



WORKING PAPER

Business planning and venture level performance: Challenging the institution of planning

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ABSTRACT

In this study we longitudinally examine outcomes of entrepreneurial business planning to assess whether this is a fruitful activity or not. We use both data replication and data extension to examine previously published and controversial research. Our empirical setting is a random sample of 623 nascent ventures that we follow over a period of six years - from conception, through exploitation venture level performance, as well as termination. We compare and contrast previous findings based on this data by observing sub-sets for the population regarding a number of dependent variables. Our findings highlight the importance of data replication, data extension, and sample selection bias. Thus, we add not only to the debate regarding the merits or liabilities of planning, but we also contribute to evaluating normative research and publication standards by re-examining past research using more comprehensive data and an extended time frame.

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Abstract

Recent research portends to provide some conclusions advocating a planning paradigm for entrepreneurial ventures (e.g. Brinckmann, Grichnik and Kapsa, 2010; Burke, Fraser and Greene, 2009; Delmar and Shane, 2004; Shane and Delmar, 2003). In this paper, we critically examine this research in light of more recent and conclusive longitudinal evidence as well as challenging some of the very foundations regarding how we conduct research in our field. We add to the debate regarding the importance of tacit knowledge (Polyani, 1967) and the utility of pursuing a trajectory that may be less systematic, and more opportunistic (Sarasvathy, 2001; 2008), empirically examining and testing the planning thesis over an extensive life-cycle for a random group of nascent firms over a period of six years.

New businesses represent an important economic and social force, providing innovation, emergent industries and technologies, as well as employment, economic development and growth. The recognition of small business and entrepreneurial activities has resulted in an explosion of education and research regarding how to best advance and promote entrepreneurial activity. One such area concerns the utility of business planning.

This study provides an important contribution to the business planning literature, indeed, for scholarship in the field of strategic management. We recognized that the same data was used for the nascent studies conducted by Honig and Karlsson 2004 as was used in the Delmar and Shane 2003 and 2004 studies. Each of these studies drew contradictory conclusions. Honig and Karlsson highlighted legitimacy, but not performance, while the Delmar and Shane studies asserted that planning activities led to better performance outcomes. Both articles are based on the exact same data as our current study, but used two different sub samples of the data. Delmar and Shane used 223 nascent entrepreneurs and Honig and Karlsson used 396 nascent entrepreneurs.

Thus, this paper presents a rare opportunity to examine how methodological bias may or may not influence findings presented in scholarly journals, particularly those related to business planning, but also relevant for other relationships in organisational life that infer causality but may actually misattribute correlations - something James March referred to as “superstitious learning” (March and Olsen, 1975). In summary, we ask, “How could two sets of researchers publishing in high quality journals come to such different conclusions?” We examine to what extent the findings of either Honig and Karlsson (2004) or Delmar and Shane (2003; 2004) are biased by the time horizon or methodology they employed in their studies by

comparatively reanalyzing their data. Thus, we seek to examine whether their findings are supported in the long run, and adjudicate different outcomes, with the benefit of a more extensive longitudinal time frame.

A second contribution this paper makes regards the importance of data replication and extension. Replication and extension are integral components of the scientific method, particularly important in identifying possible type 1 errors¹. Because much management literature relies upon unique data sets, as opposed to publicly available data, replication is more difficult and occurs infrequently. Further, as there is no tradition of testing and retesting experiments to ensure validity and reliability, much of the “science” that we think of in social science is arguably weakly tested supposition and unproven conjecture. Surprisingly, management journals tend to lag other fields in their willingness to publish research that either replicates or extends existing research, resulting in encouraging the dissemination of uncorroborated research (Hubbard and Vetter, 1996; 1997). Our study examines these limitations and weaknesses in our field by highlighting the consequences of early selection and narrow scope in providing possibly misleading or erroneous findings.

In this study we add to the literature by examining, carefully, and in a longitudinal context, the implications of planning at four points in time during a six-year period for a large sample of nascent ventures. Failure to do careful longitudinal research will unfairly bias results in terms of sampling on the dependent variable (e.g. only sampling successful ventures that “get off the ground”) or worse, misattribute causality, inferring that firms are successful as a result of their planning, when the process may actually be the other way around. This longitudinal study provides a much closer approximation of variables and relationships suggesting causality – something a meta-analysis is incapable of providing.

We begin with discussions regarding a review of the existing planning and performance literature, before introducing our theoretical model and analysis. We conclude with a discussion regarding the importance of both replication and extension to the field of social science and management literature.

PLANNING AND PERFORMANCE: THE EMPIRICAL RECORD

Considerable research has been conducted on planning and performance for entrepreneurial activities, resulting in significant controversy regarding benefits as well as liabilities. Advocates cite the importance of maximizing resources, sequential developing processes, and facilitating rapid decision making (Gruber, 2007; Shane and Delmar, 2003). However, one major limitation of this research is that extant literature typically focuses on up-and-running firms – as opposed to emergent entrepreneurial ventures. For the very few that examine nascent activity (e.g. Shane and Delmar, 2003; 2004; Honig and Karlsson, 2004) they fail to examine the full life-cycle of a firm. A recent meta-study found that only three of the 46 major relevant business planning studies utilised nascent entrepreneurship data (Brinckmann, Grichnik, and Kapsa, 2010). Ideally, studies would begin at the nascent stage, and follow planners, versus non-planners, throughout a firm’s life cycle.

¹ Type 1 errors are false positive - that is, incorrectly rejecting a hypothesis when it should be accepted

Studies of nascent entrepreneurial activity suggest that the legitimation stemming from business plans occurs primarily during the initial period of organisational formation (Karlsson and Honig, 2009) but are silent regarding whether legitimation processes persist over a firm's life-cycle. Delmar and Shane (2003) found that planning helped entrepreneurs facilitate goal attainment, make rapid and more effective decisions, and more quickly turn goals into operational activities (2003; 2004). Burke, Fraser, and Greene found that, controlling for endogeneity and entrepreneurial experience, new ventures that planned grew faster (2009). Delmar and Shane (2004) also found that business plans helped with legitimacy, reduced the probability of failure, and helped overcome the liabilities of underdeveloped social ties.

In addition, there is some evidence that planning leads to persistence (Liao and Gartner, 2006; Delmar and Shane, 2003; Honig and Karlsson, 2004; Perry, 2001; Brinckmann et al., 2010). However, persistence by itself may be a poor measure of success. Entrepreneurs might be better off identifying failure early on, rather than pursuing an activity that will likely lead to failure and unnecessary resource expenditures. In particular, the issue of persistence has not conclusively been researched, as few studies contain the necessary longitudinal data to adjudicate whether persistence eventually leads to performance, or not.

