



Paper to be presented at the
35th DRUID Celebration Conference 2013, Barcelona, Spain, June 17-19

The Sequence of Gestation Activities and its Impact on Achieving Sustained Sales

Ferdinand Jaspers

Rotterdam School of Management, Erasmus University
Strategic Management & Entrepreneurship
fjaspers@rsm.nl

Tony Hak

Rotterdam School of Management, Erasmus University
Technology and Innovation Management
thak@rsm.nl

Abstract

New firm creation is of great practical importance. Hence, it can be no surprise that the gestation process of new firms has received considerable attention in the entrepreneurship literature. However, surprisingly few studies have tried to build and test theory about how gestation processes unfold over time. As a result we know comparatively little about the temporal order of the specific gestation activities undertaken by nascent entrepreneurs. In this study we address this gap. We propose a sequence of gestation activities that tentatively can be expected to result in successful gestation. Our empirical results provide strong support for our process theory. This shows the importance of the sequence of gestation activities for future research on nascent entrepreneurship.

The Sequence of Gestation Activities and its Impact on Achieving Sustained Sales

New firm creation is of great practical importance. Hence, it can be no surprise that the gestation process of new firms has received considerable attention in the entrepreneurship literature. However, surprisingly few studies have tried to build and test theory about how gestation processes unfold over time. As a result we know comparatively little about the temporal order of the specific gestation activities undertaken by nascent entrepreneurs. In this study we address this gap. We propose a sequence of gestation activities that tentatively can be expected to result in successful gestation. Our empirical results provide strong support for our process theory. This shows the importance of the sequence of gestation activities for future research on nascent entrepreneurship.

Introduction

The creation of new firms is an important phenomenon, as new firms play an important role in processes of innovation, industry creation, and job creation. As a result, new firm creation, also referred to as new firm gestation, is of particular interest to entrepreneurship researchers. New firm creation is essentially a process as it consists of a sequence of numerous activities and events. This process typically starts with the intention of one or more nascent entrepreneurs to start a new firm and ends with the premature termination of the gestation process or with the actual birth of the firm. In between the start and the end of the gestation process, nascent entrepreneurs can engage in a wide variety of gestation activities, such as developing a business plan, hiring employees, procurement of equipment, acquiring outside funding, etc., and these activities can occur in many different combinations in time.

To improve our understanding of the new firm gestation process, several panel studies have been and are being performed that track the development of nascent entrepreneurs and their firms over time (Davidsson and Gordon, 2012). Most notably, this involves the Panel Study of Entrepreneurial Dynamics (PSED) in the United States (Reynolds and Curtin, 2009). Amongst others, these studies collect data on the activities and events that occur during each individual gestation process as well as - if they occur - the month and year in which they occur. This data has great potential to contribute to our understanding of the entrepreneurial

process, as it directly relates to the question how firms are created and how gestation processes unfold over time. The process of new firm creation has received considerable attention in the literature. However, only surprisingly few studies have tried to build and test theory about the temporal order of specific gestation activities (Van de Ven and Engleman, 2004; Davidsson and Gordon, 2012). In this study we aim to address this gap.

One stream of new firm creation research has resulted in the important insight that venture creation is characterized by extensive temporal heterogeneity (e.g., Liao and Welsh, 2008; Samuelsson and Davidsson, 2009). Lichtenstein et al. (2007), for instance, found that firms are more likely to emerge if the gestation process involves a higher number of activities and if the bulk of this activity occurs later in the process. However, these studies investigate patterns of gestation activities in general, and they do not study the occurrence of specific gestation activities over time. Another line of research on new firm creation does consider specific gestation activities, but without much focus on the temporal sequence of those activities. First, these studies reported descriptive results, such as the most common first start-up event, the average duration of the gestation process, and the frequency and median values of individual gestation activities (e.g., Reynolds and Miller, 1992; Carter, Gartner, and Reynolds, 1996; Alsos and Kolvereid, 1998). Second, these studies resulted in insights about the likelihood that individual gestation activities explain certain outcomes or states of the gestation process, such as completion of the gestation process (e.g., Gatewood et al., 1995; Carter et al., 1996).

Although these studies have substantially improved our understanding of the gestation process, they do not contribute to our understanding of the temporal order of gestation activities. Carter et al. (1996) did in fact derive a typical sequence of gestation events for started firms. However, this sequence was developed using median values for the month of occurrence of individual gestation events, and - although the number of started firms was limited (n=34) - no attempt was subsequently made to investigate to what extent this sequence actually occurred in any of the cases in the sample. In sum, given that data on the actual timeline of individual cases is readily available, surprisingly few studies have made an attempt to build and test process theory in terms of the temporal order of gestation activities (Davidsson and Gordon, 2012). In the next section, assisted by the study on process theory by Van de Ven and Poole (1995), we first of all review the body of literature that did consider the sequence of gestation activities. Subsequently, we develop a tentative process-theoretical

model. After that we explain our methodology to put this theory to a first empirical test. We then present our results and discuss our findings.

Gestation Process Theory

In their seminal article, Van de Ven and Poole (1995) identified four distinct ideal-typical process theories: life-cycle, teleological, dialectical, and evolutionary theories. These process theories, which Van de Ven and Poole refer to as ‘motors’, reflect “fundamentally different event sequences and generative mechanisms ... to explain how and why changes unfold” (p.511). For any organizational change process, one or more of these process theories are at play. Hence, all four perspectives can also be applied to help explain the new firm gestation process. However, two perspectives – the dialectical and the evolutionary approach – consider the interactions of multiple organizational entities to explain how change occurs. In this study, our primary unit of analysis involves single entities, as we are interested in the sequence of gestation activities of individual gestation processes. Therefore, this study focuses on teleological and life cycle process theories only. Below we consider these two process theories and we use both theoretical lenses to review the existing gestation process literature.

Teleological process theory

Teleological process theory states that change processes are constructed by the actions of agents to achieve a desired goal (Van de Ven and Poole, 1995). In the context of new business creation, the overarching goal of nascent entrepreneurs - ultimately - is to establish a venture that is able to profitably provide a solution to a client’s problem. The teleological perspective recognizes that entrepreneurs – influenced by institutions and scarce resources – have the freedom to creatively enact the path to the desired end state. This end state might change over time and the steps taken might occur in many different sequences and recurrent loops. Nascent entrepreneurs, for instance, may change their specific business ideas drastically while establishing their firms, for instance by targeting different user segments, by redesigning their products and services, and by adapting the revenue structure of the business. Regardless of the specific business model, however, the overall objective will be to achieve a profitable venture.

