SURVIVAL AND GROWTH OF HIGH TECH KNOWLEDGE INTENSIVE FIRMS: 
THE IMPACT OF THE VOC IN BUSINESS PLANNING

**Basil G. Englis**  
Edgeron Professor of Marketing  
Campbell School of Business, Berry College and Nikos, University of Twente  
P.O. Box 495024  
Mount Berry, GA 30149-5024  
benglis@berry.edu

**Paula D. Englis**  
Professor of Management  
Campbell School of Business, Berry College and Nikos, University of Twente  
P.O. Box 495024  
Mount Berry, Georgia  
penglis@berry.edu

**Tiago Ratinho**  
Assistant Professor  
Nikos School of Management & Governance  
University of Twente  
P.O. Box 217  
NL-7500 AE Enschede  
The Netherlands  
tiago.ratinho@utwente.nl

**Aard J. Groen**  
Professor of Innovative Entrepreneurship  
Director of Nikos  
School of Management & Governance  
University of Twente  
P.O. Box 217  
NL-7500 AE Enschede  
The Netherlands  
A.J.Groen@sms.utwente.nl

**Abstract**  
The need to bring the consumer’s voice into the startup firm and the business planning process has seldom been discussed. There is however, much debate about the role of business planning and new venture creation and success. Here, we extend this debate and advance our understanding of the effectiveness of business planning. Specifically, we investigate the impact of incorporating the “voice-of-the-consumer” (VOC) into business planning process as it affects firm survival using longitudinal data from a sample of incubated spin off firms.
INTRODUCTION

The voice-of-the-consumer can be a unique resource for high technology knowledge intensive firms that generally tend to be technology oriented and not consumer oriented (Miles and Darroch, 2006). While such firms often have very sophisticated understanding of their technological capabilities, these tend to be understood as attributes of actual or potential products. Instead they need to be understood in terms of the benefits that these attributes can deliver to users. These are not always apparent and it is here that an active program for assessing the VOC can become a critical competitive advantage. In providing a means of connecting product features and attributes to user benefits, the VOC brings a different kind of knowledge into the firm that other firms may not have, and may not be able to imitate. Thus, VOC can be an important area of resource-based advantage (Barney 1991). A large body of research supports the need to have unique resources as critical to a firm's success – particularly for startups (Florin, Lubatkin, and Schulze 2003; Yli-Renko, Autio, and Sapienza 2001; Tsai and Ghoshal 1998). From a resource-based view of the firm, if the firm can develop resources like the VOC that are valuable, rare, inimitable, and nonsubstitutable, then these could lead to a sustainable competitive advantage (Barney 1991; Conner 1991).

The need to bring the consumer's voice into the startup firm and the business planning process has not received much attention. There is however, much debate about the role of business planning and new venture creation and success (i.e., Gruber, 2007; Karlsson and Honig, 2007). In this paper, we extend this debate and advance our understanding of the potential role of the extensiveness of business planning. Specifically, we investigate the impact of incorporating the “voice-of-the-consumer” (VOC) into business planning as it affects firm performance and survival using data from a sample of incubator spin off firms. The balance of the paper begins with a review of the literature and hypotheses linking the VOC in business planning to two aspects of firm performance: survival and performance. Next, the research methodology is described and study results are presented. Finally, a discussion is provided and promising areas for further research are identified.

CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

Business planning and financial performance

Over the past decade, entrepreneurship research has shown renewed interest in the impact of business planning on startup firm survival and performance. Indeed a number of studies over the past ten years have brought additional empirical evidence concerning the impact of business planning (for example Delmar and Shane, 2003). While many of these findings are contradictory, one thing all of these studies agree on is that business planning is a heterogeneous task. Gruber (2007) suggests that future research should take better heterogeneity into consideration that not all functional areas present in a business plan are planned in the same manner and they may not be of equal importance to venture success (Bhidé, 2000). Liao and Gartner (2006) also note that complexity and dynamism may impact business planning effectiveness. Knowledge intensive high tech firms are likely to develop businesses based on novel technologies that may not be easily understood by the market (Englis, Wakkee, and van der Sijde, 2007).