Some scholarship suggests that business planning interferes with the efforts of time-constrained entrepreneurs to undertake more efficient activities in the nascent process (Ansoff, 1991; Bhidé, 2000; Sarasvathy, 2001; Gruber, 2007; Honig, 2004). This reasoning argues that planning gives a false illusion of control and yields potentially harmful predictions due to the inability to gather and analyse information about the future (Honig, 2004; Sarasvathy, 2001). Other research has shown that business plans may be either unrelated to entrepreneurial success, or primarily beneficial in signaling institutional support (Spence, 1974), as opposed to helping with entrepreneurial activities (Honig, 2004; Honig and Karlsson, 2004; Karlsson and Honig, 2009).

A recent meta-analysis of the existing business planning literature came to a number of important conclusions on this subject. Brinckmann et al found that "business planning has a significantly greater impact on performance in established small firms than in newer firms" (2010: 35). Their findings reflect two groups: "newer" firms that were firms eight years or younger, and older firms that were more than eight years old. Because they had insufficient information on the exact ages of the firms in the analysis, they were unable to examine the longitudinal effects of age on planning, short of utilizing a dichotomous variable. Thus, the question whether or not business planning is important for nascent or emergent ventures remains unanswered – however, the evidence does seem to indicate that the newer the firm, the weaker the relationship between planning and performance.

In sum, much empirical research ends up inconclusive as to the effect of business planning in nascent organisations (Castrogiovanni, 1996; Brinckmann et al, 2010). A number of studies have demonstrated that nascent entrepreneurs who do business planning are more persistent than those who do not plan (Delmar and Shane, 2004; Gartner and Liao, 2006). However, other studies, have not demonstrated a relationship between persistence and firm performance beyond survival and specific gestation behaviors. Neither Brush et al. (2008) nor Tornikoski and Newbert (2007) found a positive effect on performance. Honig and Karlsson (2004) using the same data, but another analytical approach from Delmar and Shane, found only a marginal effect between planning and venture persistence. The picture is even murkier for operational factors. Neither Edelman et al., 2008 nor Parker and Belghitar (2006) nor Tornikoski and Newbert (2007) found a

positive effect between business planning and becoming operational. In the Netherlands, Van Gelderen et al., (2005) found no effect, nor did Honig and Karlsson with the Swedish PSED data (2004).

PLANNING AND PERFORMANCE: THEORETICAL ARGUMENTS AND HYPOTHESES.

The conceptual argument behind many scholars who promote planning is rooted in goal setting theory (Locke and Latham 1990). Goal-directed motivations are acknowledged as important elements in the formation of entrepreneurial intentions (Krueger, 1993; Krueger and Brazeal, 1994). Goals are said to lead to intentions, followed by behaviors. The theory maintains that the more specific and challenging the goal, the better the task performance. Parallel to goal setting theory is the theory of planned behavior, asserting that behavior is dependent on both motivation (intention) and ability (Ajzen, 1991). In both cases, intentions lead to behavior, and the specificity of these intentions play a critical role. Entrepreneurship entails a range of activities, arguably difficult to quantify, therefore, a wide range of goals have been studied and associated with entrepreneurial behavior. For example, Boyd and Gumpert (1983) studied financial rewards, Bird (1989) examined other intrinsic rewards, such as autonomy and the need for achievement, and Kuratko and Hodgetts (1995) examine opportunity orientation. Further, the theory of planned behavior posits that attitudes are predictive of intentions, and that intentions form the basis of planned behavior (Ajzen, 1991). Thus, planning should lead to improved performance, as plans provide more specificity as well as clearer intentions.

Two important insights emerge from this literature. First, aspiring entrepreneurs are self-motivated individuals who take the initiative to plan and build an enterprise thereby implementing their personal goals (Kuratko, Hornsby and Naffziger, 1997). Second, both extrinsic and intrinsic goals function as drivers of new business creation (Naffziger, Hornsby and Kuratko, 1994). The former refer to externally driven motives (e.g., anticipated economic wealth), whereas the latter are more personal and covert in nature (e.g., perceived autonomy), and both can act as important buffers against the anticipated uncertainty when starting new businesses (MacMillan and Katz, 1992; Sarasvathy, 2001, 2008). Extrinsic and intrinsic goals, therefore, are important elements in the formation of entrepreneurial intentions (Krueger 1993; Krueger and Brazeal, 1994). Thus, goal setting theory provides a framework explaining how individual personal goals inspire choice (Herzberg, Mausner, and Snyderman, 1959; Locke and Latham, 1990), arguing that human action lies in goal-related motivations and subsequent intentions (Locke and Latham, 1990). Intentions lead to behavior, and planning is a strong signal of these intentions. For this reason, the subject of planning is important for those interested in promoting and advancing entrepreneurial activity.

An alternative theoretical argument promoting planning for new entrepreneurs is rooted in legitimacy. Legitimacy is a critical resource for nascent enterprises, as it demonstrates acceptance and validation by various stakeholders, allowing for social endorsements that become important in obtaining financial capital and investors, as well as in establishing a clientele or customer base (Aldrich and Ruef, 2006; Suchman, 1995). Legitimation theory holds that new ventures benefit by conforming to institutional pressures, thus, business planning should positively influence the performance of new ventures (Delmar and Shane, 2003; Shane and Delmar, 2004). Legitimation theory maintains that business plans are used for their value in conferring and signaling status, quality, prestige, and capability (Honig and Karlsson, 2004). Legitimacy is a critical resource for nascent enterprises, demonstrating acceptance and validation by various stakeholders, and social endorsement and support from the firm's environment (Powell and DiMaggio, 1991; Scott, 1995).

It is also important in obtaining financial capital, investors, and in establishing a clientele (Aldrich and Ruef, 2006; Suchman, 1995).

Both goal setting theory and legitimation theory suggest that efficient behavior in the nascent venturing process is dependent on goal specificity. The more specific a goal is or the more institutionalised a behavior, the more efficient one becomes by adhering to those forces. As described above, research conducted in the nascent stages of the entrepreneurial process seems to support that business planning is efficient when the dependent variable is a specific event such as product development, progress in the process, and survival (Liao and Gartner, 2006; Delmar and Shane, 2003; Honig and Karlsson, 2004). Legitimation indicates that new ventures benefit by conforming to institutional pressures; thus, business planning should positively influence the persistence of new ventures, but not necessarily performance. Measured, for example, as venture level profit, performance becomes a goal that is both unspecific and futuristic and may be incompatible with either goal setting theory or legitimacy theory. From these two theoretical perspectives, involving both intentions and legitimacy, we introduce our first hypothesis:

H1a Formal business planning has a positive impact on persistence in the nascent venturing process.

H1b Formal business planning has a positive impact on performance in the nascent venturing process.