In teleological theories – informed by the envisioned end goal – specific steps can be identified that are necessary to achieve the end goal, but there exists no deterministic rule or logic for the specific sequence of actions over time (Van de Ven and Poole, 1995). This

resonates with the findings on new business creation that no systematic sequence among individual gestation activities could be found. Reynolds and Miller (1992), for instance, concluded that “[v]irtually all combinations were present” (p.410). In their review of the literature, Davidsson and Gordon (2012) conclude that it’s “very difficult to find either general patterns in or explanations for the entire sequence of gestation activities” (p.858). Given the large number of distinct activities that can possibly be included in the analysis (PSED for instance tracks the occurrence of 30 different gestation events), the complexity of the sequential analysis of multiple gestation events quickly explodes (Liao et al., 2005). Furthermore, data-mining to identify temporal patterns among a large number of gestation events, which themselves have limited conceptual meaning, is driven by limited theoretical foundation, since individual activities and actions have limited or no conceptual meaning (Davidson and Gordon, 2012).

Given the complexity to examine the sequence of multiple gestation activities, it is perhaps no surprise to find that some studies investigated the sequence for specific pairs of gestation activities. Furthermore, which is of particular interest to teleological process theories, the goal of these studies has been to find performance differences as a consequence of differences in the sequence of pairs of gestation events. For instance, informed by goal-setting theory (Locke and Latham, 1990), Shane and Delmar (2004) argued that new firms are less likely to be terminated in the first thirty months after the start of the gestation process if a business plan is completed *before* the entrepreneur(s) start to talk to customers and *before* the entrepreneur(s) start marketing and promotion efforts. Using hazard rate analysis, Shane and Delmar found support for their claims. This results in the important insight that the sequence of two gestation activities contains important explanatory power. Given these findings, the question remains whether such explanations exist for sequences of *multiple* events and activities, i.e. sequences that include more than two activities at a time. This is exactly what our study aims to explore.

Life cycle process theory

Life cycle process theories, unlike teleological theories, assume the existence of a fixed sequence of events (Van de Ven and Poole, 1995). This perspective assumes the existence of a deterministic logic that prescribes the progression of an organizational entity through different stages, such a start-up, growth, harvest, and termination. For certain individual gestation activities a necessary sequence does exist. For instance, entrepreneurs must start

looking for outside funding before they possibly receive such funding (e.g., Eckhardt, Shane, Delmar, 2006). However, besides such trivial sequences, no necessary sequences are found to exist if a more comprehensive set of activities is considered. Liao, Welsch and Tan (2005), for instance, concluded that firm gestation is “*a complex, nonlinear process, in which developmental stages are hardly identifiable*” (p.1).

To make progress in the study of the gestation process sequences, one approach is to reduce its complexity by clustering specific gestation activities into conceptually distinct sub processes and activities (e.g., Brush et al., 2008). Gordon (2012) distinguished between acts of discovery and exploitation as two necessary stages of any gestation process. Discovery involves the conceptual and mental sub-process of idea recognition, evaluation and development. This stage tends to precede the concrete actions to obtain and combine resources to pursue an opportunity, i.e. exploitation. In line with life cycle theory, several scholars expect that discovery of an opportunity should necessarily precede exploitation (e.g., Eckhardt and Shane, 2003). Others stress that acts of exploitation can also provide new information to the nascent entrepreneur that might result in new discovery activities (e.g., Baker et al., 2003).

Using data from CAUSEE (an Australian PSED-like panel study of venture creation attempts), Gordon classified each gestation activity as an act of either discovery or exploitation. Based on the occurrence of these two types of activity, each month in each case was subsequently classified as being in one of three states: discovery, exploitation, or symbiosis (simultaneous discovery and exploitation). Using sequence analysis, Gordon finds that the early stage of the gestation process is more likely to include discovery-type events, whereas the later stage of the gestation process is more likely to include exploitation-type events. However, this study also shows that discovery and exploitation are temporally intertwined, because simultaneous discovery and exploitation was the most prevalent state of the gestation process. In other words, this study does not show a deterministic sequence of discovery followed by exploitation. Furthermore, Gordon found that similarity to the discovery-exploitation sequence does not increase the odds of new firms becoming operational. In contrast, symbiotic processes show an increased likelihood that the new firm becomes operational.

Despite its contributions, the study by Gordon leaves several gaps that this study seeks to help address. First, although the analytical approach of sequence analysis is very promising, it has difficulty dealing with the occurrence of simultaneous events. At its core, sequence analysis computes the distance between observed sequences of events based on the ‘costs’ to transform observed sequences into one another (Brzinsky-Fay, Kohler and Luniak, 2006). Subsequently, these distances can be subjected to cluster analysis to identify distinct sequences of events (e.g., Salvato, 2009; Herrmann and Van der Putten, 2010). Hence, sequence analysis is most appropriate for analyzing the sequence of distinct states over the course of a process. This implies that sequence analysis has difficulty processing the occurrence of simultaneous events. In PSED and CAUSEE, the occurrence of gestation activities is measured at the level of months. This means that many activities do frequently occur simultaneously, forcing Gordon to label those months as symbiotic. However, a symbiotic month might in an extreme case - for instance - involve many exploitation events and only one discovery event. Hence, there is a need for a more detailed temporal separation of distinct sub processes.

In sum, from the above review it becomes apparent that the gestation process is a complex temporal phenomenon. From a teleological process perspective, research has shown that the temporal order of specific pairs of individual gestation activities helps to explain the performance of the gestation process. It remains unexplored whether this also holds for more accurate sequences of multiple gestation activities and sub processes. However, with limited theoretical grounding, the study of the sequence of multiple gestation activities has proven to be a complex task. Interestingly, from a life-cycle perspective, we find that distinct sub processes can be identified by grouping gestation activities that are conceptually related. However, opportunities exist to extend this line of research. First, opportunities exist to identify a larger and a more refined set of conceptually distinct gestation sub processes. Although less parsimonious, this will better exploit the available panel study data to more accurately represent reality. This should help to develop a deeper understanding of the gestation process, for the benefit of theory as well as practice. Second, if we are indeed to develop a gestation process theory, it is crucially important to be able to analyze the temporal order of gestation activities. This is for instance difficult to achieve with sequence analysis. Below we outline how we aim to seize these opportunities by building a tentative process theory and by providing a first empirical test. In this way, we aim to further exploit the potential of panel studies on new firm creation (Davidsson and Gordon, 2012). More

importantly, it meets the more general call to develop and test process theories of entrepreneurship (Van de Ven and Engleman, 2004).

