010-2012 using a standardized form. The main purpose was to organize the whole company database creating a single file per incubated company with all the respective information. This involved the detailed inventory of every existing document about each firm as mentioned above. A research protocol was developed to carefully analyze the business plans and supporting materials. Two masters' students were trained and independently evaluated each business plan. Each plan and other materials took about two hours to read, evaluate, and code. Any disagreements were settled by the authors. Inter-rater reliability was 85%. Further, data was collected on the current situation (2012) of each incubated company. As dependent variable a dichotomous variable (Survival) was used coding whether the firm is still in business or not. The other dependent variable (Average Annual Personnel Growth) has also been updated with the most recent data obtained from the website [www.companyinfo.nl](http://www.companyinfo.nl) and the Chamber of Commerce. Average annual personnel growth is calculated as follows:

$$\text{Average annual personnel growth} = \frac{\text{last employee count} - \text{initial team size}}{\text{year of last employee count} - \text{founding year}}$$

### 3.3 Measurements

The data consist mainly of quantitative information, to test the propositions statistical analysis will be required. This chapter will describe which methods are chosen for which proposition and argue why these are best suited for each situation. Given the relatively small sample size of this research, a total of 113 business plans of which only 35 used VOC, the data cannot be assumed to be normally distributed. Since this lack of normality and the scale of the variables I have chosen to use the following test for the different propositions;

#### *A Mann-Whitney U test*

The Mann-Whitney U-test is a non-parametric method which can be used as an alternative to the two sample student's t-test in a situation of non normal distribution. The variables should however be at least ordinal and the samples have to be independent (Huizingh, 2008). This makes the Mann-Whitney U-test particularly useful for testing differences between groups for the variables that are at least ordinal scaled. The Mann-Whitney U-test will be used to test whether there are differences between groups in survival chances and personnel growth. The first independent grouping variable will be market maturity, which is divided into existing markets and new markets. The other independent grouping variable is entrepreneurs' experience, the groups have been divided into firms from which the entrepreneur did have experience, and firms from which the entrepreneur had no previous experience

#### *A Chi-Square Tests ( Fisher's Exact Test)*

A Chi-Square test will be used to test whether the observed frequencies in the different categories from the variable Survival will have significant difference. The Chi-Square test was chosen because it does not require the data to be normally distributed, and it can also be used for nominal data as is relevant for propositions two and five. For proposition two however, one or more cells contained less than five observations. To guarantee accuracy the Fisher's Exact Text was used instead of the Chi-Square test.

#### *Binary Logistic Regression*

binary logistic regression was used to control for the influences of other variables. Logistic regression analysis can be used to check whether multiple independent variables correlate with one dichotomous dependent variable (Survival). Those variables that predict the dependent variable more than could be expected by chance have a significant impact and will be discussed in the results. Since binary logistic regression does not assume normality or linearity it could be used for this research. Variables that will



included are VOC, number of employees, the amount of support, firms age, industry experience and market maturity. The amount of support was used because all firms were part of an incubation program. The amount of support is measured in number of meetings between the entrepreneur and the business coach.

The goal of this chapter was to describe which methods would be used to answer the research question and for testing the propositions. Together with the information acquired from the literature research this led to the results that are the topic of the next chapter.

### **3.4 Validity**

Shadish, Cook and Campbell (2002) use the term validity to refer to "the approximate truth of an inference" (p. 34). Something is valid when relevant evidence supports our findings, this evidence could both come from empirical findings and other sources of knowledge such as past findings and theories. (Shadish, Cook and Campbell, 2002). Cook and Campbell (1979) divided validity into four components: statistical conclusion validity, internal validity, construct validity and external validity. Below, each component is further elaborated and each component and their respective threats are analyzed for this study.

#### *3.4.1 Internal Validity*

Shadish, Cook and Campbell (2002) use the term internal validity to refer to "the validity of inferences about whether observed covariation between A (the presumed treatment) and B (the presumed outcome) reflects a causal relationship from A to B as those variables were manipulated or measured" (p. 38). They argue that to support such an inference, one must show that A preceded B in time, that A covaries with B and that there aren't any other explanations for the relationship between A and B (Shadish, Cook and Campbell, 2002).

Those threats that are applicable to this study will be discussed below.