While planning performance relationships are often widely asserted, all theories regarding the importance of business planning build on two general assumptions (Mintzberg, 2000). First, the planner must have the required knowledge to develop a useful and efficient plan, and second, that, to a certain extent, the future is predictable. Because plans are designed to occur on schedule, strategic planning, or planning in the midst of the typical ongoing crisis imposed on organisations by their unpredictable environment, takes place in chaos, and is a contingent activity (Mintzberg, 1994). Formalization is said to undercut the potential contribution of strategizing, yielding negligible returns to profits, and may be as likely to raise profits as to reduce them (Starbuck, 1992). Under the actual uncertainty of day-to-day commercial life, it may be quite difficult, if not impossible, to plan with any accuracy. Starbuck (1992) lists four reasons why planning is ineffective: 1) competitors have access to the same information 2) any strategies that are distinguishing are illegal, immoral, or impractical 3) planning is oriented toward the long term, which is itself unpredictable 4) while plans are used to form organisational consensus, their assumptions about people's knowledge and abilities are inaccurate. Further, legitimacy theory suggests that loose coupling may take place, whereby any plan is disconnected from the activities that take place in the firm (Karlsson and Honig, 2009). Thus, one possible conclusion is that business planning will not impact performance, either positively or negatively, that it will be an activity disassociated with performance. However, little research has systematically examined the full range of activity, from goal setting to intentions, through to entrepreneurial behaviors, to assess the behavioral outcomes of intentions and planning. Because these relationships may not follow a linear path, planning may be largely irrelevant, suggesting the following hypothesis:

H1c Formal business planning has no impact on performance in the nascent venturing process.

A pragmatic fact known to any entrepreneur is that organisations face limited resource constraints (Alvarez and Busenitz, 2001; Barney, 1991), while scholars recognize that they have severely limited analytical capabilities (March, 1978; March and Shapira, 1982). If it is the case that planning doesn't lead to positive

efficiency gains, there is also a possibility that planning actually wastes an organisation's limited resources, preventing it from being applied to more relevant activities. Further, planning may deter an organisation from advancing effective strategic intentions and maximizing capabilities, as actors may be blinded in their pursuit of one particular path outlined in their plan. Thus, there may be negative consequences associated with planning.

Inefficiency may actually be a normative outcome of planning. For planning to be effective, actors must anticipate a sequence of future events, in order to progress through the developmental process at a faster and more efficient rate (Delmar and Shane, 2003). However, considerable heterogeneity exists for nascent ventures, in terms of industry, size, structure, the differences between types of ventures and opportunities, as well as the time frame. For example, the issue of the timing of various organisational activities has been examined through life-cycle theory (Smith and Miner, 1983). Stages include the initial phase of emergence, characterized by brokering investments of capital, the formation of simple and informal structures, centralization, bold risk-taking and demands for swift mastering of innovation management with adequate responsiveness to constant change (Van de Ven, 1986). Unfortunately, life-cycle theory is imprecise, and provides little insight to managers or entrepreneurs (Greiner, 1972; Kazanjian, 1988; Quinn and Cameron, 1983). Further, market conditions impact firms differentially according to their specific life-cycle development. Planning suggests that nascent entrepreneurs should be able to predict their specific needs as well as the timing of resource use and strategic initiatives according to their particular life-cycle situation. Providing erroneous information may be far worse than no information at all, as it may lead firms to follow unfeasible strategies, to improperly allocate resources, to miss alternative opportunities, and to arrive at the wrong conclusions (March and Olsen, 1975). Further, some evidence suggests that firms following a mimetic strategy may over extend and over-promise investors as a means of attracting capital, thereby further undermining the accuracy, reliability and utility of their document (Honig and Karlsson, 2009). Such "over promising" may yield inefficient investments and inappropriate strategies designed to win over investors that may be a liability in the marketplace. In sum, certain theories suggest that business plans will not only be disconnected from the most efficient activities of business development, but that they will squander resources, restrict opportunity recognition, and will actually yield negative effects. Stated as an hypothesis:

H1d Formal business planning has a negative impact on performance in the nascent venturing process.

Because business plans are not "set in stone", it is also important to examine the relationships between those that plan and revise their plan, and performance. An alternative to the analyse-plan-enact sequence is to iteratively plan, and re-plan, based on the contingent environment (Honig, 2004). Mintzberg refers to allowing multiple strategic plans to compete with each other in order to "program the consequences of strategies created through venturing and learning" (2009:163). However, environmental uncertainty may discourage the use of business planning (Matthews and Scott, 1995). Due to the mismatch between the expectations of the environment, and its actual variation, Starbuck argues for changing strategies in response to new information (1992). Thus, there is reason to suggest examining the changes that take place in the planning-performance relationship is of theoretical interest.

There may be differences between plans initiated only at the start of entrepreneurial activity, and those that are modified periodically as the environment changes. Some qualitative work suggests that the legitimization stemming from business plans occurs primarily during the initial period of organisational formation (Karlsson

and Honig, 2009), suggesting that plans utilised later on serve another purpose. Business plans written for purposes of legitimacy may yield important resources, but without modification, may fail to assist with organisational cooperation and control due to the gap between initial plans and pragmatic environmental necessity (Sarasvathy, 2001). Research has shown that in uncertain environments, planning later leads to more persistence than planning earlier (Liao and Gartner, 2006). Business plans are frequently written before a new venture gets started, and often never adhered to through loose coupling. In studying loose coupling, Honig and Karlsson found that many nascent entrepreneurs wrote plans at an early stage, however, they proved unlikely to update their business plans (2009).

In principle, those individuals that modify or extensively re-write their plans at a later date, when the firm and markets are more developed, and after the business model becomes more explicit, should have a more useful road map for future activity. Firms that change their plans may be using them for purposes of coordination and control. They may also be implementing strategies and improving those strategies over time. Little research has examined the relationship between changes in business plans and success, but there is reason to believe that modifying an existing plan to account for environmental and market changes yields a more effective tool for managerial control. Stated as a hypothesis:

H2a Changing a formal business plan has a positive impact on performance in the nascent venturing process.

Despite the iterative nature of re-planning and plan updating, the formality of planning may be too severe a limitation for organisations to overcome. Formalised plans are said to incorporate larger errors, are less likely to be updated and modified than informal plans, and are likely to encourage the building of rationales around one particular strategy or another (Starbuck, 1992). Thus, formalised planning, irrespective of changes, may lead to inefficient or inconsequential outcomes. Further, the benefits that accrue in terms of legitimacy may be lost if plans are changed after their initiation, and if those providing the legitimacy begin to doubt the intentions and capabilities of the actors as expressed in the initial plan. While we have no reason to assume that changing plans yields negative effects beyond the initial formal planning ramifications, there is a possibility that changes to formal plans are insufficient in overcoming the liabilities of formalisation discussed previously. Thus, we hypothesize as follows:

H2b Changing a formal business plan has no impact on performance in the nascent venturing process.

