

Effectuation & Causation

Approaches and their effect on Business Performance

An analysis of business plans

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A word from the author

In front of you, you can read the result of my master thesis. It's the final piece of my Master in International Business Administration. This study is the conclusion of an assignment that was carried out for the University of Twente during 2015 and 2016. In order to complete the assignment additional information on companies which had written business plans was needed, after the business plans were coded, initially.

I would like to thank my two supervisors, Dr. Ir. Jeroen Kraaijenbrink and Martin Stienstra, and my external supervisor Dr. Tiago Ratinho, who guided me through this study. The numerous conversations we had were very pleasant, and always a great help to get back on the right track. When I was stuck, they provided me with the right tools to get going.

I also have to thank my girlfriend, Tessa. Without her you were probably not reading this right now. She inspired me when I needed it, and pushed me to go on whenever it was necessary. Tessa had to cope with the big delays there were, but she stands by my side indefinitely.

Have a great read!

Jos Lennips

Hardenberg, 2016

Abstract

This paper is about the influence of Effectuation and Causation, two entrepreneurial strategies, on the performance of companies. These terms were first coined by Sarasvathy in 2001 and in this research empirically tested on the survival of companies. Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means. According to the literature it is not yet known whether one approach is the preferable approach over the other in order to have a bigger chance of survival for a company, some literature hints towards effectuation as the most preferable but empirical prove does not yet exist. The same goes for a company that has survived an early phase of development. Literature suggests that causation is the better option, but empirical evidence is absent. Therefore, these two claims were tested after data on 382 business plans was gathered and coded. The findings do not give a clear and distinctive answer, but, Causation has the (slightly) better outcomes. This study poses a contribution to literature on causation and effectuation as concepts of early entrepreneurial strategy. It has made use of an extensive coding scheme and a rich database of coded business plans. However, further research on this subject is needed to validate the measures that were created, to check whether the results hold for bigger and different samples, and whether the same results come up if a different way of gathering data, not through analysing business plans, is used.

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Introduction

To explain the situation for this research, it is necessary to know what the context of the research is, and what the main challenge will be. This research will be a follow up research to other research studies, which are already completed or far advanced.

Company's performance through business plan approaches

When entrepreneurial opportunities are pursued it is interesting to know which decision-making approaches underlie the choices of an entrepreneur. There are different approaches to entrepreneurship, two opposing approaches are the effectuation and causation approach. In the recent years there has been written a lot about effectuation and causation approaches, terms first coined by Sarasvathy in 2001. In the causation approach it is believed that entrepreneurs rationally plan their ideas for ventures by assessing risks of exploiting a business opportunity. The effectuation approach follows an iterative process that is risk-averse and means-driven. Sarasvathy (2001) defines the two as follows: "Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001, p.245).

Dew et al. (2009) break down the approaches into their opposing constructs. Non-predictive control versus predictive control, means-driven versus goal-driven action, affordable loss versus expected return, partnerships versus competitive analysis, and leveraging versus avoiding contingencies. This distinction in the two approaches can be helpful in comparing them, whether one of the two leads to better performance. And while these findings are received with enthusiasm in practice, it's not sure if they even work. Does the effectuation approach have better results than the causation approach, and which circumstances play a factor in determining the performance? There has been little to no empirical research done in order to test these concepts in practice (Perry et al., 2012).

This research tries to add to the ongoing search for the answers on those questions. Which approach is better for a company's performance, while using either causation or effectuation as an approach in early entrepreneurial strategy? A large database, with several hundreds of business plans from (new) American companies that needed an investment from private investors for their plans, will be used. These business plans originate from the early 2000's,

when many companies wanted to benefit from the developments in the IT-industry, namely, the rise of the internet for business activities. Adding to data about the company's business plans, information about those company's performance will be gathered.

Current research

This research combines already available data from the databases with newly acquired data about the performance of the companies in that database throughout the years that followed, up till 2015, in order to see which approach is more preferable under certain circumstances to obtain good performance. The main challenge was to search and find the desired information about the companies, since many companies that are founded in the early 2000's, do not exist anymore (in their current form) today.

Barringer, Jones & Neubaum (2005), and Gilbert, McDougall & Audretsch (2006) all state that of the estimated 700.000 new ventures started each year in the United States, only 3,5% grow sufficiently to actually evolve in to large firms. These studies were also conducted in the years following the early 2000's, so it's likely they are applicable to the companies included in the database. Also, a McKinsey study of the life expectancy of firms in the S&P 500, showed, that in 2005 the average expectancy was only 15 years (Foster & Kaplan, 2001). So, some companies won't exist anymore today, others will be still up and running, and there will be a group of companies that altered their names or have been acquired by, or fused with, other companies.

From all that has been said above, the main research goal of this research can be derived: The main goal of this research is to determine whether a causation or effectuation approach is more preferable under certain circumstances for a company in order to obtain good performance. This goal is likely to be achieved by acquiring information about the current status of the companies, which had written a business plan in the early 2000's, in order to make clear statements about the relationship between either the causation or effectuation approach of the business plan and the performance of the corresponding company.

A research question is formed in order to frame the key issue of the study in one sentence or central question, it contains the core concepts of the study. The research question of this study will be:

To what extent is there a relationship between, effectual and causal approaches as they are reflected in the business plans of ventures, and their subsequent performance, in the years from the start of the company till 2015?

In order to successfully answer this question, two sub-questions are formed:

- 1. What is the status or performance of the companies in the database up till 2015?*
- 2. Which constructs of either effectuation and causation affect the relationship between the company's performance and its business plan approach?*

The theoretical contribution of this research consists of a subject that has not been studied before. The lack of growth in relative new ventures, and the decrease of life expectancy of new firms are both cause for an extensive amount of literature trying to find reasons for the many failures. Gilbert, McDougall & Audretsch (2006) also address this issue. They come up with many literature regarding entrepreneurial characteristics, geographical location, and various resources among the long list of possible reasons. The question whether an effectuation or causation approach is more effective should be part of entrepreneurial characteristics. And as the issue of experience of single entrepreneurs is often mentioned, and whether the entrepreneur is pragmatic or rational comes up very much as well, the dichotomous distinction between an effectuation and causation approach in business plans and their influence on a company's performance is (as far as known) never made. Therefore, this research, can be a useful addition to the existing literature, in order to fill the long list of reasons why companies lack growth, or fail in their early life.

The practical relevance of this research is the fact that specific organizational practices can be improved when a certain conclusion is reached. If it becomes known whether an effectuation or causation approach is more effective than the other, entrepreneurs can be steered to use that approach in order to achieve better results. On top of that, young entrepreneurial scholars can be trained and educated better in order to reduce the failure rate of future ventures. It's already clear that the whole problem of the lack of growth in new ventures, and the declining life expectancy of firms cannot be solved, since there are many, many factors that are affecting these issues, however it would be of great practical relevance if one of the approaches appears to achieve better results.

Theoretical Framework

This theoretical framework will consist of three separate parts. First, an in-depth description of the concepts, originally coined by Sarasvathy (2001), *Effectuation* and *Causation* will be given, what's written in the literature about those concept since 2001? Then, following the literature, contexts of *(New) Venture Performance* and *Life Expectancy of ventures* will be explained. Finally, the influence of Effectuation and Causation on New Venture Performance based on the literature will be discussed.

Effectuation & Causation

Sarasvathy (2001) published a ground-breaking article on effectuation and causation in the *Academy of Management Review*, she came up with- and provided a definition for the concepts: "Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001, p. 245). She also argues in her article, that there's not yet a distinction made about which of the two concepts is "better" or "more efficient" (Sarasvathy, 2001, p. 249). She provides us with a clear comparison of the two, structured, shown in a table.

Contrasting Causation and Effectuation		
Categories of differentiation	Causation processes	Effectuation processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect	Help choose between possible effects that can be created with given means
	Selection criteria based on expected return	Selection criteria based on affordable loss or acceptable risk
	Effect dependent: Choice of means is driven by characteristics of the effect the decision maker wants to create and his or her knowledge of possible means	Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature	More ubiquitous in human action
	More useful in static, linear, and independent environments	Explicit assumption of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

Table 1 Contrasting Causation and Effectuation, by Saras D. Sarasvathy, 2001, p. 251.

Harms & Schiele (2012) also contribute to the concepts of causation and effectuation. In their article they argue, just as Sarasvathy, that experienced entrepreneurs tend to use the effectuation approach, rather than the causation approach. They describe the concepts as follows: “Causation has connotations of rational planning (ex ante), whereas effectuation is associated with (ex post) emergent strategies” (Harms & Schiele, 2012, p. 96). They also pose that causation and effectuation are *not* diametrically opposed concepts, as both constructs show a positive correlation. Harms & Schiele (2012) tested the hypothesis that entrepreneurs with a large degree of international experience tend to use effectuation rather than causation,

and there was a full support for this hypothesis. Read & Sarasvathy (2005), however, do say that Effectuation and Causation are each other opposite in every aspect, other than Harms & Schiele (2012) who think that both concepts have a correlation with each other. According to Read & Sarasvathy (2005) causal rationality is goal-driven and effectuation is means-driven. Effectuation is enactive and exaptive where causation is reactive and adaptive. Where causation considers the environment as given and the entrepreneur needs to respond to it, effectuation believes that the entrepreneur is part of the environment and helps creating it. They also argue that expert entrepreneurs use the effectuation approach while novice entrepreneurs are more likely to use the causation approach. They believe that effectuation can be regarded as a mostly learned process, but the role of talent is not completely ruled out.

Four principles, outlined by Chandler et al. (2011, p.377), differentiate causation and effectuation approaches:”

1. A focus on short-term experiments to identify business opportunities in an unpredictable future (effectuation) versus prediction of an uncertain future by defining the final objective up front (causation).
2. A focus on projects where the loss in a worst-case scenario is affordable (effectuation) versus maximization of expected returns (causation)
3. An emphasis on pre-commitments and strategic alliances to control an unpredictable future (effectuation) versus business planning and competitive analyses to predict an uncertain future (causation)
4. Exploitation of environmental contingencies by remaining flexible (effectuation) versus exploitation of pre-existing capabilities and resources (causation)”.

Presumably, an entrepreneur with related experience makes better decisions than an entrepreneur who lacks similar experience (Gilbert, McDougall, & Audretsch, 2006).

Sarasvathy (2008) found that expert entrepreneurs hate market research and eschew predictive information. They prefer to work with things within their control where they can change goals rather than chasing means they do not have. Expert entrepreneurs use the effectual approach to lower the risk of the venture by applying five principles of effectuation:

1. Creating new means and new goals.
2. Setting affordable loss.
3. Finding truly new and useful market opportunities by leveraging constraints and new information.
4. Spreading risk to others
5. Getting customers and income early.