A number of studies have found that writing a business plan increases the likelihood of firm survival (for instance Gruber, 2007; Shane and Delmar, 2004). For instance, Shane
and Delmar (2004) used a random sample of 223 Swedish entrepreneurs to examine their organizing efforts including business plan completion. Their results showed that entrepreneurs were less likely to fail if they completed a business plan before beginning market activities. In a similar vein, Liao and Gartner (2006) found the firms that completed a business plan were 2.6 times more likely to launch their business than those that did not complete a plan. They also found that the likelihood of venture persistence increased in perceived uncertain financial and competitive environments. Following this work, Gruber (2007) found that business planning is beneficial for startup firms. He advocated that a contingency perspective should be applied with different planning approaches depending on the type of founding environment (i.e., the extent of dynamism).

On the other hand, some studies have found no association between writing a business plan and success (for example Honig and Karlsson, 2004, Karlsson and Honig, 2009). Bhide (2000) found that less than 28 percent of his sample of Inc 500 firms had completed a business plan. In addition, Honig and Karlsson (2004) showed evidence entrepreneurs only write business plans because they are required to by investors, educators and advisors. This finding was echoed by Lange, Mollov, Pearlmutter, Singh, and Bygrave (2007) in their study of startups founded by Babson College alumni. They found that firms with business plans had no performance differences from firms without business plans. They suggest that unless an entrepreneur needs to raise substantial start-up funds from venture capital or business angels, there is no compelling reason to write a detailed business plan before opening a new business. Most recently, Karlsson and Honig (2009) collected longitudinal data on six firms over a five year period to examine the impact of business planning on firm success. They found that firms initially conformed to business plan norms but over time they moved farther away from the plans. None of the entrepreneurs who wrote business plans updated them and it was quite rare for an entrepreneur to refer to the business plans after they launched.

While there is a great deal of discussion and research about business planning and firm survival and performance (Gruber, 2007; Shane and Delmar, 2004), there is not as much discussion about the content of business plans. The section below presents a discussion about the VOC and research in this area.

**Business planning and VOC**

As discussed above, most research looks at whether or not a plan exists and its impact on firm survival or performance. A written business plan may be 5 pages or 50 pages (and beyond). It may have detailed financial pro-forma statements, a well developed analysis of the market with details of consumer needs and expectation or not. 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. They go on to say that people assume that just because a plan exists, it represents a good idea has been well written or well developed. Trailor and Wolford (2001) have argued that, “listing the important topics in a business plan creates only generalities. Details must support the arguments made about and for the topics... That is, effective business plans are the outcome not only of covering all the bases, but also of covering them well” (p. 41). This suggests that entrepreneurs may have significant issues writing meaningful business plans. These issues may become even more significant if the product or service is based on novel technologies that may not necessarily be easily understood by the market. A recent meta
analysis of business planning research (Brinckmann, Grichnik, and Kapsa, 2010) showed that while planning is beneficial, contextual factors and the environment also impact the relationship. Brinckmann, Grichnik and Kapsa (2010) advocate a dynamic combination of planning and learning. The VOC may fit well into this recommendation.

**VOC and firm survival**

Many high tech knowledge intensive entrepreneurial firms tend to focus on their technological capabilities and to develop products that are typically taken to the market using a “push” strategy. In doing so, the firm and its downstream value-chain members push their technology into the marketplace with scarcely a thought of the consumer until after the product is in the hands of the user (Workman, 1994). By matching resources and perceived needs of consumers, the entrepreneur develops an initial idea into a viable business opportunity (Bhave, 1994; Puhakka; 2002). However, many entrepreneurs guess if their product/service will meet the needs of customers. Bringing the VOC into the business planning process is essential to providing an answer to the question of whether or not an opportunity exists. Understanding how the user of the technology will benefit from its use is critical to understanding the true value of the technology. This should be the starting point in developing a business model for commercializing the technology. By viewing the relationship with the customer as long term, it is an opportunity to start building the relationship. Thus the firm will start building customer equity – the beginning of a long term relationship, with the customer viewed as a firm asset.

Through interaction with members of the value chain and listening to the voice of consumer, the entrepreneur analyzes the competitive environment, refines the initial idea and develops a clear understanding of the value (if any) of the idea (Van der Veen and Wakkee, 2004). The decision to commercialize (or not) should flow from this process. In this sense, the relationship with the VOC is highly interactive where the firm identifies with consumers and their needs at a fundamental level. Using the knowledge gained from the VOC, the firm is likely to develop the idea into a full-fledged business opportunity. It is also possible that firms may realize that an appropriate resource base to exploit the opportunity is not viable or that the product/service offering does not resonate with the consumer. Likewise, the demand for the product or service may be insufficient for profitable exploitation. In these cases, the business concept may be revised or even abandoned (Herron and Sapienza, 1992). For firms that engage the VOC early in the entrepreneurial process, it is likely that they will move forward having discovered problems through the VOC much earlier thus increasing their chances of survival.