A tentative gestation process theory

Based on the above literature review, and inspired by the two process-theoretical ideal types (teleological and life-cycle), our aim in this study is to explore whether the sequence of multiple gestation activities matters for the outcome of the gestation process. For this purpose, we adopt two basic principles. First, inspired by teleological process theory (Van de Ven and Poole, 1995), we aim to focus on gestation activities that can be considered to be (almost always) necessary for gestation success to occur. Discovery and exploitation are good examples in the context of new firm gestation, but opportunities exist to further refine this conceptualization of the gestation process in terms of only two types of activities. Hence, we aim to develop a process theory that is more accurate and therefore also more useful. Below we will identify five conceptually distinct gestation sub processes that in our view are almost always necessary for a successful gestation process. Second, drawing upon life-cycle theory, we will tentatively propose an ideal-typical sequence of these five sub processes. Given that nascent entrepreneurs perform gestation activities in many different sequences (Liao and Welsh, 2008; Gordon, 2012), we will explore whether gestation success is more likely to occur if the necessary gestation events take place in a specific, 'logical' sequence.

Gestation sub processes

The gestation process might consist of a large number of events and activities. PSED 2, for instance, captures more than thirty activities that may or may not be performed by the founding team, e.g. writing a business plan, hiring a first employee, purchasing equipment, etc. Since individual gestation activities typically lack a clear conceptual meaning, Gordon (2012) – as mentioned above – has classified many of them in two distinct sub processes of discovery and exploitation. In this study, we propose a richer and more fine-grained classification of five conceptually distinct gestation activities. We have attempted to form types of activities that should *almost always be necessary* for a firm to start generating revenues and – ultimately - to become profitable. Furthermore, for reasons of parsimony, we have excluded activities that in our view have considerably little substance, such as the first use of a bank account or the purchase of a liability insurance, or that occur only rarely, such as applying for a patent. Ultimately, the establishment of valid constructs is about substantive knowledge, expert agreement and parsimony rather than empiricism (Rossiter, 2002). With

our study, we aim to contribute to the theorizing about the sequence of gestation activities (e.g., Van de Ven and Engleman, 2004). Our attempt to classify of distinct gestation activities that are likely to be almost always necessary for a firm to become successfully established is a step towards that direction.

<< INSERT TABLE 1 HERE >>

Table 1 provides an overview of the five gestation activities that we identified. These activities are labeled: the start of business analysis, the start of product development, the start of resource assembly, the legal start of the firm, and the start of marketing. In total, they are based on seventeen separate gestation activities. Some sub processes are captured by a single event. Others are based on multiple activities. For each individual activity, the PSED 2 questionnaire captures whether or not this activity occurred, and if so in which year and in which month. For many activities, therefore, we can only tell when a specific activity or process started. As a result, our concepts refer to *the start* of specific activities or gestation sub processes. To mark the starting date of each of the five activities, we simply take the earliest month of occurrence of any of an activity's underlying items. Given that gestation processes can be extremely complex, with many activities being iterative and running in parallel, the consideration of the start of distinct activities is very useful for our purpose. The start of activities is clearly demarcated in time and the order in which different activities are initiated indicates different progressions of the gestation process and distinct choices and paths that entrepreneurs might follow. Although gestation processes are inherently more complex than what we are able to capture using only *the start* of specific activities, it does provide a good starting point for the development of a more accurate, but not overly complex process theory of new firm creation. Below we discuss each of the five gestation sub processes in greater detail.

Business analysis refers to the start of the mental and conceptual activity to define, analyze, refine and adjust the business idea and its business model (Davidsson, 2004; Eckhardt and Shane, 2010; Gordon, 2012). This process is strictly abstract and cognitive. This thinking and analysis process might include several specific activities, such as collecting competitor information, talking to potential customers, performing financial analysis, determining regulatory requirements, and defining market opportunities. All of this might or might not be included in a written business plan. Although the number and the nature of the specific

analytical activities might vary immensely across gestation processes, the general act of thinking, analyzing, and conceptualizing will always be present to some extent. Note that our definition of business analysis does not include the decision to start a new firm or the discovery of a business opportunity. Although both activities involve mental processes as well, they do not refer to *the analysis* of a specific business opportunity. This is important, since the start of business analysis might – in principle – occur before or after other gestation activities.

Product development refers to the start of the product development process. We contend that product development is a necessary part of the gestation process. For sure, development work will be part of the gestation process of innovative ventures. In these instances, the start of the development of the eventual product might be signaled by the development of proprietary technology. Also imitative ventures will typically require some amount of development effort. For instance, even the replication of an existing on-line service will require development effort to build a website, to develop its back-end, and to generate a new look and feel.

Product development and business analysis are related, but conceptually distinct gestation activities. Business analysis involves the purely cognitive process to evaluate and analyze the business opportunity. Product development will also involve cognitive processes, such as product design, but ultimately its essence is that of a creative act to construct clear - and frequently tangible - outputs, such as a patent or a product prototype. From a process point of view, both activities are highly interrelated. For instance, business analysis might reveal important information about user preferences, thereby informing product design. Conversely, product design might reveal technical bottlenecks that invoke a rethinking of the entire business model.

For our purpose, it is important to stress that both activities can be initiated in a different sequence. Nascent entrepreneurs who start the gestation process by performing business analysis activities, such as talking to potential customers or collecting competitor information, might or might not proceed with the creative act of product development. The opposite sequence is also possible. For instance, an engineer might develop a new technology and subsequently identify a business opportunity. After this business analysis might start to further explore and develop this opportunity. In this example, in retrospect, the start of product development occurred before the start of business analysis.

Resource assembly refers to the activity to organize and bring together resources that are needed to support the creation of the new firm. To pursue a business idea and to bring it into being, nascent entrepreneurs need to organize and bring together the necessary financial, human, and physical inputs (e.g., Davidsson, 2004). Specific activities to provide the new firm with financial means might involve establishing supplier credit, looking for outside funding, and investing own money. Purchases of small or large items and hiring personnel involve the assembly of physical and human resources. Clearly, organizing and bringing together resources is distinct from the purely cognitive process of business analysis and the creative act of product development. Both business analysis and product development might be initiated before any resources are gathered. However, the start of resource assembly might also precede the start of any business analysis and/or product development.