This leads to the Principles of Effectuation originated from Sarasvathy's work (2008):

1. The Bird-in-hand principle suggests that entrepreneurs begin with what they have. It also involves negotiating with any and all stakeholders who are willing to make actual commitments to the project; determines the goals of the enterprise.
2. The Affordable Loss principle advises committing in advance to what entrepreneurs are willing to lose rather than investing in calculations about expected returns to the project.
3. The Crazy Quilt principle implies building a network of self-selected stakeholders and further emphasises the creation of something new with existing means rather than discovering new ways to achieve given goals.
4. The Lemonade principle indicates leveraging surprises for benefits rather than trying to avoid them, overcome them, or adapt to them.
5. The Pilot-in-the-Plane principle urges reliance on, and working with, people as the prime driver of opportunity and not limiting entrepreneurial efforts to exploiting factors external to the individual.

In her article of 2001, Sarasvathy elaborates on four aspects. On affordable loss she explains that causal models focus only on maximizing the potential returns. Where effectuation predetermines how much loss is. Causation models emphasize detailed competitive analyses where effectuation models emphasizes strategic alliances and pre-commitments from stakeholders as a way to reduce uncertainty. Effectuation can be perfectly used to exploit contingencies, where causation models are preferable when certain knowledge forms the source of competitive advantage. Causation is all about controlling the future when you're able to predict it. While effectuation focuses on the controllable aspects of an unpredictable future (Sarasvathy, 2001).

Concluding, Dew et al. (2009), also break down the opposing concepts into their constructs, and these appear to be helpful in analysing the data of this study.

Non-predictive control versus predictive control; following effectuation, entrepreneurs are more likely to use non-predictive control to transform means at hand into new outcomes. While according to causation, an entrepreneur makes his decisions based on forecasts about pre-selected favourable outcomes.

Means-driven versus goal-driven action; entrepreneurs that follow the causation approach tend to select a goal first and then choose between given means or try to acquire the means to achieve that goal, while entrepreneurs following the effectuation approach will use the given means to create new results.

Affordable loss versus expected return; causation users will try and calculate the expected return on their projects, while the users of effectuation will set a loss they are willing to pay.

Partnerships versus competitive analysis; according to effectuation, partnerships and bringing stakeholders to the board in order to determine what goals to pursue is more favourable than, using the causation approach, defining the market and competitors in it, in order to select the right segments of that market to target.

Leveraging versus avoiding contingencies; causal calculations are all about avoiding (unpleasant) surprises, where the effectual entrepreneur tries to take advantage from surprises, whether they are unpleasant or not.

However, the affordable loss principle is not significantly related to new venture performance (Read et al., 2009). This research of Read et al. (2009) investigated whether means, partnership, affordable loss and leverage contingency have a positive relation towards venture performance. The affordable loss principle was not significantly related to new venture performance according to the research. The others, means, partnership, and leverage contingency, have a significant and positive effect on venture performance. Read et al. (2009) argue that it is important to try and find out how to measure the affordable loss principle opposed to expected return.

After Sarasvathy had first coined the terms of effectuation and causation in 2001, many articles referenced and elaborated on the subjects of the original research. However, only a few researchers have attempted to empirically model and test effectuation (Perry et al., 2012). They also argue that the study of effectuation can be seen as nascent at this moment. The core beliefs of Effectuation and Causation are continuously developed and redefined. Even Sarasvathy (2007) argues that her five principles are probably not sufficient to capture all processes of effectuation.

The theory of Sarasvathy is based on 27 protocols of experts, in the United States of America. And while 27 protocols is enough to come up with hypotheses and theory, the theory itself is not tested sufficiently in order to understand its contribution. The research was done in the USA, therefore it seems to be applicable for American entrepreneurs, but is that the same for other countries in the world with different beliefs and cultures? And is it even applicable in every industry in the United States itself? Perry, Chandler & Markova (2012) tried to find how many literature had Effectuation as their scope. Out of 29 articles, 16 articles didn't mention data, and were therefore only conceptual. 13 articles were empirical articles, but of most of the empirical articles Sarasvathy was the researcher. In addition to that, many articles with empirical data require an interpretation of the data in order to understand the meaning and implication, therefore not distinctive.

Kraaijenbrink (2012) argues that it is better to compare the dimensions of effectuation and causation than the two concepts itself. He states that it is better when the dimensions are regarded as independent and therefore focusing on these is more fruitful.

(New) Venture Performance and Life Expectancy of Firms

Newly founded businesses are usually small, simple organizations. Characteristics of its founder do matter because of that, however some literature disagrees (Bruderl, Preisendorfer, & Ziegler, 1992). New ventures are subject to a liability of newness, where, in the absence of growth, their survival may be significantly reduced, unlike established firms, which have reached a level of viability and survival already (Bruderl, Preisendorfer, & Ziegler, 1992). The start-up phase of a new venture is a very important one. The decisions entrepreneurs make in the venture's early years have profound long-lasting implications for performance (Park & Bae, 2004; Gilbert, McDougall, Audretsch, 2006).

Investors and other parties evaluate the potential of a new venture based on the attributes of its founders. Venture capitalists decide whether to fund a firm based on their perception of the entrepreneur's or team of entrepreneurs' ability to successfully launch the venture (Barringer, Jones, & Neubaum, 2005)

Models of new venture growth commonly reflect that the entrepreneur must choose growth and that growth will occur when the entrepreneur possesses the resources that enable growth, has a strategy that fosters growth, operates in an industry conducive for growth, and develops structures and systems that accommodate growth (Gilbert, McDougall, & Audretsch, 2006). Venture growth can be regarded as one of the best types of performance of a venture among other types of performance (e.g., entrepreneurs' personal satisfaction, rate of commercialized innovation, or improvements in market efficiency). Venture growth reflects personal and market performances gains, causes valued economic and social gains (including job creation), venture growth is measurable and is a well-understood venture goal, and venture growth is the essence of entrepreneurship (Baum & Locke, 2004). The relative scarcity of new venture growth combined with its importance for regional job creation and development has generated a large literature seeking to explain why some new ventures grow more than others (Gilbert, McDougall, & Audretsch, 2006, p. 927). Of the estimated 700,000 new ventures started each year in the United States, only 3,5% grow sufficiently to actually evolve in to large firms (Barringer, Jones, & Neubaum, 2005).

Success is a relative measure, whereas survival is an absolute measure, that occurs when the venture creates value for its customers in a sustainable way (Chrisman, Bauerschmidt, & Hofer, 1998, p. 7). Porter (1980) shows that new ventures need to invest severely in their early phases in order to deal with the high uncertainty they undergo. When the industry is relatively new and uprising (which is the case for IT companies in the United States in the early 2000's) companies can easily lack the money they have to spend in order to attain customers, therefore (but not only therefore), funding may be essential. Moreover, the profitability of these companies in their early years will probably not be that sufficient. Profitability as measurement of success is therefore not an ideal indicator of expressing new venture performance, as also is argued by Mudambi & Zahra (2007).

New Venture Performance can also be measured in survival. Survival is the opposite of failure. A venture is failed when it stops being an economic entity, when financial requirements are no longer met, or the expectations of the owners are not met (Chrisman, Bauerschmidt, & Hofer, 1998, p. 7). A McKinsey study of the life expectancy of firms in the S&P 500, showed, that in 2005 the average expectancy was only 15 years (Foster & Kaplan, 2001). So, some companies won't exist anymore today, others will be still up and running, and there will be a group of companies as well that altered their names or have been acquired by or fused with other companies. More than 50% of new ventures terminate within their first five years, so it's important to understand the factors that drive new venture survival (Baum & Locke, 2004, p. 587) & (Chandler, DeTienne, McKelvie, & Mumford, 2011).

The Influence of Effectuation and Causation on New Venture Performance

The influence of Effectuation and Causation on New Venture Performance is discussed, conceptually, throughout many pieces of literature.

Effectual entrepreneurs allow others on board to determine what goals to pursue, which in turn determines over time which markets the venture will end up in or create (Dew, Read, Sarasvathy, & Wiltbank, 2009). This makes them susceptible to the opposite bias as causal entrepreneurs. Rather than inappropriately preferring their own ideas over those by others, they run the risk of too easily accepting the ideas of others. Since effectual entrepreneurs let others to a large extent influence the goals and direction of the firm, they run the risk of relying too much on the judgment and opinion of others (Kraaijenbrink, 2010). By their focused goal-orientation, causal entrepreneurs run the risk of focusing too narrowly and failing to exploit beneficial contingencies they may encounter. Also, they may be unwilling to adjust their direction based on new, negative information or events. While causal entrepreneurs run the risk of becoming too committed to their original goals and decisions, effectual entrepreneurs run the opposite risk. By trying to leverage all contingencies they encounter, they may drift away and constantly change the direction of their firm. These biases are important to consider, when talking about the influence of effectuation and causation on the performance of a new venture. Garonne et al. elaborate on this: "Effectuation may provide a fuzzy and boiling environment enticing creativity while damaging the firm modus operandi on a daily basis. Then, effectuation may be a favourable approach during the very early stages

of the venture but may also impede the development of the firm and slackens its progress to the next stage (Garonne, Davidson, & Steffens, 2010, p. 328).

In the case of firm development and growth, there is extant evidence that successful firms, especially highly innovative firms that endure over long periods of time, are more likely to have started through effectual action (Read & Sarasvathy, 2005). Entrepreneurs use effectual thought in order to improve the new firm's chances of survival, growth and success. But as the entrepreneur and the firm achieve these goals, the relevance of effectual action is minimized. In other words, the expert entrepreneur who effectuates has less and less advantage as the organization that he created becomes increasingly "corporate". Therefore, level of entrepreneurial expertise, as measured by effectuation, predicts the necessary departure of the effectual entrepreneur (through exit, supersession, stepping aside or other ways) once the firm has successfully expanded to the inflection point at which causal reasoning becomes necessary for firm survival (Read & Sarasvathy, 2005). While Garonne et al. (2010) and Read & Sarasvathy (2005), among others, seem to believe that an effectuation approach can be very successful in the early stages of new ventures, they also believe that in later stages of a company (once a company succeeded to survive the earlier stages) an effectuation approach can be a contradiction to a company's success (survival). They argue that a causation approach is more effective once a company has reached to a certain point, after the early phase, in order to keep surviving. Therefore a distinction can be made between short-term and long-term survival. According to the literature, effectuation seems to have a better effect on short-term survival and causation on long-term survival. The dimensions of effectuation are better in an early phase. To be means-driven for example, comes handy when innovation is necessary, when an element of creativity is needed, in order to have competitive advantage. In contrast with, when profitability is needed, a later stage, where being goals-driven (a dimension of causation) is beneficial. Once exploitation, the moment through which big profit comes in, is needed, it is better to set goals and calculate expected return.