- Ambiguous temporal precedence: In this study it is clear that the cause precedes the effect. Since the business plan had to be finalized before starting the business, and the effect such as survival and growth are measured after. This guarantees temporal precedence.
- Selection: the threat that differences between selected firms could have caused the observed effect. Since the firms themselves chose whether or not they did use VOC (treatment) it is possible that these firms have certain characteristics that influence the results. However these differences between firms are interest of this study. For example the differences between the entrepreneurs' experience, and the maturity of the founding environment of the firm. By grouping the firms that chose to use VOC on these characteristics this no longer forms a threat to internal validity.
- History: This threat refers to all events that could have produced the observed results in the absence of the treatment. Since it is impossible and unfeasible to isolate all companies, this

treat cannot be totally discarded. However by selecting firms from the same location, this threat can be minimized. Because all firms face the same events from the outside world, any differences in observed results could be accounted to the actual treatment.

- Maturation: The threat that the outcome could have been produced by natural changes. The fact that firms grow older and thereby become more experienced naturally influences their results. This threat could be reduced by ensuring that all firms are the same age. For this research maturation is dealt with by controlling for the firms age.

#### *3.4.2 Statistical conclusion Validity*

Statistical conclusion validity is defined by Shadish, Cook and Campbell (2002) as "the validity of inferences about the correlation between treatment and outcome" (p. 38). Statistical conclusion validity concerns two related statistical inferences that affect the correlation of causal inferences: (1) whether the presumed cause and effect covary and (2) how strongly they covary (Shadish, Cook and Campbell, 2002). Those threats that are applicable to this study and possibly have caused wrong inferences about the existence and size of correlation between two variables will be discussed below.

- Low statistical power: The threat to incorrectly conclude that the relationship between treatment and outcome is not significant. This threat is dealt with by increasing the sample size, and ensuring that the most powerful statistical tests were used.
- Violated assumptions of statistical tests: Violating assumptions of a statistical test could result in misinterpreting the size and significant of an effect. By simply ensuring that the assumptions of each test are met, this threat is dealt with. For example non parametric tests were chosen because the assumption of normality was not met.
- Fishing and the error rate problem: The threat that an inference may be inaccurate if it results from fishing through the data set to find a significant results. Shadish, Cook and Campbell (2002) argue that especially when multiple investigators reanalyze the same data set, fishing forms a greater threat for accurate results. This threat is dealt with by first investigating the theory and developing propositions on the basis of this theory instead of first investigating the available dataset.

#### *3.4.3 External Validity*

External validity is defined by Shadish, Cook and Campbell (2002) as "the validity of inferences about whether the cause-effect relationship holds over variation in persons, settings, treatment variables, and measurement variables" (p. 38). Those threats that are applicable to this study will be discussed below.

- Interaction of causal relationship over treatment variations: This threat deals with the fact that some variations of a treatments might not be as effective as others. the threat that using VOC

might not be as effective if used combined with other treatments such as coaching or incubator support is controlled for in the analysis.

- Interaction of the causal relationship with settings: The setting of this study is the TOP incubation program. The results are there for not easily generalized to other settings, in which for example less support and coaching is available. These consequences will be acknowledged in conclusions.
- Context-dependent mediation: The explanatory mediators entrepreneurs' experience and market maturity may not mediate the relationship between VOC and survival in another context. This will hinder the generalizability of this research to other start up companies that for example didn't have the same amount of coaching and support.

#### *3.4.4 Construct Validity (person, settings, treatment and outcomes)*

Construct validity is defined by Shadish, Cook and Campbell (2002) as "the validity of inferences about the higher order constructs that represent sampling particulars" (p. 38).

In other words construct validity examines whether the inferences (operationalization) truly represents the theoretical construct of interest. Those threats that are applicable to this study will be discussed below.

- inadequate explication of constructs: Not clearly describing the studies features could cause misinterpreting the results of a study. Careful explications of what was intended reduces this treat.
- Mono-method bias: Having only one operational representation of a construct could form a threat to construct validity. Since most variables were based solely on the written business plan of the firm, this might have influenced the results. Results or constructs might have been different if all entrepreneurs were orally questioned about their amount of planning or VOC usage, making the business plans part of the construct.

## **4 Analysis of Data**

### **4.1 Introduction**

This chapter contains the results from the data analysis and tries to give an answer to the research questions and central question: *“Under which conditions could VOC be used to increase the chance of new firm survival and growth?”*

This chapter will be set out in the following sections: section 4.2 will give an overview of the valuable descriptive statistics. Section 4.3 contains the statistical analysis and the results according to the propositions. Section 4.4 gives a general conclusion of this chapter and a transition to chapter 5, which will give the general conclusion, discussion and limitations of this research.