Summing up our discussion to this point, certain fundamental theoretical questions remain unanswered. To what extent does planning assist entrepreneurs in the evolution of their organisations? Are the positive resources associated with legitimation extended beyond the initial start-up period, and for the duration of the firm's life-cycle? Are some entrepreneurs/ventures advantaged – and others disadvantaged, through this process? Do we as researchers have an impact through our sampling methods? While considering the aforementioned issues, our main research questions are: *Does business planning lead to more efficient entrepreneurial processes, and does planning have a positive impact on venture level performance?* Our goal in this study is to help answer these questions and to bridge an important research gap by examining the same population over a six-year period, providing more measured information regarding the relationship between activities over time and venture level performance.

Reanalysis, replication and extension

Although study replication and extension are quite common in the ‘hard’ sciences, they are much less common in the social sciences, and quite rare in the strategic management field. In medicine, however, study replication is a staple – indeed – a requirement for pharmaceuticals to pass through their trials and enter into the market. Innovations in surgery and medical care are also routinely subjected to study replication, as well as clinical trials, all of them relevant for the education, practice and inquiry often referred to as evidence based medicine (Sackett, Rosenberg and Gray, 1996). As a result, instances of erroneous findings, whether due to intention or neglect, soon become a matter of public record.

Data replication is an integral component of the scientific method, one too frequently ignored in management research. In the field of management, scholars often point to the contingent nature of their particular sample to suggest that any exact replication will fail to provide sufficiently similar insight to be useful and merit publication. Because much management literature relies upon unique data sets, as opposed to publicly available data, replication is more difficult and occurs infrequently. As a result, management journals tend to lag other fields in their willingness to publish research that either replicates or extends existing research, encouraging the dissemination of uncorroborated research. For example, one study comparing accounting, economics, finance, management, and marketing for the period 1980-1991 determined that only 5.5percent of management articles were replications versus 9.3percent in accounting and 7.1percent in economics (Hubbard and Vetter, 1996). In addition to editorial policies that discourage publication of replication studies, a general hesitancy to share proprietary data with colleagues all but rules out the careful re-study and re-analysis of many studies in the management field. Notably, this is not the norm in the field of economics and accounting. In these fields scholars are commonly expected to share their data in a public forum in order to verify the accuracy of their models, analysis, and conclusions. Finance journals have accepted this premise to a much greater extent. For example, the Quarterly Journal of Business and Economics made an editorial decision in 1984 to give preference for replication in their publications, achieving a rate of 23percent by 1994 (Hubbard and Vetter, 1997).

While data replication is useful, it is insufficient to adjudicate the advantages of one research study versus another. Evidence based research suggests that other contextual factors need to be included (Sackett, Rosenberg and Gray, 1996). In the case of the Panel Study of Entrepreneurial Dynamics (PSED) research (Reynolds, 2000) both scholarly teams (Honig and Karlsson, 2004; and Delmar and Shane, 2003; 2004), examined the results of business planning at the two to three year point, before clear and evident outcomes were accessible. Typically, pressures to complete publications associated with research projects, as well as the career trajectory of academic life, constrain the employment of long duration studies with the exception of publicly acquired data (eg. Census, NLYS, etc.). Unfortunately, short duration studies, as well as cross sectional panel data, appear to be insufficient to fully understand the role of business planning on the entire range of entrepreneurial activity, from start up, through the various life-cycles, toward maturation. Research has shown that a longer time span is an important factor in observing the impact of business planning (Brinckmann et al. 2010), which is also emphasised by Delmar and Shane (2003). In particular, the majority of scholars and studies are unable to examine the relationship between business planning and subsequent venture level performance, choosing instead to focus on persistence, organising activities, growth of existing firms, and product development. In this study, we extend the range of these two well-cited studies by four

additional years, comparatively examining both sets of populations using a longitudinal study of sufficient duration to identify accurate measures of venture level performance. The implications for research extension and comparison in our field are thus obvious - time simply matters.

In addition, research methods such as sub sampling will most probably impact outcomes of empirical study. We found it particularly interesting that Delmar and Shane's (2003) results seem to be different than Honig and Karlsson's (2004), despite using the same Swedish sample. Delmar and Shane used a sub-sample of 223 respondents that they claim started their process in 1998, while Honig and Karlsson used 396 respondents that were in the original sample in 1998. We thus provide a short description of the Swedish sample, which will shed some light on the sub-sample issue.¹ The Swedish sample consists of a raw sample of 623 respondents coming from a random sample of over 35 000 respondents who answered affirmatively that "alone or with others, they were in the process of starting a new business during the past two years". In addition to this, we asked whether the project that each respondent was starting was an independent start-up (coded 1), part of one's job (coded 2), a mix of both (coded 3) or, didn't start (coded 4), don't know (coded 8) and refused (coded 9).

Delmar and Shane (2004 p:1169-1170) stated that they used the following sub-sample procedure: "(1) they were in the process of starting a new business either alone or jointly with others, (2) the first activity that they took to start the new venture occurred during the first 9 months of 1998, (3) the new venture was not part of an effort by an existing organisation, and (4) the respondent was a member of the founding team as opposed to a consultant or passive investor. The 35,971 individuals screened yielded 223 people who had initiated a new venture in the first 9 months of 1998". When trying to recreate this sample we found ourselves at a dead-end. The first part suggests a sample of 623, which is the original sample. The main problem arose when we aimed to understand how they succeeded in isolating only ventures that were started during the first 9 months of 1998. First, there is no item actually capturing the exact starting point. There was a question in a subsequent mail survey which asked when respondents first started thinking about the new venture, but the mail survey was only conducted on a sub-sample of the population, and did not measure starting the business. In addition, there were time stamps measuring various gestation behaviors when they were initiated and/or completed, but none of them were measures of an exact starting point. For example, if we examine the business planning variable, 302 respondents reported starting their plan in 1998 and three respondents reported starting in 1999. When we reduced the sample with those reporting only independent start-ups, we ended up with a sample of 221 respondents. However, since we could not get the exact number we asked Shane and Delmar for their original data. Their file consisted of 223 respondents, which closely correlated with our result (correlation of .965). However, if we take any other gestation activity, for example, whether product development was done, which was one of Delmar and Shane's dependent variables, our analysis shows that as many as 45.3 per cent of the 221 that we found reported that they completed this activity before 1998. This clearly implies a problem with causality. The second dependent variable they used is a summation of eight other gestation behaviors which they call venture organising activity. Looking closer at Shane and Delmar's work, we found further limitations that could have an impact on their results. For example, when we conducted a closer investigation of their sample, we