Legal start refers to the registration of the firm's legal form. It marks the formal start of the firm. As Katz and Gartner (1988) point out, a necessary condition for any new firm is to create its legal boundaries. Delmar and Shane (2004) indicate that legal registration can bring important legitimacy benefits to the start-up. Registration can occur at different moments in the gestation process. At one extreme, nascent entrepreneurs can register their firms very early in the gestation process, possibly right after the decision to start a new firm, but before any serious analysis or development effort. At the other extreme, they could register their firms very late in the process, possibly even after they received first income from sales.

Marketing refers to the start of marketing and promotion. In order to generate revenues during a sustained period of time, firms typically must rely on specific activities to attract and convince clients. Again, this specific activity can be initiated at different points in the gestation process. On the one hand, marketing can be initiated as the final activity. In this case the nascent entrepreneurs first analyze the opportunity, gather resources, finalize the product and establish the firm, and only then approach potential clients with their offering. Alternatively, nascent entrepreneurs might try to sell to potential clients immediately after the business idea emerged and before any other gestation activities. In this way, marketing might serve to trigger and guide subsequent business analysis and product development (e.g., Sarasvathy, 2001). Although marketing and business analysis can be closely related in this sense, they are conceptually distinct: whereas marketing is an outreaching activity that engages an external audience, business analysis is a purely conceptual activity. Below we will

explore whether the sequence of the above sub processes matters. For this we first develop a tentative process theory. After that we explain our methodology to empirically test our process theory.

A tentative process theory

As indicated above, several conceptually distinct gestation activities can be considered necessary for the creation of a new firm. These activities can be and are being performed in many different sequences. We have a limited understanding however about the drivers and the consequences of different sequences of gestation activities. To address this gap in the literature, we tentatively propose a sequence of the necessary gestation activities. This will guide our subsequent empirical investigation of whether or not adherence to this sequence matters for gestation success. To tentatively propose a sequence of gestation activities, we start from a 'central orchestrating theme' (Miller, 1996) that drives the entire sequence of events, rather than to start from theorizing about the sequence of individual pairs of events. As our guiding theme, we tentatively consider an ideal-typical process to be highly rational, efficiency-seeking, goal-oriented process. As we will explain in greater detail below, this principle results in the following tentative process hypothesis:

Gestation processes are more likely to enter a sustained period of sales if gestation activities are initiated in the following order: (1) business analysis, (2) resource assembly, (3) product development, (4) legal start, (5) marketing.

While gestation activities might go on in parallel, might be stopped at different points, and might be started again, we believe that the order in which these activities are *initiated* can substantially affect gestation outcome. Different start sequences of the gestation activities reflect different approaches to new firm creation. Overall, adherence to the sequence as proposed above assists to set initial goals and helps develop and keep a broad overview of the business opportunity and where it is going. Although gestation processes are inherently uncertain, this should help the nascent entrepreneur to prevent problems, to efficiently take additional steps, and to enter the market well-prepared.

In particular, performing *business analysis* before undertaking other gestation activities can result in important efficiency benefits. Business analysis, for instance through discussions with potential users and collecting competitor information, provides insights that facilitate

decision-making, reduce risks, and prevent problems later on in the gestation process. According to Gordon (2012; p.4) “*heightened information gathering, superior planning and having complete conceptual clarity...facilitates efficient resource assembly and successful market making action.*” Overall, business analysis helps the nascent entrepreneur to develop a clear understanding of which customers to target with what product offering. This can subsequently serve as an initial goal that should help to understand what resources are needed to develop that product offering as well as the venture itself (e.g., Shane and Delmar, 2004). If resource assembly, product development, or marketing is initiated before some kind of business analysis, then the gestation process is more likely to be confronted with problems. For instance, product design might not meet customer demand, important industry regulations might turn out to be neglected, or resources might be acquired that turn out to be incorrect or superfluous, which in turn might negatively impact the speed, cost effectiveness and the quality of product development.

Guided by the (initial) insights provided by business analysis activities, we suggest that the nascent entrepreneur subsequently starts to organize and bring together the *resources* that are needed to start product development. This process to gather resources itself provides additional information about the costs, the quality and the availability of necessary inputs. Hence, this provides a further viability check before additional irreversible commitments are made during the gestation process. All in all, this sequence of business analysis followed by resource assembly reflects a rational approach to subsequently start *product development* well-prepared. As a result, product development is less likely to be confronted with cost or quality surprises or delays because of unavailable resources.

Next, we submit that a new firm should only be *legally established* after the start of product development. This is not to say that product development must be completed first. However, we do believe that it makes sense from an efficiency point of view to first start product development to get a better understanding of product feasibility before additional steps are taken to establish the firm. Finally, the firm must be legally started however before the start of *marketing* and promotion. Only when the business opportunity is clear, when necessary resources are in place, when the product offering is sufficiently developed, and when the firm is formally registered, the nascent entrepreneur is well-prepared to reach out to target potential buyers convincingly.

All in all, we argue that adherence to the above sequence will increase the likelihood that the new firm will enter a period of sustained sales. Deviation from this sequence is more likely to result in unexpected problems, which reduces the likelihood of achieving sustained revenues. For instance, action-oriented approaches to starting a firm (e.g., Sarasvathy, 2001; Read et al., 2011) propose that immediate action is taken to develop the product and to start marketing and promotion. Whereas this approach does not lose precious time on business analysis, this approach is also more likely to be confronted with surprises and the need for change. The action-oriented, ‘effectual’ approach submits that actively looking for surprises helps to learn from these surprises, it can also have imported drawbacks. For instance, trying to sell an idea to a first potential customer might result in the subsequent development of a customized product that only few other buyers are interested in. As such, the action-oriented approach is very path dependent and likely to require rework. And while registering a firm early on can have legitimacy benefits (e.g., Delmar and Shane, 2004), this can also backfire. In particular if the firm is yet to organize resources and develop the product, clients might easily become disappointed if they were attracted to a seemingly well-prepared firm, i.e. a registered firm that already promotes its offerings. In this case, if the product does not live up to expectations or is finished too late, clients might be severely disappointed, possibly impacting the firm’s reputation for good.