### **4.2. General information and descriptive statistics**

To gain a better view of the available data and to help show the data in a way that makes it possible to see patterns among the variables Table 1 provides an overview of the number of valid cases per variable, their maximums, minimums, means and standard deviations. It also shows the variance per variable. In addition, a Kolmogorov-Smirnov test of normality was conducted and leads to the last two rows, skewness and kurtosis. And Table 2 shows the Spearman’s rank correlation coefficients. It shows the correlations between all relevant variables. In the vertical column the full names of the variables are shown. In the horizontal row the variables are abbreviations of the variable names. The capital letters of the full variable names are used and they are ordered in the same way. However to make conclusions beyond the already available data and to answer the propositions additional tests will be required.

**Table 1: Descriptive statistics, normality and inter-rater agreement of all variables**

	N	Minimum	Maximum	<i>M</i>	<i>Sd</i>	Variance	Skewness	Kurtosis
Voice of the Consumer	35	1	1	1.00	.000	0		
Market Pages	35	5	9.0	2.23	2.09	4.39	1.97	3.49
Amount of Employees	35	.00	77.00	12.23	16.10	259.30	2.46	6.97
Employee Growth	35	-.07	6.33	.84	1.38	1.76	2.63	7.98
Firm Survival	35	0	1	.69	.47	.22	-.84	-1.38
Firm Age	35	1.00	23.00	10.91	5.65	31.96	.10	-.54
Amount of Support	35	.00	4.00	1.66	1.00	1.00	.39	.34
Industry Experience	35	.00	32.00	7.11	8.52	72.58	1.25	.78
Market maturity	35	1.00	2.00	1.46	.51	.26	.18	-2.09
Valid N (listwise)	35							

### 4.3. Statistical analysis of data

#### 4.3.1 The influence of market maturity

The moderating role of market maturity on the relation between VOC and firm survival and growth has been examined according to three propositions. The first proposition states that firms founded in an existing market are likely to have used VOC more extensive than firms founded in a new market. The results show no significant difference in the number of pages spend on market research between firms that were founded in an existing market and firms that were founded in an new market. Firms that were founded in an existing market spend an average of 2.4 pages on market research, where firms founded in an new market spend an average of 2.03 pages on market research. A Mann-Whitney *U* test was conducted and the results indicate no significant difference (Mann–Whitney  $U$  125  $z = -.91$ ,  $P > 0.05$  one-tailed). Table 2 shows results of the first proposition.

**Table 2. The moderating role of market maturity on VOC extensiveness.**

		N	Mean MP	<i>P</i> -value
Market Maturity	Existing market	19	2.40	.385
	New market	16	2.03	
	Total	35		

Mann-Whitney *U*

The second proposition states that the effect of using VOC on firm survival chances will be more positive for firms founded in existing markets, than for firms founded in new markets. A Chi-Square Tests test was conducted to evaluate whether firms that used VOC and are founded in an existing market would have higher chances of survival than firms that used VOC and are founded in a new market. From the companies that did use VOC and were founded in an existing market 90% survived, from the companies that did use VOC but were founded in a new market only 43% survived, table 3 shows the exact number of firms per category. The results indicate a significant difference  $X^2 = 8.42$ ,  $df = 1$ ,  $p = .009$ . Fisher's Exact Test is often used as an alternative to the Pearson  $X^2$  when one or more cells contain less than 5 observations (as is true in our case for firms that did not survive and were founded in an existing market). The results show that firms which used VOC and were founded in an existing market, have a significantly higher chance to survive.

**Table 3. The moderating role of market maturity on firm survival chances.**

		N	Survival		P-value
			Yes	No	
Market Maturity	Existing market	19	17 (90%)	2	<b>.005*</b>
	New market	16	7 (43%)	9	
	Total	35	24	11	

Fisher's Exact Test

The third proposition states that the effect of using VOC on the firms average annual personnel growth will be more positive for firms founded in existing markets, than for firms founded in new markets. The results show that there is a significant difference on personnel growth. A Mann–Whitney U test was conducted to evaluate whether the effects of using VOC on personnel growth would be more positive for firms founded in existing markets, than for firms founded in new markets. The results indicate a significant difference,  $z = -2.09$ ,  $p < .05$ . (Mann–Whitney U 89  $z = -2.09$ ,  $n_1 = 19$ ,  $n_2 = 16$ ,  $P < 0.05$  one-tailed). Although the mean annual average personnel growth of firms founded in new markets is .90 compared to .79 for firms founded in existing markets, the growth of firms founded in existing markets is significantly higher based on mean ranks of the Mann-Whitney U test. This is mainly caused by two outliers in the category new market. Table 4 shows results of this proposition. Concluding, the results indicate that both propositions 2 and 3 can be accepted but no significant results were found for proposition 1.