As the product or service is readied for full market introduction, supporting marketing efforts are engaged (branding, packaging, advertising, training materials, etc.). A key goal of the planning process is to evaluate the effectiveness of different elements of the communications mix in conveying appropriate information about what the product/technology can do. A critical issue to successful marketing introduction and customer satisfaction is that consumers’ expectations are in line with what the product/technology can deliver. The key question that VOC can help firms to address is: “to what extent does the product/technology provide benefits match consumers’ ideal solution set?” Most product offerings are “imperfect” solutions to a consumer’s problem, and it is important for firms to understand this and to calibrate product claims accordingly. Building on these arguments, the following hypotheses is offered.
**H1:** Knowledge intensive high tech startup firms that include VOC in their business planning are likely to have more extensive business plans.

**H2:** Knowledge intensive high tech startup firms that include VOC in their business planning are more likely to survive.

**Growth**

Although some studies have examined the general construct of market orientation (Narver and Slater 1990; Kohli and Jaworski 1990) and related this to firm performance and growth, a focus on the market is not necessarily synonymous with the VOC. Many firms, especially upstream members of a value chain, tend to view their customers as those firms to whom they sell their products. This perspective relies on value chain intermediaries to act as “interpreters” of the desires and needs of the end user. A true VOC orientation involves integrating a consumer-orientation throughout the firm (regardless of the firm’s position in the value chain). Innovation should be viewed as a continuous process that operated in response to emerging consumer needs so that the firm leads rather than follows the industry (for example Sheth, Sisodia and Sharma, 2000). High tech knowledge intensive firms are likely to lead the industry with their products and services. Many of these have a shortened ‘shelf life’ or a window of opportunity to reap profits from a given innovation (Workman, 1994). Firms that engage the VOC asset base and build customer equity to guide decisions and keep a close watch on changing consumer preferences are likely to have higher levels of performance. The firm may engage lead or heavy users in testing beta versions of the product or service before it enters the market to assess the viability of the idea. Thus the flow of information is two-way with end users actively engaged in a process of co-development and co-design of the product or service. This flow of information and the VOC view of the firm lead to a deeply felt sense of purpose and conviction on both sides that serve to differentiate the firm.

As the market matures, firms will continue add new or improved products and services to the market and/or improve internal operations. The opportunity exploitation process leads to value creation in terms of choice for customers, financial gain, knowledge, incremental innovation, etc. (Autio, Sapienza and Almedia, 2000). As operational issues become critical and the focus shifts to maintenance of initial success, however, it is becomes even more important for firms to listen to the VOC: consumer preferences are constantly changing. High tech knowledge intensive entrepreneurial firms that listen to the VOC and incorporate it into their business planning should be more successful since they are more able to (1) understand how their technical capabilities translate into consumer benefits, (2) develop products that reflect this understanding and (3) better align their value chains to deliver these benefits. Based on the arguments above, we present the following hypothesis:

**H3:** Knowledge intensive high tech startup firms that include VOC in their business planning are likely to have higher levels of growth.
METHODOLOGY

Sample
Data was collected from the Top Program of the University of Twente, one of the oldest incubation programs in North-western Europe. Founded in 1984 and endorsed directly by the University board, Top has incubated more than 350 firms so far. This program stimulates the creation of technology-based spin-offs. It 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 Top 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 to answer our main research hypotheses. Our sample includes both surviving and failed firms. The database counts more than 5,000 pages of business plans and 10,000 of other documents such as meeting notes, progress reports and further evidence of incubation activities. Of the 350 firms in our full sample, 92 firms’ business plans have been fully analyzed. Of these, 33 firms included the VOC in their business plans. All analysis will be conducted on the sample of 92 firms.

Data collection
Data was collected during 2010 using a standardised 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 such as business plans, progress report, meeting notes and official committee assessment among others. 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 took about two hours to read, evaluate, and code. Any disagreements were settled by the authors. Inter-rater reliability was 85 percent. Further, we collected data on the current situation (2010) of each incubated company to find out whether they still exist and how big they are in terms of employment.