Method

Data

To put the above hypothesis to a first empirical test, we use data from five annual waves (Waves A, B, C, D and E) of the second Panel Survey of Entrepreneurial Dynamics (PSED II). This survey tracks a group of 1214 nascent entrepreneurs that was identified between October 2005 and January 2006 from a representative sample of households in the United States. These nascent entrepreneurs meet four criteria (Reynolds and Curtin, 2009, p.7): “1) *they consider themselves as involved in the firm creation process, 2) they have engaged in some start-up activity in the past 12 months, 3) they expect to own all or part of the new firm, and 4) the initiative has not progressed to the point it may be considered an operating business*”. After their selection, the nascent entrepreneurs were subjected to a structured phone interview for about one hour. Subsequently, they were interviewed five times more with intervals of about 52 weeks. Amongst others, the questionnaire asks information about

numerous gestation activities, including the calendar month (and year) of occurrence (see Table 1).

Sample

In this study we use only a subset of the 1214 nascent entrepreneurs. This helps to reduce the large degree of heterogeneity that exists in the dataset (e.g., Davidsson and Gordon, 2012). First, we focus on the gestation process for independent new businesses only. This means, for instance, that we exclude franchises. This leaves us with a dataset of 998 cases. Second, we include in our analysis only those nascent entrepreneurs who started their gestation process at a maximum one year before the date of the first interview. The start of the gestation process was defined as the month when the nascent entrepreneur first thought about starting his or her new business. Others have also restricted their analyses to a sample of processes that are initiated relatively recently (e.g., Delmar and Shane, 2003; Lichtenstein et al., 2007). The benefit of excluding those cases for which the gestation process started more than a year before the first interview is that we reduce an inevitable survivor bias. Based on the above criteria a sample of 364 nascent entrepreneurs remains.

Prior studies on the gestation process typically consider even more specific subsamples, such as only innovative new ventures. In this regard, Samuelsson and Davidsson (2009) found that their explanatory power for the progress of imitative ventures was “almost embarrassingly low” (p.245). Davidsson and Gordon stress that the bulk of new ventures creation efforts is started with no ambition to grow and are of the imitative kind. Hence, they argue, future research should take this into account. By considering all new firm creation attempts, our study helps to improve our understanding of gestation activities as they tend to be performed by the majority of nascent entrepreneurs.

Measurement

Dependent variable. In our study we seek to explain whether or not a gestation process results in a started firm. Our sample of 364 nascent entrepreneurs involves gestation processes that - by the time of the Wave E interview - can be in one of three states: (1) successful completion of the gestation process, i.e. a started firm, (2) still trying, or (3) terminated before completion. In the literature there is no clear agreement on the moment that the gestation process ends and that a new business actually starts. One of the most commonly used single-item indicators for the start of a firm is first income from sales. To be more precise, given the

structure of the PSED 2 questionnaire (in particular question A31 in the questionnaires for Waves B, C, D, and E), we consider in this study as the starting date the month in which the first revenue was received *if* the year following this month involved at least six other months in which revenues were received. In other words, in this study the date a firm starts involves the start of the firm's first sustained period of revenues.

Although this measure does not necessarily mean that the firm has become profitable or has recovered its start-up investments, it does reflect that the firm has become operational and that there appears to be consistent interest in the firm's offerings. Although this measure is not the most appropriate indicator for all businesses, such as seasonal businesses or businesses that take a long gestation period without sales, e.g. R&D intensive start-ups, such as biotech firms, it will be an appropriate performance indicator for most businesses. Based on data from Wave A-E, 152 of the 364 gestation processes have resulted in a started firm. The remaining processes have either been prematurely terminated or are still ongoing. After five years, one could argue that this latter type of gestation processes is - for the most part - either not a success or does not reflect a serious attempt to establish a business, i.e. these respondents might be labeled 'dreamers'.

Independent variable. Our independent variable involves the degree of fit between the observed sequences of the five gestation activities and the proposed sequence of the five gestation processes. To construct the fit measure, we first assessed for each case which of five activities were started and if so in which month. For cases that reported to have generated sales in at least seven months of a twelve-month period, i.e. the dependent variable as discussed above, we only consider activities to have started if it was started no later than twelve months after the first income from sales. Second, for each pair of started activities we rated its temporal order, i.e. whether A started before B or whether B started before A. Pairs of activities involve the primary level of analysis where temporal order manifests itself.

Third, we coded for each observed pair of activities whether or not its temporal sequence was similar to the proposed sequence. If all five activities were present in a case, then a total of ten pairs of activities had to be assessed to determine the number of pairs of events for which the observed temporal order matches the hypothesized temporal order. If an activity did not (yet) start, this means that this activity could not have logically started before or after another activity if it was hypothesized to do so. Hence, this respective pair was considered to not fit

the hypothesized sequence. If two activities did not (yet) start, then obviously no judgment could be made about the temporal order of these activities. As a result this pair would be coded as a missing value. For 12.6% of the observed pairs of events we could not assess the exact temporal order, since its events were reported to have occurred in the same month. In the absence of precise evidence that one activity started before the other, these pairs were coded to reflect that they do not fit the hypothesized sequence.

Finally, we constructed a scale that ranges from 0% to 100% to reflect the degree of fit between the observed gestation process and the hypothesized gestation process. For each case we summed the number of sequential pairs of events that matches the hypothesized sequence of events. This number of pairs of activities that fits the hypothesis was subsequently divided by the total number of pairs for which fit with the hypothesized sequence could be assessed in the first place, i.e. ten minus the number of missing values. The resulting scale ranges from 0 to 1, which was we transformed to range from 0% to 100% to facilitate the interpretation of the results.

Control variables. Table 2 provides an overview of the control variables included in our analysis. Based on prior studies (e.g., Samuelsson and Davidsson, 2009; Liao and Welsh, 2008; Delmar and Shane, 2004; Brush et al., 2008), our set of control variables includes a range of variables that can be expected to predict variation in gestation outcomes. Amongst others, these variables include elements related to human capital, social capital, the type of business, and the industry.