**Table 4. The moderating role of market maturity on average annual personnel growth.**

		N	Mean Growth	P-value
Market Maturity	Existing market	19	.79	<b>.037*</b>
	New market	16	.90	
	Total	35	.84	

Mann-Whitney U

#### 4.3.2 The influence of the Entrepreneurs experience

The second moderator entrepreneurs' industry experience was also examined according to three propositions. The first proposition examined the effect of entrepreneurs' industry experience on the extensiveness of VOC. The proposition states that firms with industry experience are likely to have used VOC more extensive than firms without industry experience. A Mann–Whitney U test was conducted to evaluate whether the extensiveness of VOC would differ between firms with industry experience and firms without industry experience. Table 5 shows the average number of pages spend

on market research for both categories. The results show no significant difference on the effects of entrepreneurs' industry experience on the extensiveness of VOC. (Mann–Whitney U 124  $z = -0,37$ ,  $n_1 = 25$ ,  $n_2 = 10$ ,  $P > 0.05$  one-tailed).

**Table 5. The moderating role of the entrepreneurs' industry experience on VOC extensiveness.**

		N	Mean MP	P-value
Experience	Yes	25	2.24	.97
	No	10	1.77	
	Total	35	2.09	

Mann-Whitney U

The second proposition states that the effect of using VOC on firm survival chances will be more positive for entrepreneurs with industry experience than for entrepreneurs without industry experience. A Chi-Square Tests test was conducted to evaluate whether survival chances would be higher for firms that used VOC from which the entrepreneur had industry experience than for firms that used VOC from which the entrepreneur had no industry experience. From the companies that did use VOC and the entrepreneur had industry experience 76% survived, from the companies that did use VOC but from which the entrepreneur had no industry experience only 50% survived. Table 6 shows the exact number of firms per category. Although there is a difference the results show no significant difference  $X^2 = 2.24$ ,  $df = 1$ ,  $p = .138$ .

**Table 6. The moderating role of the entrepreneurs' industry experience on survival chances**

		N	Survival		P-value
			Yes	No	
Experience	Yes	25	19 (76%)	6	.14
	No	10	5 (50%)	5	
	Total	35	24	11	

Chi-Square Tests

The third proposition states that the effect of using VOC on personnel growth will be more positive for firms with industry experience, than for firm without industry experience. A Mann–Whitney U test was conducted to evaluate whether the effects of using VOC on personnel growth would be more positive for firms with industry experience, than for firms without industry experience. The results indicate no significant difference,  $z = -1,628$ ,  $p > .05$ . (Mann–Whitney U 81  $z = -1,62$ ,  $n_1 = 25$ ,  $n_2 = 10$ ,  $P > 0.05$  one-tailed). However as can be seen in table 7 there is quite a difference, firms from which the entrepreneur had previous industry experience had a mean growth of .98, where firms from



which the entrepreneur had no industry experience only had a mean growth of .50. Conclusively no support was found for propositions 4, 5 & 6, which means that the entrepreneurs' industry experience has no significant moderating effect on the relation between using VOC and the outcome variables extensiveness, survival and personnel growth.

**Table 7. The moderating role of the entrepreneurs' industry experience on average annual personnel growth**

		N	Mean Growth	P-value
Experience	Yes	25	.98	.104
	No	10	.50	
	Total	35	.84	

Mann-Whitney U

*4.3.3 Binary Logistic Regression*

binary logistic regression was used to test whether the dichotomous variable survival could have been predicted using a set of predictor variables. The predictor variables are a mix of continuous, categorical and nominal dichotomous variables and no normal distribution can be assumed. The variables used are, Voice of the Consumer, number of employees, amount of support, the firms age, industry experience and market maturity.