¹ For a complete discussion see the method section

observed that between 13.3 and 39.6 per cent of their sample performed gestation behaviors (milestones in their language) *before* their cut-off launch date of 1998. This means that the causal order of their sample comes into question, potentially invalidating the event history timeline they utilised. For example, a respondent might report attaining sales in 1997 but at the same time state that she started working on the venture in 1998. Delmar and Shane assume that the opposite order should be true across the sample, but the assumption does not hold true in the empirical data. In addition, event history is an appropriate analytical tool, but not if the sample suffers from left censoring (Tuma and Hannan, 1984). Event history is particularly sensitive to left-censored expressions, including sample selection bias, and missing data on the initial conditions (Tuma and Hannan, 1984:128-132). These biases occur in the PSED even though it was designed to capture ventures as early as possible in the entrepreneurial process. Event history will still provide significant estimates, but they may be biased due to unnoticed left censoring. When we tried to replicate their study based on respondent identification numbers it became evident that at the time of the first interview, their sample contained at least 37 cases that report themselves as either franchisee (n=19), having purchased or taken over an established firm (n=2), or a business sponsored start-up (n=16). Sample size, in itself, will have an impact on empirical results. With as many as 37 cases out of 223 not being independent start-ups, we suspect a strong bias may have falsely influenced the results of the Delmar and Shane studies. There are some uncertainties about the sampling procedure used, but as far as we can discern from published articles, it is difficult to understand exactly how they reached the sample size of 223 independent start-ups. However, we included the Delmar and Shane (2003, 2004) sample in our study in order for us to compare how sampling strategies may influence performance findings in the nascent venturing process.

We also examined the Honig and Karlsson (2004) article for replication purposes. Their starting point is exactly the same as the one produced by Delmar and Shane (2003). "Of those contacted by telephone, 30,427 individuals (84.6percent) agreed to participate. Only a few of them were currently starting a business. A final sample of 396 verified and accessible nascent entrepreneurs were identified, who form the basis for our analyses." (Honig and Karlsson 2004:36). No explanations on how they reached their final sample were provided except that they are nascent entrepreneurs. If we use the same strategy here and select on the independent start-up items, we identified a sub-sample consisting of 420 nascent ventures. This difference in sample size could have an impact on estimates. Honig and Karlsson used hierarchical multiple logistic regressions to determine the influence of control variables on the dichotomous outcomes specified. From a methodological perspective, and the concern in Delmar and Shanes work, right censoring could lead to biased estimates.

In sum, our review indicates that both studies provided limited information about their final sample and that both sampling strategies in combination with statistical analysis could yield biased estimates. The rigorous aspects of Delmar and Shane statistical procedure seems overworked in the light of inherent problems with left-censoring, while, for Honig and Karlsson, the method seems flawed based on the problem of right-censoring. The third aspect not considered yet is that none of the above mentioned studies have been able to systematically examine the full breadth of the life-cycle of entrepreneurial activities that occur over time in any single location. One of the biggest constraints in doing so is that no lists exist that comprehensively examines start-ups from pre-regulatory stages (e.g. nascent, idea generation), longitudinally, through the first critical years of operation. Virtually every quantitative longitudinal study examines only a portion of the

firm's life cycle, either beginning with registration, or from some other major life-cycle event (such as IPO, investment, a particular dollar size transition, etc...).

In this study we examined a range of business planning parameters, including if they planned, how formally they planned, and whether or not they changed their business plan. Our study provides the first comprehensive and systematic longitudinal study that effectively examines a comprehensive set of performance outcomes testing for the importance of business planning activities, over a six year duration. We suffer from the same left-censoring problem as both Delmar and Shane and Honig and Karlsson. However, we are aware that left-censoring will always be a problem as long as we have limited resources and hence limited sample sizes. Further, our study stretches over a period where there is no right censoring since all cases have both valid measures of persistence as well as performance for at least a period of six years. This could, in theory, be a short period, for example, a bio tech innovation could take as long as ten years to commercialize. However, we expect that such cases will be relatively rare in a random sample of new ventures.

Method

The study of nascent emerging organisations, while important, is still in its infancy, primarily used in the PSED and Global Entrepreneurship Monitor (GEM) projects (Carter, Gartner, and Reynolds, 1996; Katz and Gartner, 1988). Traditionally, nascent organisations are inherently difficult to identify and study. For example, they do not show up in common databases of firms, as they have not yet registered their firms. Once they have registered, they are typically new organisations, not emerging or nascent firms, and do not reflect the many nascent attempts that fail to establish themselves as a firm. Neither are they captured in databases that rely upon tax payments, employee rolls, or the like. Consequently, data about nascent firms are not readily obtainable from traditional sources.

This research was therefore uniquely designed to provide population estimates for business start-up efforts, and to follow a random sample of nascent activities leading to the possible emergence of new businesses by studying so called "gestation activities". The Swedish version of the PSED I (Panel Study of Entrepreneurial Dynamics) is a longitudinal effort with the same aim as the US counterpart 1) to provide population estimates for business start-ups and 2) to systematically follow a large number of ventures during the nascent start-up process and beyond. The Swedish data used in this research project is unique, in that we followed a random sample of business start-ups from conception across time, for a full six years. The US and other such panel studies typically terminated at three to four years. The Swedish version of the PSED project deviates from the US twin because instead of ending after a three to four year follow up, we continually followed our sample across time for six years and beyond. Thus, our study of nascent ventures identified individuals prior to the launch of their firms, and tracked them through gestation, launch, and the eventual growth, or death of their firm.

The research design and sample has several advantages over other designs and samples used to investigate the nascent venturing process. 1) It was constructed from a random sample of the adult Swedish population. Consequently, the 623 venture opportunities are at least a fair approximation of the Swedish population of

venture opportunities in the exploitation process during the years 1998 to 2005. 2) The database contains enough ventures to utilise statistical methods suitable to study development over time. 3) Following the venture exploitation process across time from one particular point in their lives makes it possible to establish a “time order”. That is, variables in the data do not suffer from a time effect that might influence the longitudinal analysis. 4) The sample does not suffer from the selection bias present in most samples of new ventures. In particular, archival sources do not record abandoned venture exploitation processes that fail to become new firms, biasing research based on lists of new firms. By identifying venture opportunities at their point of inception, we avoid this selection bias. 5) This sample does not suffer from bias introduced by respondents due to memory decay, hindsight bias, or rationalization after the fact. 6) This dataset examines the evolution of venture opportunities from discovery, and forward in time. This approach allows for the examination of the process of variation, selection and retention during the period prior to the establishment of a formal organisation – a period that is acknowledged to be important to the evolution of the new firm (Bamford, Dean, and McDougall, 1999) but is largely understudied.