DeTienne & Chandler (2010) also indicate that entrepreneurs who were intrinsically motivated, primarily, to start their ventures are more likely to exit via an independent sale and less likely to liquidate.

When a company switches the other way around, from causal to effectual approaches, they increase the level of commitment in the foreign market. Effectuation shows the way to act and

base decisions on knowledge and capabilities when it is not possible to acquire resources or decrease the level of uncertainty. Entrepreneurs prefer causal over effectual logic if information availability and information processing capabilities allow it (Chandler et al. 2011). It seems that the entrepreneurs instinctively begin approaching the problem with causal *modus operandi*; nevertheless, if it appears too complex, they pass smoothly to the effectuation logic.

According to Johansson & McKelvie (2012) “it seems as though the most innovation-experienced firms tend to employ effectuation principles. This furthers the line of thought that effectual logic stems from experience, and thereby helps bridge effectuation research at the individual-level with that at the firm-level” (Johansson & McKelvie, 2012, p. 10). Chandler et al. (2011) show that, in support of Sarasvathy’s conceptualization, causation measures are negatively related to uncertainty measures and the experimentation sub-dimension of effectuation is positively related to uncertainty measures. They also add to that, that an understanding of causation and effectuation processes for starting and growing ventures, helps entrepreneurs to extend their skillset in order to start viable ventures.

In conditions of high uncertainty (when the future cannot be predicted or estimated), entrepreneurs create opportunities by basing their decisions on the affordable loss principle rather than on the maximization of expected returns. They, thus, manage to create new ventures with relatively limited investment and taking limited risks (Kalinic, Sarasvathy, & Forza, 2014). But, the principle of affordable loss, is not significantly related to new venture performance. However, the effectual construct of Leverage Contingency is surely positively related to new venture performance. The means, from which entrepreneurs start to build out their venture are also positively related to the new venture performance, “and lends support to the overall effectual expectation of the importance of the effectual notion of means to new venture performance” (Read, Song, & Smit, 2009).

New venture creation may use the causation approach, those who bring resources together efficiently, and work according to a plan may achieve competitive advantage, but, the path to new venture creation may also be a process of experimentation, affordable loss, and flexibility that will lead to entrepreneurial success. Future research has to sort out which approach is more appropriate for a particular individual or opportunity (Chandler et al., 2011). This study can be a contribution to that effect.

Valliere (2015) criticizes the measure of effectuation. “Given the inherently processual and potentially effectual nature of entrepreneurship, any measure of entrepreneurial intent should be likewise processual and effectual” (Valliere, 2015). According to him, entrepreneurship is not an ‘all or nothing’ profession. Entrepreneurial intent should be measured along a iterate scale, step-by-step. He suggest that an ideal measure must consist of two aspects, (1) the measure needs to discriminate from closely related constructs, (2) the measure must reflect the step-by-step process of entrepreneuring (Valliere, 2015).

Finally, in light of this study, the analysis of business plans plays an important role, according to Chandler et al. (2011) business plans are popular in both entrepreneurship practice and pedagogy and are an example of institutional conformity to the causation approach (Chandler, DeTienne, McKelvie, & Mumford, 2011). So it looks like that business plans are already a form of causation because of their origin, that fact needs to be considered carefully, preventing unreliable results. New ventures may use an effectuation approach but will change decisions based on outcomes of previous ones. The future is unpredictable, so entrepreneurs using an effectuation approach may try different approaches in the marketplace before settling on a business model (Chandler, DeTienne, McKelvie, & Mumford, 2011).

Hypotheses

From all the above literature, several hypotheses are being formed.

According to Sarasvathy (2001), Dew et al. (2008), Read & Sarasvathy (2005) and many others the effectuation approach is more effective in new venture development. According to Chrisman et al. (1998), Mudambi & Zahra (2007), and through the inference of the words of Porter (1980), survival is the best way to measure new venture performance. Therefore, the following hypothesis can be raised.

Hypothesis 1: *Companies that use the effectuation approach in their business plans are more effective and therefore have more chance of survival than companies that use the causation approach in their business plans.*

Since many business plans of companies will consist of both effectuation constructs and causation constructs, these individual constructs of effectuation will also be likely to have a positive effect on a company's performance (survival). The constructs of both causation and effectuation are opposed by (among others) Dew et al. (2009) and will be used in the following hypotheses.

Hypothesis 2: *Companies that have made use of non-predictive control in their business plans are more effective and therefore have more chance of survival than companies that have made use of predictive control in their business plan.*

Hypothesis 3: *Companies that are, according to their business plan, means-driven are more effective and therefore have more chance of survival than companies that are, according to their business plans, goal-driven.*

Hypothesis 4: *Companies that will set an affordable loss in their business plan are more effective and therefore have more chance of survival than companies that will try and calculate the expected return on their projects in their business plan.*

Hypothesis 5: *Companies that will make use of partnerships, according to their business plan, are more effective and therefore have more chance of survival than companies that will try to define the market and its competitors, according to their business plan.*

While Garonne et al. (2010) and Read & Sarasvathy (2005), among others, seem to believe that an effectuation approach can be very successful in the early stages of new ventures, they also believe that in later stages of a company (once a company succeeded to survive the earlier stages) an effectuation approach can be a contradiction to a company's success (survival). They argue that a causation approach is more effective once a company has reached to a certain point, after the early phase, in order to keep surviving.

With that in mind, a distinction can be made between short-term and long-term survival. According to the literature, effectuation seems to have a better effect on short-term survival and causation on long-term survival. At the same time, the constructs of causation would have

a better effect on long-term survival than the constructs of effectuation. And the other way round, the constructs of effectuation would have a better effect on short-term survival than the constructs of causation. From the above, several hypotheses can be deduced.

Hypothesis 6: *Companies that have survived on short-term but not manage to survive in the long-term, are likely to have more similarities with the effectuation approach than with the causation approach.*

Hypothesis 7: *Companies that have survived on short-term but not manage to survive in the long-term, are more likely to have made use of non-predictive control than to have made use of predictive control, according to their business plan.*

Hypothesis 8: *Companies that have survived on short-term but not manage to survive in the long-term, are more likely to be means-driven than to be goals-driven, according to their business plan.*

Hypothesis 9: *Companies that have survived on short-term but not manage to survive in the long-term, are more likely to set an affordable loss than to calculate an expected return on their projects, according to their business plan.*

Hypothesis 10: *Companies that have survived on short-term but not manage to survive in the long-term, are more likely to make use of partnerships than to try to define the market and its, according to their business plan.*

Method

Design

The design of this study is nonexperimental quantitative research, and is frequently an important and appropriate mode of research (Johnson, 2001). Correlational research involves collecting data in order to determine whether, and to what degree, a relationship exists between two or more quantifiable variables.

Data collection and Sample

For this research there was access to a large database with several hundreds of business plans, which were acquired from www.businessplanarchive.org. These business plans are from (new) American companies that needed an investment from private investors for their plans. These business plans originate from the early 2000's, when many companies wanted to benefit from the developments in the IT-industry, namely, the rise of the internet for business activities. Only business plans that met certain information on the variables in the coding scheme were used. This method of sampling is called purposive sampling (Babbie, 2007), and is used to select only that cases that are relevant to the study, based on the researcher's judgement. This was done earlier, therefore, the dataset that was used in this study was already given.

For this study, more information on that dataset was necessary to acquire. There was access to the same database from www.businessplanarchive.org from where additional information, that was used for the data collection, was found. As said, the companies are founded in the early 2000's or even prior to that, and it's good to know where they stand anno 2015. In order to make clear statements about the relationship between either the causation or effectuation approach of the business plans and the current status of the corresponding companies, it's not only good to know what those companies are doing today, but also what their performance is, was, or has been during the years till now. Primary to that, it was necessary to find out whether the company survived, or how long the company managed to survive. A search plan was conducted. A full outline of that search plan can be found in Appendix A. In short; knowledge about a company was gathered by looking at all the documents that were available for that company on www.businessplanarchive.org. Then, that information was used in a broad open source search, following certain steps.

On a total of 382 companies information was sought. But from only 264 companies the necessary information was retrieved. On the missing 118 companies there was simply nothing to find what could help this study. Although it can be presumed that these companies haven't survived on short term and therefore not survived, these companies were excluded from further analysis, since no hard evidence whether or not they survived was found.

Measurement

Dependent variable

The dependent variable of this study is *survival* of the company. *Survival* is the variable that measures how the company performs, since it's the best way of comparing new ventures in their early phase according to Chrisman et al. (1998) and Mudambi & Zahra (2007). Other than *success*, which is a relative measure, *survival* is an absolute measure. When people hear *company performance*, one usually thinks in monetary terms. How much profit a company makes for example. As discussed in the literature review, this would be difficult for this study, since companies in their early phase often invest most of their profit back in to the evolving business. *Survival* is the better choice, since it's easier to compare between more different companies in different industries, phases, and circumstances. Not forgetting to mention, that it's far more easier to obtain this information about the companies than their monetary data.

Survival was expressed in two ways, *Survival 2004* and *Survival 2014*. Since the companies were founded in the late 1990's or in the early 2000's, the *Survival 2004* variable indicates whether a company managed to survive on short term. The *Survival 2014* variable indicates whether the company also managed to survive past the year 2014, and therefore survived on the long term as well. More than 50% of the companies cease to exist in their first five years (Baum & Locke 2004)(Chandler et al., 2011). And from the companies that survive, the average life expectancy is only 15 years in average (Foster & Kaplan, 2001). In order to find out if and how long a company of this dataset survived, several open source websites were used. Websites like www.findusabusinesses.com were useful to determine the end date of a company. The findings were cross-checked along several websites, in order to be sure that the information that was found is right. A broad google search on all the information that was found for each company concluded each case of the dataset. More information about the search plan can be found in Appendix A.

Independent variables

The independent variables of this study are several variables contributing to the constructs of the concepts of causation and effectuation. Each of the constructs is measured by several variables, and these will be explained down below. For an extensive explanation of the measurement of the different constructs by the corresponding variables there has to be referred to Appendix A.

Four out of five opposing constructs of Dew et al. (2009) will be measured in this study. The fifth, Avoiding contingencies (causation) versus turning contingencies into advantage, will be neglected in this study, since the necessary information in this database is lacking for that end. Of course, how a company deals with contingencies can't be analysed using a business plan, since these contingencies will arise during the process of developing a business. The four opposing constructs that will be analysed are: predictive control versus non-predictive control; means-driven versus goals-driven; affordable loss versus expected return; and partnerships versus competitive analysis.

Predictive control versus non-predictive control

For predictive control (causation) the variables *Business plan pages* (number of pages of the business plan), *Market analysis pages* (pages dedicated to market analysis), *Assumptions* (to which extent assumptions are used to develop business plans and financial projections), *Market analysis complexity* (complexity of the market analysis), *Marketing tables/figures* (amount of tables and figures used in the marketing section of the business plan), *Number of instances of obligations, necessities and duties* (use of modal verbs), and *Number of prediction-based terms* (use of words relating to prediction) are used.