The Intercept only model without including any predictor variables shows us that it is expected that firms are 1.97 times more likely to survive than not to survive. It tells us that if we would predict all firms to survive the model will be correct 66.4% of the time. The new model however has a predictive capacity of 85.8%. With a Nagelkerke R Square of 0.622 and a -2 Log Likelihood of 77. The significant variables form the equation are number of employees, the amount of support and the firms age. The table also shows us that VOC isn't significant, however as shown before the role influence of VOC is moderated by other variables such as the entrepreneurs' industry experience and the maturity of the firms' founding environment.

Table 9 shows the logistic regression coefficient, Wald test, and odds ratio for each of the predictors. Using a  $p < 0.05$  statistical significance criteria, the significant predictor variables form the equation are number of employees, the amount of support and the firms age. The number of employees is measured in absolute numbers, so with every increase of one employee the firm is 1.11 times more likely to survive. The amount of support is measured in number of meetings with an incubator, the results indicate that with every extra meeting the firm is 2.66 times more likely to survive. The last significant predictor is firms age, which is measured in years. With every increase of one year in firm age, the firm is 1.43 times more likely to survive.

**Table 8. Predictor statistics of the binary regression model**

Predictor	B	Wald X2	P	Odds Ratio
Voice of the Consumer	.118	.030	.863	1.125
Employees	.101	4.807	.028	1.106
Amount of Support	.979	8.489	.004	2.662
Firm Age	.360	19.784	.000	1.433
Industry Experience	.028	1.203	.273	1.028
Market Maturity	-.659	1.234	.267	.517
Constant	-4.316	9.409	.002	.013

#### 4.3.4 Multiple regression analysis

Multiple regression analysis was used to test whether the continuous variable average annual personnel growth could have been predicted using a set of predictor variables. The predictor variables are a mix of continuous, categorical and nominal variables and no normal distribution can be assumed. The variables used are, the firms age, industry experience, VOC, amount of support, and market maturity. Average annual personnel growth was calculated using the following calculation:

$$\text{Average annual personnel growth} = \frac{\text{last employee count} - \text{initial team size}}{\text{year of last employee count} - \text{founding year}}$$

Using the enter method, no significant model emerged  $R^2 = .214$   $F = 1.579$ ,  $p = .197$ . The Adjusted R Square value tells us that our model accounts for 21.4% of variance in the average annual growth. Table 9 shows the multiple regression Beta coefficients and their corresponding P-values. Using a  $p < 0.05$  statistical significance criteria, none of the independent variables have a significant influence on average annual personnel growth.

**Table 9. Multiple regression analyses**

Predictor	Beta	P
Market Maturity	.160	.396
Amount of Support	.163	.339
Firm Age	.078	.682
Industry Experience	.150	.408
Voice of the Consumer+	.363	.139
Constant	-1.148	.322

## Chapter 5: Conclusions and Discussion, Limitations and Implications

### 5.1 Introduction

This research is conducted to answer the central question, “Under which conditions could VOC be used to increase the chance of new firm survival and growth?”. The central question will be answered using two research questions being:

1. What influence does market maturity have on the use and impact of VOC?
2. What influence does the entrepreneurs industry experience have on the use and impact of VOC?

Research question 1 and 2 were answered using the test results which are presented in the previous chapter. This chapter will start with a brief overview of the test results and further interpret and discuss these test results and draw conclusions which will answer the central question. Finally the limitations and implications of this study will be discussed.

### 5.2 Conclusions and discussion

The results gathered from the tests presented in the previous chapter will be discussed in the same sequence as the propositions were derived from the theoretical framework. Which means that the influence of market maturity on the use and impact of VOC will be discussed first and that the influence of the entrepreneurs’ industry experience will be discussed subsequently. Table 9 first presents the test results from the propositions tested in the previous chapter:

**Tabel 10 . Overview test results**

	Test	P-value	Significant
Proposition 1	Mann-Whitney U	.385	
Proposition 2	Fisher’s Exact Test	<b>.005</b>	*
Proposition 3	Mann-Whitney U	<b>.037</b>	*
Proposition 4	Mann-Whitney U	.970	
Proposition 5	Chi-Square Tests	.143	
Proposition 6	Mann-Whitney U	.104	