DATA AND SAMPLE

We obtained information about firm formation by following a random sample of the Swedish population that was in the process of establishing a new business during the first 9 months of 1998. This is also the original sample used by, among others, Delmar and Shane 2003; 2004; and Honig and Karlsson, 2004). In order to optimize the number of possible venture initiatives in the sample, the following screening question was used: “Have you, alone or with others, started a new firm during the last two years?” (See Gartner et al., 2004). A decision rule was used to determine which of the respondents could be defined as a nascent and who had already started a business. The decision rule was based on so-called gestation behaviors. Gestation behaviors are different behaviors associated with starting a new firm, such as earned money on sales, market research, or saving money to start a business. Based on Reynolds’s (2000) suggestion, those that reported two or more firm gestation behaviors were considered “nascent ventures”. This was the lower bound. The upper bound is when the start-up process is completed, i.e., when a business is considered as started. The start-up process was considered as completed when the following criteria were fulfilled: if a) money has been invested, b) income has been made, and c) the firm is already a legal entity (cf. Carter et al., 1996; Samuelsson, 2004). Data comes from two samples consisting of 49, 979 individuals in Sweden which began in 1998 and were followed until 2005. The first sample consisted of individuals aged between 16-70 years and the second sample consisted of individuals aged between 25-44 years. The purpose with the first sample was to get a representative sample of the adult population. A probability sample has the advantage of allowing inference about the population by use of statistical tests. The purpose of the second sample was to increase the probability of finding more entrepreneurially engaged individuals to interview and follow by focusing on a demographic known to have a higher start-up rate. Of the 49,979 individuals randomly selected, it was possible to obtain a telephone number for 35,971 (71.9percent). The remaining 28.1percent were not listed ($n = 13,338$), had severe disabilities ($n = 381$) or had moved abroad ($n = 289$). Of those contacted by telephone, 30,427 individuals (84.6percent) agreed to participate. Out of these, 961 respondents qualified for the longer interview by answering in the screening interview that they were starting a business. Failure to establish renewed contact led to the loss of 147 cases. Another 133 individuals were dropped from the active case file after detecting, in the longer interview that they did not qualify. As a result, our first sample consists of 623 individuals that completed the longer interview, this is the original

sample that was used both by Delmar and Shane in 2003 and Honig and Karlsson in 2004. Honig and Karlsson, as described above, withdrew 203 venture initiatives that were not owned by a physical person, or were considered as nascent intrapreneurs i.e., venture initiatives started inside an established organisation. Our second sample therefore consists of 420 independent nascent entrepreneurs, we tried to reproduce the sample originally created by Honig and Karlsson, but found it impossible, and after running the same model it appears that they arrived at 396 cases due to missing data. In order to compare this with Delmar and Shane's sample we tried to reproduce the sample they used through their papers but found it impossible. Instead, we asked the authors about their sample and got the identification number for each of their respondents. Their entire sample included 223 nascent entrepreneurs that according to them started their new venture during the first nine months of 1998. This is our third sample. Because our interest concerns replication and extension of prior research, we decided to split the original sample into these three different subsamples. The underlying assumption is, as stated above, that variations in sample and explanations will have an impact on explanations across time as well as on how stable our explanations are across time.

Overall, this is a high quality sample with response rates for eligible cases in the successive waves above 86 per cent. However, this is also one of the reasons for us to include the issue of how to subdivide a sample, and to consider the consequences. In order to understand how business planning influences venture level performance, our analyses utilise multiple and logistic regressions, using the same analysis across all samples in order to be able to compare the results. Shane and Delmar argued that event history analysis was a more appropriate analysis method. However, as concluded earlier in this paper, their sample does suffer from left-censoring regardless of what they maintain, and therefore not entirely unbiased (Tuma and Hannan, 1984).

Our data is longitudinal, but we measure a set of independent variables at the time of the first interview. Our dependent variables are measured in real time subsequent to our independent variables. In this study, our dependent variable depends on more than one explanatory variable. For example, venture level performance could be expected to depend on both business planning and future growth aspirations. Furthermore, possible explanatory variables often co-vary with one another (e.g. sea surface temperatures and sea-level pressures). This makes it impossible to subtract out the effects of the factors separately by performing successive linear regressions for each individual factor. It is necessary in such cases to perform multiple regressions defined by an extended linear model. In addition to multiple regressions, our study also utilises logistic regression. Logistic regression calculates changes in the log odds of the dependent, and not changes in the dependent itself, as OLS regression does.

In order to fully display our results we would have needed 30 pages, therefore our data and original result files are all available upon request from the authors. In this paper we only present mean, standard deviation and correlations, as well as the regression results from each performance measure and year.

MEASURES: DEPENDENT VARIABLES

Our purpose with this study is to study whether business planning influences performance in the nascent venturing process and beyond. As a concept, performance may be traced back to the work of Frederick Taylor (1998) and Max Weber (Swedberg, 1998), in their view, performance is closely related to efficiency and productivity in relation to resource utilization. In later management literature, the discussion typically evolved around concepts such as "stakeholders" and "multiple constituents." Organisational efficiency was

summed up with the question, “For whom are we measuring and evaluating organisational performance?” However, this could be viewed from two perspectives. The first concerns the measuring of organisational efficiency from different points of view depending on who stands to benefit from the operations of the organisation (Zammuto 1984; Connolly, Conlon, and Deutsch 1980). The idea of the firm as a coalition of interests has a long tradition in management (Cyert and March 1963; Barnard 1938), and taking a stakeholder view includes consumers, co-workers, executives, owners, and the community at large (Freeman 1984). However, for an overall measure of organisational performance, the classical owner’s perspective represents a reasonable indicator, particularly for the study of entrepreneurship that focuses on the individual. The different inputs used in a firm are often priced on factor markets; there are labor markets, capital markets, markets for equipment, and raw materials. Assuming efficient markets, factors of production will be “paid” their proper market value, which is what the market determines they are “worth.” For the average of all firms, the residual (e.g., profit) is thus an adequate overall measure of organisational performance. In practice, this would be something like the firm’s gross profit and should be similar to operationalizations of the firm’s added value (revenue minus cost of production).

A similar reasoning applies to survival as a measure of organisational performance. What keeps a firm together (or an individual motivated) is when the benefits of interacting within the boundaries of the firm are larger than the disadvantages. The fact that a particular firm is surviving means that a particular constellation of productive resources and market opportunities are optimal (or at least worthwhile) for that organisation. The idea that a business concept is “dead” is rarely based on a zero benefit to society from the product or service provided, but relies on the fact that for most types of resource bundles that can produce any particular combination of goods or services, there are alternative resources that are more worthwhile.