Where for non-predictive control (effectuation) the variables *New markets* (if new markets are identified), *New products* (amount of new products or services), *Past actions* (mentioning of past actions related to business development), and *Number of non-predictive control* (use of words related to non-predictive control) are used.

Means-driven versus goals-driven

For means-driven (effectuation) the variables *Members advisory board* (amount of members participating in advisory board), *Start-up experience* (amount of companies previously started by founders), *Entrepreneurial team business competencies* (the business competencies of the

management team according to their background), *Entrepreneurial team technical competencies* (the technical competencies of the management team), *Number of instances of theoretical possibilities* (Use of modal verbs), and *Fit with previous experience* (Degree to which the business plan fits with previous experience of founders) are used.

Where for goals-driven (causation) the variables *Growth intention* (does the business plan mention a growth intention), and *Market share* (mentioning of an intended market share) are used.

Affordable loss versus expected return

For affordable loss (effectuation) the variables *Required start-up capital* (amount of capital asked in business plan), and *Risks* (mentioning of risks in business plan) are used.

Where for expected return (causation) the variables *Market segmentation* (amount of market segments targeted), *Projected years* (amount of years projected), *Selected strategy* (mentioning of clear strategy for achieving goals), and *Precision of financial projections* (amount of detail of financial projects).

Partnerships versus competitive analysis

For partnerships (effectuation) the variables *Amount of partnerships* (amount of partnerships mentioned), *Pages on partnerships* (amount of pages spent describing partners), and *Openness to potential partnerships* (willing to seek partnerships) are used.

Where for competitive analysis (causation) the variables *Pages on competitive analysis* (amount of pages describing competitors), and *Amount of competitors* (amount of competitors mentioned) are used.

Analysis

The analyses were done by using the statistical program SPSS. For all statistical tests, an alpha of 0.10 was chosen. A significance level of 0.10 indicates a 10% risk of concluding that relationships exist when there is actually no relationship.

Since the dependent variable *survival* is a dichotomous variable logistic regression tests are used. In order to increase the measurement of the regression tests, all the independent variables were recoded into new variables, ordering them in a 1 to 5 likert-scale (Likert,

1932). The range of each variable was divided in five classes, the lowest class was assigned 1, the second lowest 2, etc. Dichotomous variables were also recoded, a 0 was recoded into a 1, and a 1 was recoded into a 5.

From the several variables that try to measure a construct of causation and effectuation, new variables were computed for each of the constructs, named alike the constructs, using the SPSS function: compute variable. The mean of the means of the several variables measuring the construct was taken to create the new variables. From there on, the same was done to come up with variables for effectuation and causation itself, by computing the several constructs of each concept into two new variables, named like the concepts effectuation and causation. A complete overview, and descriptive statistics, of the recoded variables and the new computed variables can be found in Appendix B.

Results

The gathered data will be analysed in this chapter, sorted by the hypotheses which were tested using the data. The SPSS output of all the tests can be found in Appendix C. As well as the frequencies of the dependent variable, survival. From all of the 382 companies in the dataset, 115 survived past 2004, 149 did not, and on 118 companies there was nothing to be found about their status. Past 2014 only 58 companies lived, and 206 did not. 20 companies were merged or acquired prior to the end of 2004, and in the years following to 2014 3 more companies were acquired or merged as well.

Descriptive Statistics

	N	Mean	Std. Deviation
survival2004(jos)	264	,44	,497
survival2014	264	,22	,415
r_stpcap	280	1,3607	,77729
risks	375	1,672	1,2178
r_openpartns	374	2,8128	1,14017
r_partnsanl	313	1,0319	,26361
r_partns	374	1,0374	,28111
r_advbrd	375	1,1653	,45004
r_stpexp	339	1,1416	,46538
r_busexp	347	1,2046	,50567
r_techexp	348	1,3678	,70999
r_theor	374	1,6738	,94373
r_expfit	344	1,0116	,21567
r_newprods	375	1,1173	,51925
r_newmks	375	1,2667	,99911
r_pastact	375	3,592	1,0755
r_bppages	376	1,4149	,69910
r_mktpages	289	1,3875	,73738
r_mkktabfig	375	1,1440	,50193
r_obligs	376	1,3830	,79808
r_assumpt	347	1,0000	,00000
mktcompl	375	3,16	1,130
grwtint	324	4,333	,9311
r_mktshare	375	2,0347	1,75395
r_segm	374	1,2513	,63070
r_projyrs	356	2,2472	,76591
strat	374	3,428	,9927
finprc	347	3,196	1,2593
r_companl	308	1,3149	,70005
r_compet	374	1,1497	,46777
Predictive_Control	378	1,5994	,47764
Goals_driven	375	2,9787	1,25369
Expected_return	375	2,5184	,59697
Competitive_analysis	374	1,2193	,47743
Causation	378	2,0716	,48335
Non_predictive_control	375	1,9920	,49860
Means_driven	375	1,2627	,28674
Affordable_Loss	375	1,5333	,85333
Partnership	374	1,6965	,51265
Effectuation	375	1,6209	,33722
Valid N (listwise)	106		

Table 2 - Descriptive Statistics Variables

In Appendix D, one can find the correlations between all the variables. For non-parametric statistics the Spearman correlation coefficient is best, since this coefficient is also useful when the variables are ordinal.

Hypothesis 1

The first hypothesis, *Companies that use the effectuation approach in their business plans are more effective and therefore have more chance of survival than companies that use the causation approach in their business plans*, is tested using four binary logistic regression

tests. In order to check if either causation or effectuation could explain the survival of companies in 2004 and 2014.

First, effectuation was tried to explain survival of companies on short term. Effectuation is measured by several variables, the new variable Effectuation was computed using the SPSS function: compute variable. The mean of the means of the several variables measuring Effectuation was taken to create the new variable. And with $\chi^2 = 0,023$, and not significant, $p = 0,88$, it is not a good model to explain survival past 2004. Nagelkerke's R^2 was also 0,000, which means approximately 0% of the variance can be explained through this model, no need to discuss the effect.

Second, effectuation was tried to explain survival of companies past 2014. With $\chi^2 = 0,047$ and not significant, $p = 0,829$. Nagelkerke's R^2 was 0,000. So the effect will not be discussed, because these models could not explain the survival of companies past 2004 and 2014.

Then causation was tested in order to explain survival of companies past 2004. With $\chi^2 = 5,913$, and very significant, $p = 0,015$, and a good model to explain the survival of companies past 2004. Nagelkerke's R^2 was also improved with 0,03, which means approximately 3% of the variance can be explained through this model. With $\beta = 0,681$, S.E. = 0,285, Wald = 5,726 and $p = 0,017$, the effect of causation on survival 2004 is positive and significant.

Finally, causation was tested in order to explain survival of companies past 2014. With $\chi^2 = 2,211$, and just not significant, $p = 0,137$, it was slightly better than effectuation, but still not a good model. Nagelkerke's R^2 was also improved with 0,013, which means approximately 1,3% of the variance can be explained through this model. With $\beta = 0,496$, S.E. = 0,337, Wald = 2,167 and $p = 0,141$, the effect of causation on survival 2014 is positive but not significant.

According to this data, the hypothesis that effectuation has a better effect on a company's survival can't be supported. To the contrary, causation seems to explain the survival of a company better than effectuation, but this effect is not that big, and for survival past 2014 also not significant.

Hypotheses 2, 3, 4 & 5

The following hypotheses, 2, 3, 4 & 5, are tested together since they include the measures of effectuation and causation. Initially, four binary logistic regression tests are performed; the combination of constructs of causation and effectuation (apart from each other) on either survival 2004 and survival 2014.

First, the constructs of Effectuation are tried to explain the survival of companies past 2004. With $\chi^2 = 2,416$, and not significant, $p = 0,660$, it was also a bad model to explain the survival of companies past 2004. Nagelkerke's $R^2 = 0,012$, which means approximately 1,2% of the variance can be explained through

this model. And neither of the individual constructs had a significant effect, or came even close to be significant.

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	2,416	4	,660
	Block	2,416	4	,660
	Model	2,416	4	,660

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	356,875 ^a	,009	,012

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	4,126	8	,846

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
Non_predictive_control	,246	,258	,906	1	,341	1,278
Means_driven	,303	,446	,461	1	,497	1,354
Affordable_Loss	-,091	,147	,381	1	,537	,913
Partnership	-,245	,248	,978	1	,323	,783
Constant	-,568	,765	,552	1	,458	,566

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Table 3 - Constructs of Effectuation on short-term survival

Second, the constructs of Effectuation are tried to explain the survival of companies past 2014. With $\chi^2 = 3,712$, and not significant, $p = 0,446$, it was again a bad model to explain the

survival of companies past 2014. Nagelkerke's $R^2 = 0,022$, which means approximately 2,2% of the variance can be explained through this model. And of the individual constructs only *means-driven* came 'close' being significant, with $p = 0,179$, but just like the others, the effect wasn't significant.

Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step 1 Step	3,712	4	,446
Block	3,712	4	,446
Model	3,712	4	,446

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	273,296 ^a	,014	,022

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	15,474	8	,051

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a Non_predictive_control	,329	,298	1,224	1	,269	1,390
Means_driven	-,771	,574	1,804	1	,179	,463
Affordable_Loss	,173	,173	1,004	1	,316	1,189
Partnership	-,165	,304	,295	1	,587	,848
Constant	-,949	,923	1,058	1	,304	,387

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Table 4 - Constructs of Effectuation on long-term survival

Third, the constructs of Causation are tried to explain the survival of companies past 2004. With $\chi^2 = 10,354$, and significant, $p = 0,035$, the constructs of Causation proved to form an okay model to explain the survival om companies past 2004. Nagelkerke's $R^2 = 0,052$, which means approximately 5,2% of the variance can be explained through this model. Goals-driven with $\beta = 0,287$, S.E. = 0,113, Wald = 6,448 and $p = 0,011$, was the only construct of causation being significant, although Competitive analysis, with $p = 0,113$, came close as well.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	10,354	4	,035
	Block	10,354	4	,035
	Model	10,354	4	,035

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	348,937 ^a	,039	,052

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8,770	8	,362

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Predictive_Control	-,293	,321	,838	1	,360	,746
	Goals_driven	,287	,113	6,448	1	,011	1,332
	Expected_return	,072	,260	,078	1	,780	1,075
	Competitive_analysis	,478	,302	2,513	1	,113	1,613
	Constant	-1,408	,708	3,957	1	,047	,245

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Table 5 - Constructs of Causation on short-term survival

Finally, the constructs of Causation are tried to explain the survival of companies past 2014. With $\chi^2 = 7,392$, and just not significant, $p = 0,117$, this was again nearly a good model. Nagelkerke's $R^2 = 0,043$, which means approximately 4,3% of the variance can be explained through this model. Predictive Control with $\beta = -0,725$, S.E. = 0,427, Wald = 2,889 and $p = 0,089$, was the only construct of causation being significant, but with a negative effect, which supports hypothesis 2, on company survival past 2014. Expected return and competitive analysis had a positive effect, but with $p = 0,136$ and $p = 0,142$ just not significant.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	7,392	4	,117
	Block	7,392	4	,117
	Model	7,392	4	,117

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	269,617 ^a	,028	,043

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,044	8	,642

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Predictive_Control	-,725	,427	2,889	1	,089	,484
	Goals_driven	,134	,133	1,019	1	,313	1,144
	Expected_return	,470	,316	2,218	1	,136	1,600
	Competitive_analysis	,475	,323	2,154	1	,142	1,607
	Constant	-2,313	,863	7,182	1	,007	,099

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Table 6 - Constructs of Causation on long-term survival

According to this data, the hypotheses that the individual constructs of effectuation have a better effect on a company’s survival can’t be supported. The constructs of causation are better, but apart from *goals driven*, not significant.