<< INSERT TABLE 2 HERE >>

Analysis and Results

Table 3 presents descriptive results and correlations among the variables included in our analysis. The table shows that 42% (152 cases) of the 364 cases started, meaning that they entered a sustained period of sales. The table also shows that our main independent variable, simply labeled 'fit', is hardly correlated with any of the control variables. On average, the degree of fit between the proposed sequence and the observed sequences is 31%. 28% of the gestation processes in our dataset (102 cases) reported not a single pair of activities that was in line with the proposed sequence. An additional 43% of the dataset (156 cases) reported a

degree of fit with the proposed sequence of up to 50%. Finally, 29% of the dataset reported a degree of fit ranging from 50% to 100%. Within this latter group, eleven cases reported a degree of fit of 90% or higher and only five cases were performed fully in line with the proposed sequence. A closer inspection of our data reveals that the five gestation activities are indeed almost always necessary.

A closer inspection of our data reveals that starting business analysis (in 150 of the 152 started firms; 99%), starting to assemble resources (in 151 of the 152 started firms; 99%), and starting product development (in 140 of the 152 started firms; 92%) indeed appear to be almost always necessary for a firm to get started. Strikingly, legal form registration and starting marketing and promotion occurred much less frequently for started firms. Although the majority of all started firms did start both activities (respectively in 93 and 91 out of the 152 cases, i.e. 61% and 60%), these activities certainly do not appear to be necessary for the start of a new firm. Although U.S. states typically demand firm registration before any sales are made, many firms (in our sample 39% of all started firms) therefore do not comply with this request. The most obvious explanation for this finding seems to be that our sample reflects all gestation processes. Our sample, for instance, does *not* constitute a sample of ambitious, high-tech gestation processes. In contrast, the majority of our sample can be expected to involve modest start-up initiatives (e.g., Davidsson and Gordon, 2012). For instance, our dataset might include a blue-collar employee who starts to provide his services to friends and family in the weekend, or a grandmother who starts to sell cookies and cupcakes on a small scale in her own neighborhood. These informal firms might not require any other marketing than word-of-mouth and might perhaps never formally register.

In the set of 212 firms that did not (yet) start, the majority of these firms did start business analysis (in 196 cases; 92%), did start to assemble resources (in 173 cases; 82%), and did start product development (in 147 cases; 69%). In line with our findings for started firms, registration of the legal form and start of marketing occurred much less frequently (respectively in 41 and 80 cases, i.e. 19% and 38%). From these numbers we can conclude that gestation processes that did not (yet) start still reported the start of many gestation activities. As a result, the measurement of fit did not suffer much from missing data. Out of all ten possible pairs of gestation activities, we could assess on average 9.7 pairs in the group of started firms. In the group of non-started firms on average we still had data available on 8.3 pairs of gestation activities.

<< INSERT TABLE 3 HERE >>

To test our hypothesis we performed binary logistic regression analysis. Discriminating between gestation processes that have entered a sustained period of sales and those that – after five years – did not, we find strong support for the hypothesis that fit is related positively with successful new firm creation. Table 4 presents the detailed results. In Model 1 we entered only the control variables. Not surprisingly, this resulted in a statistically significant model according to the Chi-square statistic ($p < 0.001$). This model explains variation in the dependent variable considerably (between 15% and 21%). In Model 2 we entered our dependent variable of interest, i.e. fit with the proposed sequence of the five gestation activities. In line with our tentative hypothesis, the addition of this variable strongly improves the explanatory power of Model 1, which now ranges from 25% to 34%. The fit coefficient is positive and statistically significant ($p < 0.001$). The value of $\text{Exp}(B)$ is 1.03 (CI: 1.02-1.04), which means that for each additional percentage point of fit, a new firm is 1.03 times more likely to enter a sustained period of sales. Put differently, a gestation process with only a 50% degree of fit is $1.03^{50} = 5.2$ times less likely to enter a sustained period of sales than a gestation process that perfectly fits the proposed gestation sequence, having allowed for all of our control variables.

<< INSERT TABLE 4 HERE >>

Discussion and Conclusion

The creation of new firms involves a sequence of numerous activities and events. Although new firm creation is of great practical concern, we know very little about successful sequences of gestation activities. In this respect, our study meets the call to develop and test process theories of entrepreneurship (Van de Ven and Engleman, 2004). From a process theory perspective (Van de Ven and Poole, 1995), our literature review reveals that gestation processes are characterized by extensive temporal heterogeneity (Samuelsson and Davidsson, 2009). For instance, nascent entrepreneurs perform gestation activities in many different sequences (Liao and Welsh, 2008; Gordon, 2012). Some evidence exists that the temporal order of specific pairs of gestation activities matters (Shane and Delmar, 2004). However,

limited theory and evidence exists about the sequence of three or more gestation activities and its impact on gestation success.

To extend the literature, we defined five conceptually distinct gestation activities that we consider to be almost always necessary for a firm to get started, and we tentatively hypothesized that these have to be started in the following sequence: (1) business analysis, (2) resource assembly, (3) product development, (4) legal start, and (5) marketing. The basic principle behind this sequence is that it facilitates a goal-oriented and efficient process and that it helps to enter the market well-prepared. Altogether, this is argued to increase the likelihood that the firm will start. In a first empirical test of this process hypothesis, we found strong evidence that fit with the proposed sequence increases the likelihood that the gestation process enters a sustained period of revenues. This shows the importance of the sequence of gestation activities for future research on nascent entrepreneurship. As an additional contribution, our study draws on data from the second Panel Study of Entrepreneurial Dynamics (PSED 2) about the timing of gestation activities in gestation processes. To date, this data is yet to be fully exploited (Davidsson and Gordon, 2012). For practitioners, coaches, and teachers, our study provides clear guidance about the temporal order in which to initiate a multitude of gestation activities.

Limitations

The data that we use is right-censored. As a result, for instance, we might not have captured the registration of a firm's legal form or its start of marketing and promotion. Both activities typically tend to occur relatively late in the gestation process. Of course, our dataset might well include firms that did not yet start. Our results have to be interpreted with these caveats in mind.

References

- Acs, Z. & Audretsch, D.B. 2010. *Handbook of entrepreneurship research*. New York: Springer.
- Alsos, G.A. & Kolvereid, L. 1998. The Business Gestation Process of Novice, Serial, and Parallel Business Founders. *Entrepreneurship Theory and Practice*, Summer, 101-114.
- Baker, T., Miner, A. S., & Eesley, D.T. 2003. Improvising Firms: Bricolage, Account Giving and Improvisational Competencies in the Founding Process. *Research Policy* 32 (2): 255-276.