Recent empirical literature examining the PSED framework has made use of a number of different performance indicators as dependent variables. Frequently, the systematic examination of financial profit was avoided because studies were conducted early into the firms’ life-cycle often after only two years of activity. Delmar and Shane (2004) used various milestones such as reaching first sales, positive cash flow, profit, financial input and so forth. Others have used variations on the accumulation of gestation behaviors between two or more points in time. For example, Samuelsson (2004) used the accumulations of gestation behaviors as a sign of progress, as did Davidsson and Honig (2003). Self-reported measures of status, such as “up and running,” have been used by Parker and Belghitar (2006), or explained as persistence, that is, continuing to attempt to launch a business (Brush et al. 2008; Liao and Gartner 2006). Scholars have also examined planning using continuous measures of levels of sales or profits (Delmar and Shane 2006). In sum, our review indicates that there is weak but somewhat inconclusive support for a relationship between business planning and persistence, and only limited support for a relationship between business planning and other measures of performance, such as venture level profit or income exceeding costs. Overall, persistence could just as well indicate known psychological biases such as escalation of commitment (McCarthy, Schoorman, and Cooper 1993) or the failure to seek and use disconfirming information (Klayman and Hay 1987).

Because we have the advantage of a long time horizon, we decided to focus this study of the impact of business planning using a range of performance measures. As described above, persistence is captured by survival and organising activity, strategic impact is captured by sales, financial impact by return on

investment, and wealth creation by number of jobs created. We maintain that it is reasonable to believe that venture-level profit captures the underlying development of an emerging firm better than other dependent variables that have been used, such as survival or persistence. However in order to test and replicate both variation and heterogeneity we allow ourselves to test our models on both persistence and performance.

Notably, estimating profit in new ventures is known to be somewhat difficult, including problems regarding the time periods involved, and specifically when and how it is reported. Recent reviews in the field, however, agree that self-reported measures correspond well with actual measures (Shepherd and Wiklund 2009). In addition, Davidsson, Steffens, and Fitzsimmons (2009) and Brännback, Carsrud, Renko, Östermark, Aaltonen, and Kiviluoto (2009) showed that early profit actually drives subsequent profitable growth.

The first dependent variable included in our study captures survival. In each follow-up interview we asked whether all team members abandoned the venture and whether it was continued by someone else. We coded those that were abandoned (0) and those that survived (1). This measure was used by both Delmar and Shane 2003, and Honig and Karlsson 2004).

The second dependent variable captures performance through a summation of gestation behaviors across time. At each follow-up we asked whether the respondent had performed any of 20 gestation behaviors. The theoretical distribution is 0-20 and the underlying assumption is that progress in the nascent venturing process is captured through the accumulation of gestation behaviors across time, this is the measure used by among others Delmar and Shane 2003.

The third dependent variable is another performance measure capturing value creation, consisting of sales across time. At the time for each follow up, we asked about the previous year's sales figures. It is a self-reported measure examined in each of the follow-up surveys.

The fourth dependent variable was also designed to capture wealth creation. Profit was measured and logged at year 1, 2, and 6. It is a self-reported measure of profit.

The final (fifth) dependent variable is a return on investment measure, where we divided profit by the total amount of money invested, both equity and loans, in years 1, 2, and 6. Together, these five performance measures capture the process of creation, survival and growth as well as the ultimate termination of the venture.

MEASURES: INDEPENDENT VARIABLES

Business planning can be assessed by objective measures of whether respondents made a business plan or not, as well as by subjective measures, such as whether business plans helped or not, and if entrepreneurs indicated that they changed their plan, or not (reflecting a dynamic or effectuating environment and the need to modify strategic action). In order to capture these three dimensions we included the following independent variables.

We included a formal measure of business planning by examining individuals, differentiating them on whether they had a formal business plan at the time for the first interview. We asked at the time of each follow-up whether respondents had an unwritten (coded 1), written (coded 2) or formally written (coded 3)

business plan. This was coded into two dummy variables, formal business plan (formally written) and informal business plan (unwritten). We were also interested in whether changes in business plans have an impact on venture level performance. Therefore, we asked whether the respondent changed their business plan or not (1=yes and 0=no). This question was posed after two and six years.

MEASURES: CONTROL VARIABLES

In order to control for effects that might otherwise influence a nascent entrepreneur's ability to obtain resources and create a successful firm, we controlled for the following market-, individual-, and organisational-level effects that might influence venture level performance. According to much research (e.g. Aldrich, 1999), entrepreneurs are more likely to be men than women. To the extent that this rate may be a function of an individual's needs for additional resources (i.e., women comparatively undercapitalised) or a function of an individual's perceived likelihood of acquiring resources (i.e., biases in lending practices), we controlled for gender by including a dummy variable with a value of zero for female respondents and one for male respondents. In addition, we controlled for resource and network effects. Greater amounts of social capital, more likely to increase an entrepreneur's resource base, could have a positive impact on venture level profit (Davidsson and Honig 2003). We therefore included a measure for social capital: In the first interview we asked whether respondents had been in contact with any programs that help new businesses to start and operate their new venture. Those that indicated such contact were coded 1 and all others as a referent coded 0.

In addition, since a random sample of nascent entrepreneurs includes a certain level of variation in starting date, we included a control for the accumulation of gestation behaviors at the time of the first interview (cf. Samuelsson, 2004). Research also suggests that resource gatekeepers, such as venture capitalists, evaluate the age, education, and growth motivation experience of the lead entrepreneur in making investment decisions (Macmillan, Siegel and Narasimha, 1985). Thus, we also controlled for age (operationalised as the age in years of the respondent), education (operationalised as the number of years in formal education), and the nascent entrepreneur's growth aspirations. At the time of the first interview we asked each respondent about his or her expected sales revenue in five years' time rounded to the nearest thousand SEK (Swedish krona). Because this variable was highly skewed in its raw form, its log, plus one, was utilised to normalise the distribution.

Findings

Table 1 shows the results for our three samples, for firm formation (the number of gestation activities completed, as a dependent variable for OLS regression) and a logistic regression for each of the sub-samples for survival. As can be seen from the results, three variables consistently predicted nascent activity in all three sub-samples: growth aspirations, formal planning, and changing a business plan. Thus, it appears that business planning is one activity among many, and that those that formally planned were more likely to engage in other gestation activities. Hence, our results give us no empirical reason to reject hypothesis: *H1a Formal business planning has a positive impact on persistence in the nascent venturing process.*

The other reported analysis is a logistic regression regarding survival. Here, there was less agreement between the samples; although in no case was formal planning associated with survival. For the smallest sample of 223, informal planning led to improving the odds of up and running status in year one, while changing a business plan was associated with a significant log-odds probability enhancement in year six. Changing a plan was also a significant odds prediction for the sample of 420 in year six, and for the entire sample of 623 in years two and six.