Hypothesis 6

The sixth hypothesis, *Companies that have survived on the short term but not managed to survive the long term, are likely to have more similarities with the effectuation approach than with the causation approach*, is tested using two binary logistic regression tests. In order to check whether companies that survive past 2004 but fail to survive past 2014 have more characteristics of the effectuation approach, the cases in the dataset were selected to only the companies that managed to survive past 2004.

First, effectuation was tried to explain survival of companies past 2014 while having survived 2004. And with $\chi^2 = 0,155$, and not significant, $p = 0,694$, it was not a good model to explain survival past 2014 under the condition that companies initially survived past 2004. Nagelkerke’s $R^2 = 0,002$, which means approximately 0,2% of the variance can be explained through this model, no need to discuss the effect.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,155	1	,694
	Block	,155	1	,694
	Model	,155	1	,694

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	159,260 ^a	,001	,002

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5,794	8	,670

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Effectuation	,214	,545	,154	1	,695	1,238
	Constant	-,337	,923	,134	1	,715	,714

a. Variable(s) entered on step 1: Effectuation.

Table 7 - Effectuation on long term survival (selected cases)

Second, causation was tried to explain survival of companies past 2014 while having survived 2004. And with $\chi^2 = 0,001$, and not significant, $p = 0,976$, it was the worst model to explain survival past 2014 under the condition that companies initially survived past 2004. Nagelkerke's $R^2 = 0,000$, which means approximately 0,0% of the variance can be explained through this model, so again, no need to discuss the effect.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,001	1	,976
	Block	,001	1	,976
	Model	,001	1	,976

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	159,414 ^a	,000	,000

a. Estimation terminated at iteration number 2 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	10,293	7	,173

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Causation	,014	,459	,001	1	,976	1,014
	Constant	-,012	1,012	,000	1	,990	,988

a. Variable(s) entered on step 1: Causation.

Table 8 - Causation on long term survival (selected cases)

According to this data, the hypothesis that causation has a better effect on a company's survival once a company survived past the early phase can't be supported. The data gathered in this study can't explain an effect of either causation and effectuation on a company's survival once it survived the early phase.

Hypotheses 7, 8, 9 & 10

The hypotheses 7 to 10 are on the constructs of effectuation and causation and therefore tested together (constructs of each concept per test) in two separate binary logistic regression tests. In order to check whether companies that survive past 2004 but fail to survive past 2014 have more characteristics of the constructs of the effectuation approach, the cases in the dataset were selected to only the companies that managed to survive past 2004.

First, the constructs of effectuation were tried to explain survival of companies past 2014 while having survived 2004. And with $\chi^2 = 5,293$, and not significant, $p = 0,259$, it was not the best model to explain survival past 2014 under the condition that companies initially survived past 2004. Nagelkerke's $R^2 = 0,06$, which means approximately 6% of the variance

can be explained through this model, because of that, although this model does not form the best fit, the effects will be discussed. With $\beta = -1,239$, S.E. = 0,659, Wald = 3,533 and $p = 0,06$, there's a significant negative effect of Means-driven, which supports hypothesis 8, that companies that have survived past the early phase are more likely to be goal-driven in order to survive. Other constructs were not significant.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	5,293	4	,259
	Block	5,293	4	,259
	Model	5,293	4	,259

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	154,122 ^a	,045	,060

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,503	7	,482

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
Non_predictive_control	,193	,391	,244	1	,621	1,213
Means_driven	-1,239	,659	3,533	1	,060	,290
Affordable_Loss	,351	,231	2,300	1	,129	1,420
Partnership	-,109	,450	,058	1	,809	,897
Constant	,860	1,227	,491	1	,484	2,363

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Table 9 - Constructs of Effectuation on long term survival (selected cases)

Second, the constructs of causation were tried to explain survival of companies past 2014 while having survived 2004. And with $\chi^2 = 4,749$, and not significant, $p = 0,314$, it is a not so good model to explain survival past 2014 under the condition that companies initially survived past 2004. Nagelkerke's $R^2 = 0,054$, which means approximately 5,4% of the variance can be explained through this model, therefore the effects will be discussed although this model does not form the best fit. With $\beta = -1,031$, S.E. = 0,589, Wald = 3,070 and $p = 0,08$, Predictive Control does have a significant effect, however, this effect is negative, which is remarkable because it contradicts hypothesis 7, that companies that have survived past the early phase are more likely to have used predictive control in order to survive. With $\beta = 0,78$, S.E. = 0,431, Wald = 3,273 and $p = 0,07$, Expected Return does also have a significant effect

and this one is positive. Therefore it supports hypothesis 9, that companies that have survived past the early phase are more likely to have used expected return in order to survive. According to this data, hypothesis 7 can't be supported, it is even contradicted, since predictive control does have a negative effect on a company's survival once it survived the early phase. Hypothesis 8 can be supported since means-driven does have a negative effect on a company's survival once it survived the early phase, which is in line with the hypothesis. Hypothesis 9 is also supported, companies are likely to have used expected return in order to survive, once they have survived past the early phase. This data does not support nor contradict hypothesis 10, since the effects were not significant.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	4,749	4	,314
	Block	4,749	4	,314
	Model	4,749	4	,314

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	154,667 ^a	,040	,054

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,239	8	,620

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Predictive_Control	-1,031	,589	3,070	1	,080	,357
	Goals_driven	-,047	,165	,081	1	,776	,954
	Expected_return	,780	,431	3,273	1	,070	2,181
	Competitive_analysis	,400	,430	,866	1	,352	1,493
	Constant	-,698	1,182	,349	1	,555	,498

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Table 10 - Constructs of Causation on long term survival (selected cases)

Conclusion & Discussion

Conclusion

Concluding, the following table shows whether each hypothesis is either supported or rejected.

Hypothesis	Accepted/ Rejected	Conclusion
<i>1. Effectuation approach is more effective than causation approach for survival of a company</i>	Inverted	The data can't support the hypothesis, since effectuation can't explain the survival of a company. On the contrary, causation can definitely explain the survival of a company past 2004, and also, not really but nearly significant, past 2014.
<i>2. Non-predictive control is more effective than predictive control for survival of a company</i>	Partly accepted	When the effectuation and causation constructs were tested against company survival 2004, no evidence in support of this hypothesis was found, but neither was it contradicted. When causation constructs were tested against company survival 2014, predictive control showed a significant negative effect, therefore claiming that it would better not be used in order to survive. However, it is not stated that non-predictive control is better to use. Therefore this hypothesis is not supported, but definitely not rejected as well.

3. <i>Means-driven is more effective than goal-driven for survival of a company</i>	Rejected	This hypothesis was rejected and contradicted, since goal-driven showed a significant slight positive effect on the survival of a company past 2004.
4. <i>Affordable loss is more effective than expected return for survival of a company</i>	Rejected	The data can't explain the influence of Affordable loss or expected return on the survival of a company. There's no evidence to support this hypothesis.
5. <i>Making use of partnerships is more effective than competitive analysis for survival of a company</i>	Rejected	This hypothesis was not supported, and it can be argued that it could be contradicted as well. Since competitive analysis showed an almost significant effect on a company's survival past 2004 and 2014.
6. <i>Companies that have survived on the short term but not on the long term are more likely to have made use of effectuation than effectuation</i>	Rejected	The data can't explain the influence of Effectuation or Causation on the survival of a company. There's no evidence to support this hypothesis.
7. <i>Companies that have survived on the short term but not on the long term are more likely to have made use of non-predictive control than predictive control</i>	Rejected	According to this data, hypothesis 7 can't be supported, it is even contradicted, since predictive control does have a negative effect on a company's survival once it survived the early phase.
8. <i>Companies that have survived on the short term but not on the long term are more likely be means-driven than goal-driven.</i>	Accepted	Hypothesis 8 can be supported since means-driven does have a negative effect on a company's survival once it survived the early phase, which is

in line with the hypothesis.

<i>9. Companies that have survived on the short term but not on the long term are more likely to have used affordable loss than expected return.</i>	Partly accepted	Hypothesis 9 is also supported, companies are likely to have used expected return in order to survive, once they have survived past the early phase. But it is not proven that using expected return has a negative effect.
<i>10. Companies that have survived on the short term but not on the long term are more likely to have made use of partnerships than using competitive analysis.</i>	Rejected	This data does not support nor contradict hypothesis 10, since the effects were not significant.

Table 11 - Hypotheses

When causation constructs were tested against long-term survival, predictive control showed a significant negative effect, therefore claiming that it would better not be used in order to survive. However, it is not stated that non-predictive control is better to use. Being Means-driven does have a negative effect on a company's survival once it survived the early phase and companies are likely to have used expected return in order to survive, once they have survived past the early phase. But it is not proven that using expected return has a negative effect.

The research question: *To what extent is there a relationship between, effectual and causal approaches as they are reflected in the business plans of ventures, and their subsequent performance, in the years from the start of the company till 2015?* can not explicitly be answered. The two concepts itself do not have a significant effect on a company's survival (used as an indicator to measure performance) , and however some constructs of the two concepts do have, it can't be stated that the one has more effect on a company's survival than the other. If a choice has to be made, one can argue that causation has, contrary to the literature, a more positive effect on a company's survival (and therefore performance) than effectuation.

Discussion

This study makes a contribution to literature on causation and effectuation as concepts of early entrepreneurial strategy. It has made use of an extensive coding scheme, which was developed and expanded through different researches and researchers in order to come up with what it is now. Not many studies have done that, and have not tried to measure the concepts of effectuation and causation through analysing business plans and acquiring information on companies over the years.

The database itself is a very useful contribution, since many researchers can make use or expand this database, and draw their own conclusions from it.