- Brush, C.G., Manolova, T.S., & Edelman, L.F. 2008. Properties of emerging organizations: An empirical test. *Journal of Business Venturing*, 23(5): 547-566.
- Brzinsky-Fay, C., Kohler, U. & Luniak, M. 2006. Sequence Analysis with STATA. *The Stata Journal*. 6, 435-460.
- Carter, N., Gartner, W. & Reynolds, P. 1996. Exploring start-up event sequences. *Journal of Business Venturing*, 11, 151–166.
- Davidsson, P. 2004. *Researching entrepreneurship*. New York: Springer.
- Davidsson, P., & Gordon, S.R. 2012. Panel Studies of New Venture Creation: A Methods-Focused Review and Suggestions for Future Research. *Small Business Economics*, 39(4), 853-876.
- Delmar, F., & Shane, S. 2003. Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24(12): 1165 -1185.
- Delmar, F., & Shane, S.A. 2004. Legitimizing first: Organizing activities and the survival of new ventures. *Journal of Business Venturing*, 19(3): 385-410.
- Eckhardt, J.T. & Shane, S.A. 2003. Opportunities and entrepreneurship. *Journal of Management*, 29(3), 333-349.
- Eckhardt, J.T., Shane, S.A., & Delmar, F. 2006. Multistage selection and the financing of new ventures. *Management Science*, 52(2): 220-232.
- Eckhardt, J.T. & Shane, S. 2010. An update to the individual-opportunity nexus. In: *Handbook of entrepreneurship research*, Edited by: Acs, Z.J. & Audretsch, D.B. 47-76. New York: Springer.
- Gatewood, E. J., Shaver, K. G., & Gartner, W. B. 1995. A longitudinal study of cognitive factors influencing start-up behaviors and success at venture creation. *Journal of Business Venturing*, 10, 371–391.
- Gordon, S.R. 2012. A sequence analytic model of entrepreneurial discovery and exploitation process. Paper presented at *The Joint ACERE-DIANA International Entrepreneurship Conference 2012*.
- Herrmann, A.M. & Van der Putten, K. 2010. Do It Both Ways! On the Use and Usefulness of Sequence Analyses for Studying Venture Creation Processes. Working paper.
- Katz, J., & Gartner, W. 1988. Properties of emerging organizations. *Academy of Management Review*, 13(3), 429–442.

- Liao, J, Welsch, H. & Tan W. 2005. Venture gestation paths of nascent entrepreneurs: Exploring the temporal patterns. *Journal of High Technology Management Research*, 16, 1-22.
- Liao, J.J., & Welsch, H. 2008. Patterns of venture gestation process: Exploring the differences between tech and non-tech nascent entrepreneurs. *The Journal of high technology management research*, 19(2), 103-113.
- Lichtenstein, B.B., Carter, N.M., Dooley, K.J., & Gartner, W.B. 2007. Complexity dynamics of nascent entrepreneurship. *Journal of Business Venturing*, 22(2): 236-261.
- Locke E.A., & Latham, G.P. 1990. *A Theory of Goal Setting and Task Performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Miller, D. 1996. Configurations revisited. *Strategic Management Journal*, 17: 505-512.
- Reynolds, P. & Miller, B. 1992. New firm gestation: conception, birth, and implications for research. *Journal of Business Venturing*, 7, 405-417.
- Reynolds, P. D., & Curtin, R. T. (Eds.). 2009. *New firm creation in the United States: Initial explorations with the PSED II data set*. New York, NY: Springer.
- Rossiter, J.R. 2002. The C-OAR-SE procedure for scale development in marketing. *International Journal of Research in Marketing*, 19: 305-335.
- Salvato, C. 2009. Capabilities unveiled: The role of ordinary activities in the evolution of product development processes. *Organization Science*, 20(2) 384-409.
- Samuelsson, M. and Davidsson, P. 2009. Does venture opportunity variation matter? Investigating systematic process differences between innovative and imitative new ventures. *Small Business Economics*. 33, 229-255.
- Sarasvathy, S.D. 2001. Causation and Effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26 (2): 243-263.
- Shane, S. A., & Delmar, F. 2004. Planning for the market: Business planning before marketing and the continuation of organizing efforts. *Journal of Business Venturing*, 19(6): 767-785.
- Read, S., Sarasvathy, S., Dew, N., Wiltbank, R., & Ohlsson, A.-V. 2011. *Effectual Entrepreneurship*. New York: Routledge
- Van de Ven, A.H., & Engleman, R.M. 2004. Event-and outcome-driven explanations of entrepreneurship. *Journal of Business Venturing*, 19, 343-358.
- Van de Ven A.H., & Poole, M.S. 1995. Explaining development and change in organizations. *Academy of Management Review*, 20(3):510-540.

Table 1. Gestation sub processes

Gestation activity	Definition and PSED 2 items
<i>Business Analysis</i>	<i>The start of the mental and conceptual activity to define, refine and adjust the business idea and the business model.</i>
	D3. Start business plan preparations D21. Start of product/service talks with potential customers D23. Start of collecting competitor information D25. Start of defining market opportunities D27. Start of developing financial projections D29. Determination of regulatory requirements
<i>Resource Assembly</i>	<i>The start of the activity to bring together resources to support the creation of the new firm</i>
	B9. First use of physical space D17. Purchase/lease of major items D19. Purchase of materials/inventory E4. First receipt of outside funding E6. First establishment of supplier credit E8. First person hired Q14. The first time an owner invested own money
<i>Product Development</i>	<i>The start of the product development process</i>
	D7. Start of product/service development D12. Start of development of proprietary technology
<i>Legal Start</i>	<i>The legal start of the firm</i>
	C3. Registration of legal form
<i>Marketing</i>	<i>The start of marketing and promotion</i>
	D10. The start of marketing and promotion efforts

The codes (e.g. D3) refer to the item codes in the PSED 2 questionnaires.