Variables
We used as dependent variable a dichotomous variable coding whether the firm is still in business or not. Independent variables are related to the VOC in the business plan. We used a dummy variable to code the existence of VOC in the business plan. Extensiveness of business planning consisted of the number of pages in each business plan. Growth was measured by the number of employees in the firm. Furthermore, we used size in the first two sets of analysis and controlled for offering (product versus service) of each company in all analysis.

RESULTS
Table 1 presents the descriptive statistics and correlations of our sample. About 64 percent of all incubated firms are still trading. Their average age is about 12 years old. Their business plans are on average about 17 pages long.
Table 1
Descriptive statistics and correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total BP pages</td>
<td>18.41</td>
<td>12.03</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Service company</td>
<td>0.35</td>
<td>0.48</td>
<td>-0.029</td>
<td>1.000</td>
</tr>
<tr>
<td>3</td>
<td>Employees</td>
<td>10.63</td>
<td>11.88</td>
<td>-0.052</td>
<td>-0.000</td>
</tr>
<tr>
<td>4</td>
<td>Survival</td>
<td>0.74</td>
<td>0.44</td>
<td>0.087</td>
<td>-0.190</td>
</tr>
</tbody>
</table>

N=92

Results show that there is no difference in extensiveness of business planning between firms with VOC in their business plan than those without, answering negatively our first research question (Table 2). Non-parametric independence tests show that there are no significant differences. Thus H1 was not supported.

Table 2
Non parametric tests (grouping variable = VOC)

<table>
<thead>
<tr>
<th></th>
<th>Mean VOC</th>
<th>Mean non- VOC</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total BP pages</td>
<td>19.61</td>
<td>17.74</td>
<td>n.s.</td>
</tr>
<tr>
<td>Service company</td>
<td>0.36</td>
<td>0.34</td>
<td>n.s.</td>
</tr>
<tr>
<td>Employees</td>
<td>10.67</td>
<td>10.61</td>
<td>n.s.</td>
</tr>
<tr>
<td>Survival</td>
<td>0.79</td>
<td>0.71</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Logit regression analysis revealed that including VOC in the business plan (p-value ≤ 0.10) did not have a significant impact on survival (Table 3). The coefficient’s signal is positive but not significant. H2 was not supported.

Table 3
Linear regression (dependant variable = survival)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.D</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.58</td>
<td>0.10</td>
<td>0.00</td>
</tr>
<tr>
<td>Total BP pages</td>
<td>0.00</td>
<td>0.00</td>
<td>0.35</td>
</tr>
<tr>
<td>Service company</td>
<td>-0.17</td>
<td>0.09</td>
<td>0.06</td>
</tr>
<tr>
<td>Employees</td>
<td>0.013</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>VOC</td>
<td>0.073</td>
<td>0.09</td>
<td>0.42</td>
</tr>
</tbody>
</table>

R²=0.166

Some of the control variables were significant. Size was significant. The coefficient was positive indicating that the larger the firm is, the higher the likelihood of survival (p<.001). Service firms were more likely to fail (p<.05).

Logit regression analysis was also used to test H3 – that VOC firms would have higher levels of growth than non VOC firms (Table 4). The coefficient’s signal is positive but not significant. H3 was not supported.

Table 4
Table 4  
Linear regression (dependant variable = size) 

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.D</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>11.54</td>
<td>2.62</td>
<td>0.00</td>
</tr>
<tr>
<td>Total BP pages</td>
<td>-0.05</td>
<td>0.11</td>
<td>0.63</td>
</tr>
<tr>
<td>Service company</td>
<td>-0.05</td>
<td>2.64</td>
<td>0.99</td>
</tr>
<tr>
<td>VOC</td>
<td>0.154</td>
<td>2.63</td>
<td>0.95</td>
</tr>
</tbody>
</table>

\[ R^2=0.003 \]

We also looked more closely at the firms that did engage the VOC in their business plans and looked to examine, 1. who they talked to (end users versus downstream partners), 2. how they contacted the VOC (formal [focus groups, surveys, etc.] versus informal mechanisms [discussions]), 3. if the VOC input changed the business plan (yes, no), and what was the nature of the input (favorable, unfavorable). Table 5 shows these results.