Sarasvathy (2001) coined the terms of effectuation and causation, and in her later work (2005) she argued that the two concepts are each other's opposite. It was believed by many (Sarasvathy (2001), Dew et al. (2008), Read & Sarasvathy (2005)) that effectuation is more effective than causation in new venture development, but this study can't empirically support that. This study therefore contributes to existing literature. It does not contradict the beliefs in the literature but it doesn't support them as well. It can be regarded as a critical reflection on the current beliefs that effectuation is more effective than causation in new venture development.

Garonne et al. (2010) and Read & Sarasvathy (2005), among others, seem to believe that an effectuation approach can be very successful in the early stages of new ventures, they also believe that in later stages of a company (once a company succeeded to survive the earlier stages) an effectuation approach can be a contradiction to a company's success (survival). They argue that a causation approach is more effective once a company has reached to a certain point, after the early phase, in order to keep surviving. But again, this study can't find the empirical evidence to support the claim. The study contributes to current beliefs about the effect of effectuation and causation on the short- and long-term survival of a company, but does not support them. The data in this study does not point towards the beliefs that were suggested in the literature. It can be regarded as a critical reflection on the literature.

Limitations

Without decreasing the valuable contribution of this study, it certainly has its limitations, which are discussed below. The most important limitation of this research arises from the way the concepts are measured. The literature on effectuation and causation has difficulties to come up with clear measures. This research uses a coding scheme in which the concepts of effectuation and causation and their constructs are measured by several variables. These measures are only partly built on literature, so it is not sure whether the rest of them are good measures for the concepts. This research has taken the measures used in the coding scheme as given, and had therefore no influence on them.

Furthermore, the fifth dimension, dealing with contingencies, could not be measured at all. Since the origin of this dimension, contingencies arise unexpectedly during the process of developing a new company, this study was unable to measure it by using business plans.

Another important limitation rises from the use of business plans. Business plans are popular in both entrepreneurship practice and pedagogy and are an example of institutional conformity to the causation approach (Chandler et al., 2011). If business plans are already a form of causation, it would be logical if analysing them would get results that are better to measure the constructs of causation than they are to measure effectuation. This study also had to deal with that fact, since the results on the constructs of causation were often more significant than the results on the effectuation constructs.

Then, many data was missing as there was nothing to find on more than 30% of the dataset. This could lead to the wrong conclusions, since the data that was included could give a wrong image. The data was already sampled by the use of purposive sampling, and therefore contributes to this effect. However, it was argued that all the companies on which it was hard to find any information probably have not survived at all. It seems likely to assume that, since an existing company, nowadays, would almost certainly leave a trace of its existence online at the world wide web. For the sake of this study, these companies were not included, because there's no hard evidence whether or not they survived.

Finally, the sample of this study, which included mainly American companies that were trying to benefit from the booming IT sector, is not very representative for all businesses. It is therefore difficult to generalize the results to other businesses. The results can, however, be

generalized to the companies that are listed in the business plan archive. And perhaps, the results could also be generalized to small companies that make use of IT for the first time, in order to expand their business.

Further Research

Perry et al. (2012) argue that the study of effectuation and causation can be seen as nascent at this moment. Therefore, more research is certainly advisable, this study already did an attempt but especially on the fields of operationalization more research is needed. Not that many articles have tried to create measures for the concepts, and especially not while using business plans. This study makes use of a coding scheme that tries to come up with a measurement for the concepts, but it is not yet known for sure whether these measures are the right ones. Future research on validating these measures or contributing to the coding scheme can be fruitful.

This study was done by analysing business plans in order to answer the questions. As stated earlier, business plans are likely to have much more aspects of causation in it due to its origin. Business plans could therefore be ideal to measure causation, but it is maybe harder to measure causation. It might be a wise idea that further research uses another way to gather the data on effectuation and causation than through analysing business plans. For example by interviewing entrepreneurs on how they would develop their company in certain circumstances.

The results in this study are interesting for both literature and practice, but it would be nice to see whether these results are the same when bigger samples of business plans are considered. It could create more insight if not only more business plans were used, but also in other industries, making use of other archives. This data consisted of American companies only, it is certainly interesting to check whether the results hold for the rest of the world. Different cultures have different ways of doing business and probably also in creating successful new companies. Seeing how different cultures cope with causation and effectuation would be very valuable.

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Appendices

Appendix A: Business Plan Coding Scheme

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Effectuation constructs in business plans:

- *Predictive control*

A business plan based on prediction contains analyses of current and past events and projects those patterns and trends onto future situations. Prediction in business plans consists of market analysis, description of market trends, and the use of calculations to make projections.

- *Non-predictive control*

Business plans based on non-predictive control do not contain analyses and calculations but the initial idea presented in the plan is the result of processes called 'learning by doing' and 'trial and error'. These processes involve creativity and therefore the chance of developing a new product/market is likely.

- *Means orientation*

The initial idea mentioned in the business plan is clearly built upon the resources available to the entrepreneur at the time of writing. Resources available to the entrepreneur could be: experience, education, network contacts, etc.

- *Ends orientation*

The business plan is clearly built around a defined goal and the necessary actions to achieve it.

- *Affordable loss*

A business plan based on the affordable loss principle clearly indicates the financial resources the entrepreneur(s) is/are willing to lose. Instead of making calculations to maximize profit, the business plan indicates the amount of financial capital available.

- *Expected return*

A business plan which makes projections based on the most promising strategy and/or is based on calculations that provide the maximum output are built around maximizing the expected return principle .

- *Competitive analysis*

A business plan which clearly describes their competitors. In the business plan, an advanced competitive analysis describes the most important competitors, their strength and weaknesses, product/services etc.

- *Partnerships*

Business plans clearly describe their partnerships. The business plan describes the most important partners and/or mention being open towards potential partners.

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Jos' search plan:

First, knowledge about the company was gathered by looking at all the documents that are available for the specific company from businessplanarchive.org. Information about the founders, founding date, and country and state where the company resides in, is used later on in the broad google search.

Then www.bizapedia.com is used to perform a search on the company's name, and on the names of the founders of the company. www.findusabusiness.com is used to perform a search on the company's name.

www.opencorporates.com is used to perform a search on the company's name. www.uc411.com is used to perform a search on the company's name.

LinkedIn is used to perform a search on the name(s) of the founder(s) of the company.

Finally, a broad google search is performed by putting all earlier required information into the search field, or at least: [Company name] + [Company founder].

Construct	Variable	Code	Variable description	Measurement variable	Unit
<i>Name of the company</i>		company			
<i>Names of the Entrepreneurs</i>		names			

Founding date		founding date			
Date of BP		date			
Website company		website	If still active, the web-URL of the company		
Survival 2004		survival2004	Did the company survive past 2004, according to David Kirsch' database	Survival of the company past 2004 according to David Kirsch' database (no/yes/missing)	0-1-999
Survival 2004 (jos)		survival2004 (jos)	Did the company survive past 2004, according to Jos' search	Survival of the company past 2004 according to Jos' search (no/yes/missing)	0-1-999
Survival 2014		survival2014	Did the company survive past 2014, according to Jos's search	Survival of the company past 2014 according to Jos' search (no/yes/missing)	0-1-99
Unknown		unknown	Is there information about the statuts of the company findable	Whether or not there's information about the status of the company findable (no/yes)	0-1

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Closing Date		closingdate	If the company is no longer active, its closing date	If the company is no longer active, its closing date -> DD-MONTH-YYYY. If the company is no longer active but no closing date is found, '999' is assigned for a missing value. If the company is active a closing date does not apply, so '99' is assigned as a 'not applicable' value.	DD-MONTH-YYYY - 999 - 99
Merger & Acquisition 2004		m&a2004	Was the company merged or acquired, prior to the end of 2004, according to David Kirsch' database	M&A prior to the end of 2004 according to David Kirsch' database (no/yes/missing)	0-1-999
Merger & Acquisition 2004 (jos)		m&a2004(jos)	Was the company merged or acquired, prior to the end of 2004, according to Jos' search	M&A prior to the end of 2004 according to Jos' search (no/yes/missing)	0-1-999
Merger & Acquisition 2014		m&a2014	Was the company merged or acquired, prior to the end of 2014, according to Jos' search	M&A prior to the end of 2014 according to Jos' search (no/yes)	0-1
Status of the company		currently2015	status of the company (active/not active/acquired/merged/unknown) past 2014.		"Active" - "Not Active"- "Acquired" -

					“Merged” - “Unknown”
Annual Revenue		revenue	Company’s anual revenue in US dollars, if still active	Positive yearly amount in US dollars. If the company is active but amounts are missing “999” is assigned for a missing value. If the company is anything other than active, ‘99’ is assigned to indicate a value ‘not applicable’	# - 99 - 999
Employment		employment	Company’s number of employees, if still active	Total number of employees past 2014. If the company is active but amounts are missing “999” is assigned for a missing value. If the company is anything other than active, ‘99’ is assigned to indicate a value ‘not applicable’	# - 99 - 999
Contact Info		contactinfo	Company’s phone number or email addresss, if still active	Contact info on the active companies. If company is active but info is missing “999” is assigned for a missing value. If the company is anything other than active, ‘99’ is assigned to indicate a value ‘not applicable’	- 99 - 999

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Additional Notes		notes	Various notes about the info that was found about the company		
Sources of information		source	Where has the information been found.		
Team size		teamsize	Size of the entrepreneur/managers team	Total number of entrepreneurs/management team members at the time of seeking investors	#
Predictive control	Business plan pages	bppages	Number of pages of business plans	Rounding to whole pages	
	Market analysis pages	mktpages	Pages dedicated to market analysis, <u>excluding marketing strategy</u>	Rounding to ½ pages. No pages spent on describing market analysis = 0	
	Assumptions	assumpt	To which extent have assumptions been used to develop the business plans and financial projections?	<p>1) Very Low (No assumptions were reported in the plan)</p> <p>2) Low (Assumptions are general and do not impact plans)</p> <p>3) Average (Assumptions are general and have a minor impact in the plans)</p> <p>4) High (Assumptions are well identified and have a significant impact in the plans)</p> <p>5) Very high (Assumptions are very well</p>	1-5

				identified and have a large impact in the plans)	
	Market analysis complexity	mktcompl	Complexity of the market analysis	1) no market analysis at all 2) short and superficial market analysis based on own projections 3) general market analysis based on own projections and little external data 4) extensive market analysis including external data 5) very extensive and precise market analysis mostly based on external data	1-5
	Marketing tables/figures	mkttabfig	Amount of tables and figures used in the marketing section of the business plan	Total amount of figures and tables	#
	Number of instances of obligations, necessities and duties	oblign	Use of modal verbs (deontic modality)	Word count of conjugations of verbs 'have to', 'must', 'should'	#
	Number of prediction-based terms	predterms	Use of words relating to prediction (based on RWTH Aachen)	Word count of the following words: predict, prediction, predictable, forecast, plan, foresee, anticipate, envision, vision, projection,	#