Table 2. Control variables

Variable	Scale (PSED 2 item code)
Industry experience	How many years of work experience had this owner in the industry where this new business will compete; the average of all team members (AH11)
Full time	Did one of the owners begun to work 35 hours or more per week on this new business?; 1 = yes; 0 = no (AH17)
Team (non-spouse)	1 = two or more founders, non-spouses; 0 = self or team of self and spouse (AG2)
Level of education	The highest level of education completed as an average of all – up to 4 - team members. Scale from 1 to 10: up to eighth grade; some high school; high school degree; tech. or voc. Degree; some college; comm. College degree; bachelor’s degree; some graduate training; master’s degree; LAW, MD; PHD; EDD degree (AH6)
Product novelty	Will all, some, or none of your potential customers consider this product or service new and unfamiliar? 0 = none or some, 1 = all (AS11)
High-tech	Would you consider this business to be hi-tech? 1 = yes; 0 = no (AS6)
Social capital	How many other people, who will not have an ownership share, have made a distinctive contribution to the founding of this new business, such as planning, development, financial resources, materials, training, or business services? 0 = none, 1 = one or more (AG13)
Gender	1 = male, 2 = female (Qsex)
Start-up experience	How many other businesses did this owner helped to start; average of all members (AH12)
Growth aspiration	1 = I want it to be as large as possible; 0 = I want a size to manage by self or with key employees (AT1)
Competition	Right now, are there many, few, or no other businesses offering the same products or services to your potential customers? 1 = no competition; 0 = many or few competitors (AS2)
Industry dummies	Consumer service (reference category), Restaurant, Real estate, Business consulting, Agriculture, Manufacturing, Wholesale, Construction, Retail store, Health and education, Other industries (AB1)
Quality importance	Quality products or services are important fort his new business to be an effective competitor. 1 = strongly agree; 2= agree; 3= neither; 4= disagree; 5 = strongly disagree (AF2)
Price importance	Lower prices are important fort his new business to be an effective competitor. 1 = strongly agree; 2= agree; 3= neither; 4= disagree; 5 = strongly disagree (AF1)

Table 3. Descriptives and correlations

	Mean	St. dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Started	,42	,49														
2 Fit	30,60	27,65	,37 ***													
3 Gender	1,36	,48	,00	-,03												
4 Growth Ambition	,17	,37	,04	,11 *	-,06											
5 High-tech	,21	,41	-,04	,02	-,09	,04										
6 Level of Education	5,29	1,95	,14 **	,17 **	,10 *	,02	-,03									
7 Industry Experience	8,81	9,42	,17 **	,00	-,10 *	-,09	,01	,06								
8 Start-Up Experience	,92	1,32	,07	,12 *	-,02	,12 *	,11 *	,13 *	,03							
9 Product Novelty	,18	,39	-,09	-,04	-,08	,08	,21 ***	-,10	-,10	,02						
10 Full time	,28	,45	,15 **	,06	-,05	,13 *	,02	-,12 *	,00	,09	,05					
11 Price Importance	2,72	1,63	,02	,06	,03	,00	-,07	,24 ***	,02	,08	,00	-,02				
12 Quality Importance	1,39	,88	-,16 **	-,07	-,08	,02	-,10	-,02	,06	,07	,06	,00	,16 **			
13 Competition	,21	,41	-,09	-,13 *	,04	,05	,12 *	-,11 *	-,04	-,02	,28 ***	-,01	,11 *	,02		
14 Team (non-spouse)	,29	,45	-,12 **	,00	-,01	,09	-,02	-,04	,01	,03	,02	,06	-,05	,06	,10	
15 Social Capital	,33	,47	,00	,10	,01	-,03	,04	,13 *	,00	,11 *	-,09	-,07	,04	-,03	-,08	-,03
Industry dummies omitted; * = p<0.05; ** = p<0.01; *** = p<0.001																

Table 4. Results from binary logistic regression to explain whether firms start (1) or not (0)

	Model 1						Model 2					
	B	S.E.	Exp(B)	95% C.I. for EXP(B)		B	S.E.	Exp(B)	95% C.I. for EXP(B)			
				Lower	Higher				Lower	Higher		
Industry Experience	,04	,01 **	1,04	1,02	1,07	,05	,01 **	1,05	1,02	1,08		
Full Time	,80	,27 **	2,22	1,32	3,75	,77	,29 **	2,16	1,23	3,82		
Team (non-spouse)	-,63	,28 *	,53	,31	,91	-,70	,30 *	,50	,27	,89		
Quality Importance	-,50	,19 **	,61	,42	,87	-,47	,21 *	,63	,42	,94		
Level of Education	,14	,07 *	1,15	1,00	1,31	,12	,07	1,12	,97	1,30		
Product Novelty	-,40	,34	,67	,34	1,31	-,47	,37	,62	,30	1,30		
High-tech	-,45	,32	,64	,34	1,19	-,36	,34	,70	,36	1,36		
Social Capital	-,09	,26	,92	,56	1,51	-,25	,28	,78	,45	1,33		
Price Importance	-,02	,08	,98	,84	1,14	-,05	,08	,95	,80	1,12		
Gender	-,02	,26	,98	,59	1,63	,13	,28	1,14	,66	1,99		
Start-up Experience	,09	,09	1,09	,91	1,31	,03	,10	1,03	,85	1,24		
Growth Aspiration	,30	,33	1,35	,71	2,57	,10	,35	1,11	,55	2,22		
Competition	-,09	,33	,91	,48	1,74	,08	,35	1,08	,54	2,16		
Restaurant †	-2,27	1,13 *	,10	,01	,95	-2,11	1,15	,12	,01	1,16		
Real estate	-,57	,68	,57	,15	2,14	-,95	,76	,39	,09	1,71		
Business consulting	-,05	,48	,95	,37	2,45	-,57	,53	,57	,20	1,60		
Agriculture	,58	,65	1,78	,49	6,40	,67	,72	1,95	,48	8,00		
Manufacturing	,03	,53	1,03	,37	2,90	,37	,55	1,45	,50	4,23		
Wholesale	,51	,65	1,66	,46	5,97	,34	,71	1,41	,35	5,64		
Construction	-,51	,46	,60	,25	1,47	-,10	,49	,90	,35	2,34		
Retail store	,00	,37	1,00	,48	2,04	-,02	,40	,98	,45	2,14		
Health, education	-,01	,50	,99	,37	2,63	,02	,54	1,02	,35	2,94		
Other industries	,36	,62	1,43	,43	4,80	,61	,65	1,83	,52	6,51		
Fit						,03	,01 ***	1,03	1,02	1,04		
Constant	-,61	,53	,54			-1,49	,59 *	,23				
Step						44,87	***					
Chi-square	57,96	***				102,83	***					
-2 Log likelihood	419,49					374,62						
Cox & Snell R Square	,15					,25						
Nagelkerke R Square	,21					,34						
p<0.001	***											
<0.01	**											
<0.05	*											

† reference category is "consumer service".