Table 5  
Gathering of VOC and Outcomes 

<table>
<thead>
<tr>
<th></th>
<th>Number of Firms (32 VOC)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of VOC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>End user contact</td>
<td>26</td>
<td>78.8%</td>
</tr>
<tr>
<td>Other customer input</td>
<td>11</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>How VOC Contacted</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal method</td>
<td>5</td>
<td>15.2%</td>
</tr>
<tr>
<td>Informal method</td>
<td>32</td>
<td>86.4%</td>
</tr>
<tr>
<td><strong>Outcome of VOC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOC input changed Bplan</td>
<td>10</td>
<td>30.3%</td>
</tr>
<tr>
<td>VOC input favorable</td>
<td>25</td>
<td>75.6%</td>
</tr>
</tbody>
</table>

Of the 32 firms who sought input, there were 37 contacts with the VOC. Of these, the majority were with the end user (78.8%) using informal contact methods (86.4%). In terms of the impact of the VOC, 30% of firms used the VOC input to change their business plans. In the business plans, 76% of the firms indicated that they received a favorable response from the VOC.

**DISCUSSION AND CONCLUSION**

Taken together, our results show that business planning may not make much of a difference for high-tech knowledge intensive start-ups. We found no differences among the extensiveness of some business planning for firms that engaged the VOC compared with those that did not and we found that firms that engaged the VOC were no more likely to survive than those that did not.

This finding is quite interesting and puts us in the middle of the debate about the effectiveness of business planning. The results support those who have found no association between writing a business plan and success (for example Bhide, 2000; Honig and Karlsson, 2004; Karlsson and Honig, 2009). One possible explanation is that our sample size is too small (92). We plan to continue to analyze the rest of the incubator sample and increase the sample size to 350. When we conducted post hoc z-tests to look at
survival, we found that although the groups were not significantly different, the differences were approaching significance ($z=1.09$). Of the 32 VOC firms, 6 failed (18%) and of the 59 non VOC firms, 18 failed (30%). If the sample were larger, it is quite possible that there would be a significant difference. Another possible explanation of this finding is that incubated knowledge intensive high-tech start-up firms are likely to develop businesses based on novel technologies that may not necessarily be understood by the market and may be difficult to translate into business plans. In addition, these technologies may be disruptive or create new industries. Further, these findings suggest that mechanisms other than planning may be contributing more strongly to firm’s survival. Effectuation (Sarasvathy, 2001), bricolage (Baker and Nelson, 2005; Liao and Gartner, 2006) or improvisation might have taken the place of formal planning for the firms in our sample. Further, incubated firms typically enjoy a business support environment using frequently services such as coaching or networking with other organizations. Under these conditions, planning can be take place throughout the incubation period and develop informally rather than formally.

Of course, every study has its limitations. One of the major limitations of the study is the sample. First, all the startup firms were from an incubator. Thus our results can only be generalized to other incubated firms. Second, although we only evaluated startups from one incubator, we were able to gather business plan data on the entire population of startups firms over a 20+ year period from this incubator. However, analysis on only 92 of those firms is presented here. The analysis process has taken an enormous amount of time and has constituted coding approximately 15,000 pages. Each business plan and support materials take ~two hours to read and evaluate and there are two coders. We estimate that 370 hours have been spent thus far on the data. To further build on the results of this research, we will continue assess the remainder of the firms. Another limitation is that there may be excluded variables. It is possible that key variables were not included in this analysis such as other outcome measures (current sales). We are trying to collect this data now. A final limitation is that there may be other, possibly more pertinent aspects of business plans and startups that should be included in future investigations (such as amount of coaching support since these firms were all incubated).

We recommend that future research not only examine the extensiveness of business planning but also examine the quality of the business plan. Further work in this area of qualitative examination of business plans by multiple expert raters (allowing for inter-rater reliability) would contribute to the field by moving to substantive discussions versus existence discussion. As Heriot Campbell and Finney (2004) show in the their model of business plan effectiveness, if the idea is not good (a pig) putting lipstick on it by writing a business plan will not make it more attractive. Thus, the quality of the core idea and execution of the idea through business plan development should be assessed.

In summation, our study contributes toward an understanding of the startup business plan effectiveness and firm survival. We contribute to the literature of business planning and its impact on performance for startup firms by moving beyond the formal outcome of the planning effort (e.g. such as the existence of written business plans) by analyzing both the extensiveness of business planning and the role of the VOC. Our findings show no differences among the extensiveness of business planning for firms that used the VOC and that these firms were as likely to survive compared with those that did not use the VOC.
We hope that our research will continue the debate on effectiveness of business planning – an issue that is of interest to both academics and entrepreneurs.

REFERENCES