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				extrapolate, prognosis, trend, expectation, outlook, prospect, future, long-term, goal, aim, objective, target, roadmap, blueprint, market, marketplace, industry, sector, competition, compete	
<i>Non-predictive control</i>	New markets	newmkt	(a) new market(s) have/has been identified in the business plan	Does the plan mention the identification of a new/unidentified market? (no/yes)	0-1
	Age at the time of writing	age	Number of years between founding the company and writing the business plan	(#) Rounding to ½ years. Cannot be determined? Missing variable	#
	New products	newprods	Amount of new products, services or combination of products and services identified in business plans	No new products, services or combinations of products and services are introduced = 0	#
	Past actions	pastact	Business plan mentions past actions related to business development such as customer feedback or product development	At the time the plan was written, how many of the following business activities had already been taken: - business analysis (e.g. business idea, business	1-5

				<p>model, business plan)</p> <ul style="list-style-type: none"> - resource assembly (e.g. attracting finance, hiring employees, buying equipment) - product development (e.g. product design, prototype, patent filed) - legal start (e.g. business registered) - marketing (e.g. marketing efforts started, promotion done, advertising) <p>1. none or 1(<i>none is hypothetical, since of all them did this for writing the plan</i>)</p> <p>2. 2</p> <p>3. 3</p> <p>4. 4</p> <p>5. all (business is already running)</p> <p>Writing a business plan counts so 1 is the default value.</p>	
	number of non-predictive control	contrterms	Use of words related to non-predictive control (based on	Word count of the following words: control, shape, influence, reshape, persuade,	#

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	based terms		RWTH Aachen)	endogenous, empower, overpower, partner, cooperate, collaborate, create, explore, revolutionalize, commit, disrupt, untested, unseen, unexplored, unchartered, non-ventured, realize, overthrow, experience	
<i>Ends oriented (defined goals)</i>	Growth intention	grwtint	Business plans mention a clear growth intention (sales growth, production growth, revenue growth, going public, self-funding, product growth, profit growth, job growth)	The business plan reflects... 1) ...no growth intention (e.g., single person company, minor revenues) 2) ...a minor growth intention (e.g., 2-10 employees, <2 million revenues) 3) ...a moderate growth intention (e.g., 11-50 employees, <10 million revenues) 4) ...a strong growth intention (e.g, 51-250 employees, <50 million revenues) 5) ...a very strong growth intention (e.g., 250+ employees, 50+ million in revenues)	1-5
	Market share	mktshare	Mentioning of an intended market share in the business plans	Mentioning of an intended market share (no/yes)	0-1

<i>Means oriented</i>	Members advisory board	advbrd	Amount of members participating in advisory board, board of directors (only if role is not active and therefore advisory), or industry experts.	No advisory members mentioned = 0	#
	Start-up experience	stpexp	The amount of companies previously started by the founding team. No founders mentioned, info managment team is used.	Total amount of companies previously started by the founders.	# -999 if unspecified number
	Entrepreneurial team business competencies	busexp	The business competencies of the management team according to their educational background	Number of management team members holding a higher education degree in Business Administration related studies (General Management, Accounting, Economics, MBAs, ENtrepreneurship studies, Business School studies)	# Missing if no information on the founding team

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	Entrepreneurial team technical competencies	techexp	The technical competencies of the management team according to their educational background	Number of management team members holding a higher education degree in Technical studies (Science, Technology, engineering & Mathematics)	#
	Number of instances of theoretical possibilities	theor	Use of modal verbs to denote possibility, likelihood or uncertainty (epistemic modality)	Word count 'can', 'could', 'may', 'might'	#
	Fit with previous experience	expfit	Degree to which the business plan fits / is a continuation of the previous experience of the founding team. No founders mentioned, info management team is used.	1) not at all related to previous experience of the founding team 2) similar competences required than in previous activities of the founding team (previous job, other ventures) 3) in the same industry as previous activities of the founding team (previous job, other ventures) 4) similar kind of product/service as previous	1 - 5

				activities of the founding team (previous job, other ventures) 5) direct continuation of previous activities of the founding team (previous job, other ventures)	
<i>Expected return</i>	Market segmentation	segm	The amount of market segments targeted in business plans	No segments targeted = 0	#
	Projected years	projyrs	Amount of years projected	No years of revenue projection = 0	#
	Selected strategy	strat	The business plans describe a clear strategy (promotion, pricing, distribution, sales) for achieving established goals	1) No strategy described 2) Short and general description of strategy 3) General description of strategy 4) Extensive strategy description 5) Very extensive strategy description	1-5
	Precision of financial projections	finprc	Amount of detail of the financial projects	1) no financial projections at all 2) short-term and general financial projections (may include balance sheet, income statement, ...) 3) long-term general financial projections (may include balance sheet, income statements, ...)	1-5

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				<p>4) extensive financial projections (may include balance sheet, income statements, operational costs, planned investments, ...)</p> <p>5) very extensive and detailed financial projections (may include monthly calculations, ...)</p>	
<i>Affordable loss</i>	Required start-up capital	stpcap	Amount of capital asked in business plans	Amount of capital in \$	
	Risks	risks	The business plans mention the risks with regard to the feasibility of the plan	<p>1) No risks mentioned</p> <p>2) Short and general description of risks</p> <p>3) General risk analysis</p> <p>4) Extensive risk analysis</p> <p>5) Very extensive risk analysis</p>	1-5
<i>Competitive analysis</i>	Pages on competitive analysis	companl	Amount of pages spent on describing competitors	Rounding to ½ pages. No pages on describing competitors = 0	#
	Amount of competitors	compet	Amount of competitors mentioned/described in business plans	No competitors mentioned/described = 0	#

<i>Seeking partnerships</i>	Amount of partnerships	partns	Amount of partnerships mentioned/described in business plans	No partnerships described = 0	#
	Pages on partnerships	partnsanl	Amount of pages spent on describing partners(hips)	Rounding to ½ pages. No pages on describing partners(hips) = 0	#
	Openess to potential partnerships	openpartns	To which level mentions the plan their openess towards potential partnerships? (actual and potential)	<p>1) No partnerships are mentioned.</p> <p>2) Partnerships are described in general</p> <p>3) Partnerships are described in general and some partners identified</p> <p>4) Partnerships are described in detail with some partners identified</p> <p>5) Partnerships with specific partners are described in detail</p>	1-5
<i>Control variables</i>	Industry experience	expind	<p>Total amount of years experience of the founders in the specific industry.</p> <p>No founders mentioned, info managment team is used.</p>	Total amount of years experience of the founders in the specific industry.	#

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	Team experience	expteam	Team's exposure to different industries.	<p>1) no industry experience</p> <p>2) limited industry experience; 1-5 years mostly within a single industry</p> <p>3) moderate industry experience; 5-10 years within some industries</p> <p>4) experienced; 10-15 years of experience within multiple industries</p> <p>5) very experienced; decades of experience across many industries and positions</p>	1-5
	Market Uncertainty	mktunc	Information Technology firms vs. Non-Information Technology firms.	Is the business, as described in the plan, related to Information Technology? (no/yes)	0-1
<i>Dependent variables</i>	VC backing	vcback	VC money invested	Did the company received VC money?	0-1
	Funds Sought	fundssought	Amount of money requested		#
	Funds raised	fundsraised	Amount of money received		#
	Venture Capital firm	vcfirm	Venture fund inevesting		name

Business Plan Content Analysis 2015 - Pilot Coding Scheme

Notes

Number of instances of realized actions and Past actions variables measure the stage of development of the firm at the time of writing. Our initial thought was to use this as part of the non-predictive control construct but since these business plans were written by firms seeking VC, the elements of non-predictive control have different manifestations.

Appendix B: Descriptive Statistics of Recoded and Computed Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
survival2004(jos)	264	0	1	,44	,497
survival2014	264	0	1	,22	,415
r_stpcap	280	1,00	5,00	1,3607	,77729
risks	375	1,0	5,0	1,672	1,2178
r_openpartns	374	1,00	5,00	2,8128	1,14017
r_partnsanl	313	1,00	5,00	1,0319	,26361
r_partns	374	1,00	5,00	1,0374	,28111
r_advbrd	375	1,00	5,00	1,1653	,45004
r_stpexp	339	1,00	5,00	1,1416	,46538
r_busexp	347	1,00	5,00	1,2046	,50567
r_techexp	348	1,00	5,00	1,3678	,70999
r_theor	374	1,00	5,00	1,6738	,94373
r_expfit	344	1,00	5,00	1,0116	,21567
r_newprods	375	1,00	5,00	1,1173	,51925
r_newmkt	375	1,00	5,00	1,2667	,99911
r_pastact	375	1,0	5,0	3,592	1,0755
r_bppages	376	1,00	5,00	1,4149	,69910
r_mktpages	289	1,00	5,00	1,3875	,73738
r_mkttabfig	375	1,00	5,00	1,1440	,50193
r_obligs	376	1,00	5,00	1,3830	,79808
r_assumpt	347	1,00	1,00	1,0000	,00000
mktcompl	375	1	5	3,16	1,130
grwtint	324	1,0	5,0	4,333	,9311
r_mktshare	375	1,00	5,00	2,0347	1,75395
r_seg	374	1,00	5,00	1,2513	,63070
r_projyrs	356	1,00	5,00	2,2472	,76591
strat	374	1,0	5,0	3,428	,9927
finprc	347	1,0	5,0	3,196	1,2593
r_companl	308	1,00	5,00	1,3149	,70005
r_compet	374	1,00	5,00	1,1497	,46777
Predictive_Control	378	1,00	3,60	1,5994	,47764
Goals_driven	375	1,00	5,00	2,9787	1,25369
Expected_return	375	1,00	4,00	2,5184	,59697
Competitive_analysis	374	1,00	4,00	1,2193	,47743
Causation	378	1,00	3,56	2,0716	,48335
Non_predictive_control	375	1,00	3,67	1,9920	,49860
Means_driven	375	1,00	2,50	1,2627	,28674
Affordable_Loss	375	1,00	5,00	1,5333	,85333
Partnership	374	1,00	4,50	1,6965	,51265
Effectuation	375	1,00	3,21	1,6209	,33722
Valid N (listwise)	106				

Appendix C: SPSS Output

Research Sub-question; status of the companies

survival2004(jos)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	149	39,0	56,4	56,4
1	115	30,1	43,6	100,0
Total	264	69,1	100,0	
Missing 999	118	30,9		
Total	382	100,0		

survival2014

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	206	53,9	78,0	78,0
1	58	15,2	22,0	100,0
Total	264	69,1	100,0	
Missing 999	118	30,9		
Total	382	100,0		

m&a2004 (jos)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	243	63,6	92,4	92,4
1	20	5,2	7,6	100,0
Total	263	68,8	100,0	
Missing 999	119	31,2		
Total	382	100,0		

m&a2014

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	240	62,8	91,3	91,3
1	23	6,0	8,7	100,0
Total	263	68,8	100,0	
Missing 999	119	31,2		
Total	382	100,0		

Hypothesis 1; Effectuation – Survival 2004(jos)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,023	1	,880
	Block	,023	1	,880
	Model	,023	1	,880

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	359,268 ^a	,000	,000

a. Estimation terminated at iteration number 2 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4,656	8	,794

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Effectuation	-,054	,356	,023	1	,881	,948
	Constant	-,157	,605	,067	1	,796	,855

a. Variable(s) entered on step 1: Effectuation.