### *5.2.1 The influence of Market Maturity*

The influence of market maturity on the use and impact of VOC on survival changes has been examined according to three propositions. The results for the first proposition indicates that there is no significant difference between firms that were founded in existing market and firms that were founded in new markets concerning the extensiveness of VOC usage. Firms that were founded in existing markets did however spend an average of 0,5 pages more on market research than firms that were founded in new markets. As expected more information about customer preferences should be available in existing markets because potential customers are more easily identified and customers should be able to provide more detailed information about their needs and preferences regarding the products or services of the firm. One would expect the opposite for firms founded in new markets, where it would be harder to find potential customers that are familiar with the new product or service. The fact that the results didn't provide a significant difference could be caused by several factors. The most likely cause will probably be the small sample size which makes it hard find a significant result. Another more theoretical explanation could be that just because more information about customers is available, doesn't mean the entrepreneur chooses to write it down. On the contrary one could even argue that information about customers in an existing market might seem so obvious that they didn't take the effort to mention it in their business plan. Another explanation is given by Castrogiovanni (1996) who argues that more learning is required under uncertain conditions, this could have stimulated planning and thereby the extensiveness of VOC for firms founded in for new markets.

The results of the second proposition indicates that there is a significant difference on the influence of VOC on firm survival chances between firms that are founded in existing market and firms that are founded in new markets. These results confirm the proposition that the effect of using VOC would be more positive for firms founded in existing markets than for firms founded in new markets. Although the previous proposition didn't provide a significant result on the difference in the extensiveness of VOC, this result indicates that there is a difference in the quality and value derived from using VOC. The fact that firms that did use VOC in an existing market are more likely to survive could be explained by the quality of the information, because it is this information that helps the entrepreneur evaluate his initial idea, and if necessary make changes so that his product matches the customers' expectations. Since the success of a product and thereby the survival of a new firm will largely depend on the satisfaction of the customer, detailed information about customers expectations are of great importance to firm survival. Another conclusion that can drawn from these results is that VOC is less valuable for firms entering a new market because there is a higher degree of uncertainty and entering an new market is often associated with novel technologies that may not be easily understood by the market (Englis et al. 2011). These factors negatively influence the quality of the information gained from using VOC.

The results of the third proposition report a significant difference for personnel growth between firms founded in existing markets and for firms founded in new markets. These results confirm the proposition that the effect of using VOC on firm growth will be more positive for firms founded in existing markets, than for firms founded in new markets. So it seems that besides the great importance of information about customers expectations on firm survival it also influences the company's growth. Although it seems logical to assume that if the firms survival chances are higher these firms will automatically grow faster, this will not always be true. Where making a business plan is a onetime task for most companies, a true VOC orientation involves integrating a consumer-orientation throughout the firm (Englis et al. 2010) and adapting to changes along the way. This means changing your products or services to the changing expectations of customers. As was the case with survival, the impact of VOC on personnel growth is more positive for firms founded in an existing market. This significant difference is most likely to be caused by the availability of information about customers preferences and expectations. Another explanation is the lesser degree of uncertainty in existing markets. Because industry trends and customer preferences are generally better known, decision making will be faster and bottlenecks can be avoided which facilitates faster growth (Castrogiovanni, 1996, Delmar & Shane, 2003).

#### *5.2.2 The influence of the Entrepreneurs experience*

The results of the fourth proposition report no significant difference on the extensiveness of VOC between firms with industry experience and firms without industry experience. It was proposed that Firms with industry experience are likely to have used VOC more extensive than firms without industry experience, because potential customers are more easily identified by entrepreneurs who know the market and might already have some relationship with customers. Not finding a significant difference might be due to the same causes that were responsible for not finding significant results for the first proposition. Especially for entrepreneurs with industry experience information about customers might seem so obvious that they didn't take the effort to mention it in their business plan. Besides for a experienced entrepreneur with preexisting knowledge of the market there is an reduced need to learn, but there is also less to learn than for an inexperienced entrepreneur (Castrogiovanni, 1996).

The results of the fifth proposition indicates that there is no significant difference between survival chances for firms that used VOC from which the entrepreneur had industry experience and for firms that used VOC from which the entrepreneur had no industry experience. Although not significantly there is a considerable difference in survival chances. The fact that the results didn't provide a significant difference could be caused by several factors. The most likely cause will probably be the small sample size which makes it hard find a significant result nevertheless the test that was chosen is especially useful for this kind of data and a small sample size. Another reason could be that for an

experienced entrepreneur with preexisting knowledge of the market there is an reduced need to learn and there is also less to learn than for an inexperienced entrepreneur, which makes the outcome less valuable (Castrogiovanni,1996). So although it was expected that an experienced entrepreneur could gain more value for using VOC because he would have an easier time gaining information from potential customers, it seems that his previous experience and knowledge could also diminish the potential value from using VOC.