Hypothesis 1; Effectuation – Survival 2014

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,047	1	,829
	Block	,047	1	,829
	Model	,047	1	,829

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	276,961 ^a	,000	,000

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8,739	8	,365

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Effectuation	,091	,419	,047	1	,828	1,095
	Constant	-1,409	,715	3,882	1	,049	,244

a. Variable(s) entered on step 1: Effectuation.

Hypothesis 1; Causation – Survival 2004(jos)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	5,913	1	,015
	Block	5,913	1	,015
	Model	5,913	1	,015

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	353,378 ^a	,022	,030

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	7,397	8	,494

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Causation	,681	,285	5,726	1	,017	1,976
	Constant	-1,674	,613	7,465	1	,006	,187

a. Variable(s) entered on step 1: Causation.

Hypothesis 1; Causation – Survival 2014

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2,211	1	,137
	Block	2,211	1	,137
	Model	2,211	1	,137

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	274,797 ^a	,008	,013

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9,233	8	,323

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Causation	,496	,337	2,167	1	,141	1,642
	Constant	-2,308	,738	9,778	1	,002	,099

a. Variable(s) entered on step 1: Causation.

Hypotheses 2 to 5; Constructs of Effectuation – Survival 2004(jos)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2,416	4	,660
	Block	2,416	4	,660
	Model	2,416	4	,660

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	356,875 ^a	,009	,012

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4,126	8	,846

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
Non_predictive_control	,246	,258	,906	1	,341	1,278
Means_driven	,303	,446	,461	1	,497	1,354
Affordable_Loss	-,091	,147	,381	1	,537	,913
Partnership	-,245	,248	,978	1	,323	,783
Constant	-,568	,765	,552	1	,458	,566

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Hypotheses 2 to 5; Constructs of Effectuation – Survival 2014

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	3,712	4	,446
	Block	3,712	4	,446
	Model	3,712	4	,446

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	273,296 ^a	,014	,022

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	15,474	8	,051

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
Non_predictive_control	,329	,298	1,224	1	,269	1,390
Means_driven	-,771	,574	1,804	1	,179	,463
Affordable_Loss	,173	,173	1,004	1	,316	1,189
Partnership	-,165	,304	,295	1	,587	,848
Constant	-,949	,923	1,058	1	,304	,387

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Hypotheses 2 to 5; Constructs of Causation – Survival 2004(jos)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	10,354	4	,035
	Block	10,354	4	,035
	Model	10,354	4	,035

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	348,937 ^a	,039	,052

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8,770	8	,362

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Predictive_Control	-,293	,321	,838	1	,360	,746
	Goals_driven	,287	,113	6,448	1	,011	1,332
	Expected_return	,072	,260	,078	1	,780	1,075
	Competitive_analysis	,478	,302	2,513	1	,113	1,613
	Constant	-1,408	,708	3,957	1	,047	,245

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Hypotheses 2 to 5; Constructs of Causation – Survival 2014

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	7,392	4	,117
	Block	7,392	4	,117
	Model	7,392	4	,117

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	269,617 ^a	,028	,043

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,044	8	,642

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Predictive_Control	-,725	,427	2,889	1	,089	,484
	Goals_driven	,134	,133	1,019	1	,313	1,144
	Expected_return	,470	,316	2,218	1	,136	1,600
	Competitive_analysis	,475	,323	2,154	1	,142	1,607
	Constant	-2,313	,863	7,182	1	,007	,099

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Hypothesis 6; Effectuation – Survival 2014 (selected cases)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,155	1	,694
	Block	,155	1	,694
	Model	,155	1	,694

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	159,260 ^a	,001	,002

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5,794	8	,670

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Effectuation	,214	,545	,154	1	,695	1,238
	Constant	-,337	,923	,134	1	,715	,714

a. Variable(s) entered on step 1: Effectuation.

Hypothesis 6; Causation – Survival 2014 (selected cases)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	,001	1	,976
	Block	,001	1	,976
	Model	,001	1	,976

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	159,414 ^a	,000	,000

a. Estimation terminated at iteration number 2 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	10,293	7	,173

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Causation	,014	,459	,001	1	,976	1,014
	Constant	-,012	1,012	,000	1	,990	,988

a. Variable(s) entered on step 1: Causation.

Hypotheses 7 to 10; Construct of Effectuation – Survival 2014 (selected cases)

Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step 1 Step	5,293	4	,259
Block	5,293	4	,259
Model	5,293	4	,259

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	154,122 ^a	,045	,060

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,503	7	,482

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a Non_predictive_control	,193	,391	,244	1	,621	1,213
Means_driven	-1,239	,659	3,533	1	,060	,290
Affordable_Loss	,351	,231	2,300	1	,129	1,420
Partnership	-,109	,450	,058	1	,809	,897
Constant	,860	1,227	,491	1	,484	2,363

a. Variable(s) entered on step 1: Non_predictive_control, Means_driven, Affordable_Loss, Partnership.

Hypotheses 7 to 10; Constructs of Causation – Survival 2014 (selected cases)**Omnibus Tests of Model Coefficients**

	Chi-square	df	Sig.
Step 1 Step	4,749	4	,314
Block	4,749	4	,314
Model	4,749	4	,314

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	154,667 ^a	,040	,054

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than ,001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,239	8	,620

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a Predictive_Control	-1,031	,589	3,070	1	,080	,357
Goals_driven	-,047	,165	,081	1	,776	,954
Expected_return	,780	,431	3,273	1	,070	2,181
Competitive_analysis	,400	,430	,866	1	,352	1,493
Constant	-,698	1,182	,349	1	,555	,498

a. Variable(s) entered on step 1: Predictive_Control, Goals_driven, Expected_return, Competitive_analysis.

Appendix D: Correlation between variables

Correlations

			survival2004 (jos)	survival2014	Predictive_Control	Goals_driven	Expected_return	Competitive_analysis	Causation	Non_predictive_control	Means_driven	Affordable_Loss	Partnership	Effectuation
Spearman's rho	survival2004(jos)	Correlation Coefficient	1,000	,604**	,018	,160**	,047	,055	,136*	,075	,003	-,025	-,032	-,017
		Sig. (2-tailed)	.	,000	,776	,009	,445	,375	,028	,228	,958	,684	,603	,782
		N	264	264	262	262	262	262	262	262	262	262	262	262
	survival2014	Correlation Coefficient	,604**	1,000	-,006	,098	,077	,104	,090	,054	-,040	,022	-,027	-,025
		Sig. (2-tailed)	,000	.	,924	,112	,216	,094	,145	,385	,515	,722	,665	,686
		N	264	264	262	262	262	262	262	262	262	262	262	262
	Predictive_Control	Correlation Coefficient	,018	-,006	1,000	,209**	,504**	,235**	,577**	,047	,382**	,246**	,330**	,373**
		Sig. (2-tailed)	,776	,924	.	,000	,000	,000	,000	,359	,000	,000	,000	,000
		N	262	262	378	375	375	374	378	375	375	375	374	375
	Goals_driven	Correlation Coefficient	,160**	,098	,209**	1,000	,382**	,059	,834**	,002	,182**	,192**	,096	,171**
		Sig. (2-tailed)	,009	,112	,000	.	,000	,254	,000	,975	,000	,000	,064	,001
		N	262	262	375	375	375	374	375	375	375	374	375	
	Expected_return	Correlation Coefficient	,047	,077	,504**	,382**	1,000	,114*	,671**	,079	,283**	,179**	,275**	,313**
		Sig. (2-tailed)	,445	,216	,000	,000	.	,027	,000	,129	,000	,000	,000	,000
		N	262	262	375	375	375	374	375	375	375	375	374	375
	Competitive_analysis	Correlation Coefficient	,055	,104	,235**	,059	,114*	1,000	,331**	-,069	,156**	,124*	,058	,070
		Sig. (2-tailed)	,375	,094	,000	,254	,027	.	,000	,183	,002	,016	,264	,178
		N	262	262	374	374	374	374	374	374	374	374	374	374
	Causation	Correlation Coefficient	,136*	,090	,577**	,834**	,671**	,331**	1,000	,017	,343**	,252**	,231**	,302**
		Sig. (2-tailed)	,028	,145	,000	,000	,000	,000	.	,741	,000	,000	,000	,000
		N	262	262	378	375	375	374	378	375	375	375	374	375
	Non_predictive_control	Correlation Coefficient	,075	,054	,047	,002	,079	-,069	,017	1,000	,125*	,062	,171**	,556**
		Sig. (2-tailed)	,228	,385	,359	,975	,129	,183	,741	.	,016	,227	,001	,000
		N	262	262	375	375	375	374	375	375	375	374	375	
	Means_driven	Correlation Coefficient	,003	-,040	,382**	,182**	,283**	,156**	,343**	,125*	1,000	,186**	,247**	,471**
		Sig. (2-tailed)	,958	,515	,000	,000	,000	,002	,000	,016	.	,000	,000	,000
		N	262	262	375	375	375	374	375	375	375	374	375	
	Affordable_Loss	Correlation Coefficient	-,025	,022	,246**	,192**	,179**	,124*	,252**	,062	,186**	1,000	,070	,625**
		Sig. (2-tailed)	,684	,722	,000	,000	,000	,016	,000	,227	,000	.	,175	,000
		N	262	262	375	375	375	374	375	375	375	375	374	375
	Partnership	Correlation Coefficient	-,032	-,027	,330**	,096	,275**	,058	,231**	,171**	,247**	,070	1,000	,577**
		Sig. (2-tailed)	,603	,665	,000	,064	,000	,264	,000	,001	,000	,175	.	,000
		N	262	262	374	374	374	374	374	374	374	374	374	374
	Effectuation	Correlation Coefficient	-,017	-,025	,373**	,171**	,313**	,070	,302**	,556**	,471**	,625**	,577**	1,000
		Sig. (2-tailed)	,782	,686	,000	,001	,000	,178	,000	,000	,000	,000	,000	.
		N	262	262	375	375	375	374	375	375	375	374	375	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