The results of the last proposition reports that there is no significant difference between personnel growth for firms that used VOC from which the entrepreneur had industry experience and for firms that used VOC from which the entrepreneur had no industry experience. It was proposed that The effect of using VOC on personnel growth would be more positive for firms with industry experience, than for firms without industry experience. The fact the results were not significant could be caused by the small sample size. Besides the small sample size entrepreneurs experience could have diminished the benefits otherwise gained from planning and VOC at the foundation of the firm, making the difference between experienced and inexperienced entrepreneurs smaller. As was the case with the previous proposition inexperienced entrepreneurs have more to learn, making VOC more valuable. However it seemed logical to assume that as the company grows I would benefit from the information gained from a true VOC orientation. This leads me to one of the shortcomings of this research, whether a firm used VOC was determined at the foundation of the firm (in the BP), the results could have been different if a follow up study on the real use of VOC was conducted, to see whether the firm kept using VOC after the business plan was finalized and the product or service was launched.

### *5.2.3 Answering the central question*

This research is conducted to answer the central question, “Under which conditions could VOC be used to increase the chance of new firm survival and growth?”. The two most influencing variables, market maturity and entrepreneurs experience were taken to evaluate under which circumstances VOC would be most valuable. In summary it can be concluded that market maturity is the most important moderating factor given the significant result of propositions two and three. Firm survival chances and growth are most likely to be increased when VOC is used by firms founded in an existing market.

## **5.3 Limitations**

This study as most other studies has its limitations, some are caused by design choices other because of time constraints. One of the major limitations of this study is probably the sample size. The sample size of 113 business plans of which 35 have used VOC, reduces the statistical conclusion validity of this research. Although statistical test were chosen carefully and in compliance with the limitations imposed by the available data, it is possible results have been overestimated. A second limitation of this research is its generalizability. Since all business plans are from high tech startup firm that participated in the TOP incubation program of the University of Twente, the sample is not

representative for most other startup firms. The results of this study are likely to be influenced by the effects of being in an incubation program and can therefore only be generalized to other startups that participate in an incubation program.

Another limitation of this research is caused by the data collection procedure. Since data on the dependent variables was collected at one point in time (in the initial business plan), it is hard to say anything about the actual VOC usage. Therefore we can only conclude whether VOC was present in the business plan, while especially for the effect on growth the actual usage over time might have significant influence. In addition only firms that started a business were included in the sample, some entrepreneurs that used VOC decided not to commercialize a certain opportunity because VOC pointed out there wasn't a real opportunity. This could have biased the results. Finally it is possible that key variables were not included in this analysis such as other outcome measures (current sales). This data isn't available because firms with a turnover of less than 1m EUR do not have to report their financial data to the Chamber of Commerce.

#### **5.4 Implications & suggestions for further research**

The results of this study contribute to the ongoing debate about the value of business planning by focusing on VOC, startup survival and growth, and incorporating the impact of potential moderators such as market maturity and the entrepreneurs' experience. This is important because research on business planning is fragmented, and research on VOC didn't provide significant evidence on its influence on new firm survival. In line with the results from for example Gruber (2007) this research emphasizes the need for an adaptive perspective on planning, in which different areas of the business plan could be more or less valuable depending on contextual factors. Although VOC is a relatively new topic and not present in all business plans, the moderating role of the maturity of the startups founding environment might also be influencing other areas in the business plan. However additional research on the other areas of the business plan will be needed to see under which conditions these will be most valuable.

In addition to the theoretical relevance it will also be beneficial for future entrepreneurs to know how and under which conditions they could benefit from using VOC in their business plan, because there are many other important time consuming tasks when creating a new business. The results indicate that firms in existing markets are likely to benefit most from using VOC. However especially high tech startups founded in new markets have a hard time to align their technology with the demands of the consumer (Von Hippel, 1986). It will be necessary to gain a better understanding about how these companies have used VOC, and how to increase the value derived from VOC by for example different information gathering methods such as focus groups or lead user testing. Additional research and alternative research designs such as for example case studies are needed to gain a better understanding

about how VOC was used. This could further improve the chances of new firm survival and growth and increase the commercialization of research.



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