Next, we move on to more conventional success measures as dependent variables shown on Table 2. Heterogeneity becomes more evident in these analyses. For the small sample, gender (male) and changing business plans led to more jobs created in the smallest sample, but these variables had no effect on the other populations. There was also a positive statistical relationship between education in year two (more education = more jobs) and a significant relationship between changing a plan in year six and creating jobs for the smallest sample. Further, high growth aspirations had a significant relationship in all the years for the largest group (623). The results for overall sales were in better agreement across the three samples. High growth aspirations clearly led to increased sales across all three populations in all three years. This is a very significant finding, suggesting that there are consequences of initial expectations and entrepreneurial intentions.

Table 3 shows the results for profits (logged) and for return on equity. Again, there is little agreement between the three populations. For the smallest sample, there are negative relationships between age (year 1) and formal planning (year 6) on profits. For the 420 sample, growth aspirations lead to profit in year six, and return on equity in years one and two. For the entire population, only growth aspirations seem to be related to profit or equity - although the relationship is reversed for the first year.

Our first set of hypotheses examined formal planning, asserting that the relationships between planning and performance would be positive, neutral, or negative. We can see from the regressions of all three samples, and all three dependent variables, that there are almost no statistically significant relationships between planning and performance, as measured by jobs created, sales, profit, or return on equity (the one exception: sales in year one for the smallest group). Thus, we conclude that H1c, which stated “Formal business planning has no impact on performance in the nascent venturing process” was upheld, and H1b and H1d are rejected.

Our next set of hypotheses examined the relationship between changing a plan, asserting that either changing a plan would show a positive relationship with performance, or else is neutral. As can be seen from

table 2 and table 3, changing a business plan has a statistically positive significance for jobs created for year two for the 623 sample. Changing plans had no other impact in subsequent years, nor did it impact profitability or return on equity - two leading measures of firm performance. Our interpretation would be to uphold H2b, which stated “Changing a formal business plan has no impact on performance in the nascent venturing process” and not to accept H2a, which stated “Changing a formal business plan has a positive impact on performance in the nascent venturing process”.

Discussion

In this paper we introduced a controversial empirical and theoretical debate regarding planning, examining the contradictory empirical results regarding the efficiencies and inefficiencies of business planning. In addition, we introduced a serious discussion about replication and extension of prior studies in management research. In summary, our systematic study, encompassing six years of longitudinal data with three sub-samples and six dependent variables, all failed to show significant positive relationships between business planning and performance, when measured according to a number of dimensions (survival, job creation, sales, profit, equity, and return on investment). However, we can conclude that business planning seems to relate to persistence in the nascent venturing process. We can also conclude that replication is not an easy task in our field. We found it extremely difficult to recreate prior research samples despite full access to the original data sets used by for example Delmar and Shane (2003) and Honig and Karlsson (2004).

THEORETICAL IMPLICATIONS

Two main theoretical arguments have been put forward in favor of the efficiency of business planning. The first is based on goal setting theory and the second on legitimation theory. There are two opposing theories where the first has its roots in psychology and stemming from how to be efficient in ones day-to-day life. Legitimation theory on the other hand has its roots in institutional theory and thus based on the influence of environment over individuals in certain contexts. These theories could be viewed as incompatible, however they share the same underlying assumptions that individuals freely can choose strategies, and that information is, to some degree, accurate and available. Further, the theories have both been used in order to explain persistence and performance in the entrepreneurial process.

This study supported, to some extent, both the goal setting perspective and the legitimacy thesis regarding business planning. Goal setting theory seem to explain early stage progress, such as reaching a specified goal or developing a prototype. This was described and empirically tested by Shane and Delmar (2003). Goal-directed motivations are acknowledged as important elements in the formation of entrepreneurial intentions (Krueger, 1993; Krueger and Brazeal, 1994). Goals are said to lead to intentions, followed by behaviors. The more specific and challenging the goal, the better the task performance and this seems to be the case in our research as well. In the early stages of the entrepreneurial process, planning seems to be efficient for relatively well defined goals such as forming a team, obtaining a phone number, developing a prototype, initiating sales, etc. However, this is not a test of the efficiency of planning since we do not know whether those goals are relevant for any particular business process or not.

On the other hand, this study clearly supports the legitimacy thesis regarding business planning, suggesting that actors engage in planning behavior for institutional reasons - be they coercive, mimetic, or normative.

Those that do plan appear to be loosely coupled, in that their planning activities fail to coordinate with their operational outcomes. This institutional relationship is emphasised by the observation that changing business plans had little or no effect on performance. Examining the incidence and implications of changing business plans is quite rare in the empirical literature, hence our observations make an additional contribution to the understanding of the long term implications of modifying the planning process. At the outset of this study, we anticipated that changing a plan once the business idea was more developed and better focused would provide some benefits. In fact, we were surprised to find that there were only very limited positive relationships between planning and increasing employment, and between changing plans and completing other gestation activities. It appeared that certain nascent entrepreneurs are very industrious – and that changing the business plan becomes yet another activity that they engage in, irrespective of the outcome. We found no relationship between changing plans and profit, return on equity, or sales – conventional measures of business success. Such a finding emphasises the symbolic nature of business planning for emergent firms, as plans fail to impact performance in virtually any conventionally measurable way.

The second implication of our results is the demonstration of entrepreneurial heterogeneity. While scholars are aware of the vast array of businesses started each year, differing by industry and sector, the recognition of this heterogeneity rarely extends to the classroom or necessarily to the specific research project. Emergent businesses often diverge considerably from their initial aspirations and expectations, making planning all the more difficult (Sarasvathy, 2001; 2008). As a result, scholars and teachers often lump early stage start-ups into one category, attempting to teach and research them as though they represent a single, unique phenomenon. Our results suggest that this is an inappropriate strategy. Each of the three sub-samples we analysed, including those identified by earlier research (Delmar and Shane, 2003; 2004; Honig and Karlsson, 2004) demonstrated different relationships with the business planning variable. However, despite variation, we found commonalities. In all of the samples, there were no significant relationships regarding business planning and measures of long-term venture level performance. In sum, to develop a theory in entrepreneurship it is evident that a bridge between actor based theories and institutional theories across time is necessary. Founding and developing a business is a long process, which suggests that theories need to be dynamic and allowed to vary across time.

In relation to this, our explanations need to be related to an outcome that is compatible with our underlying definition of what entrepreneurship is, and is not. Goal setting theory, for example, might be an important explanation for product development success, but it is not an end in and of itself. If we are concerned with an entrepreneurial end, comprising profitable new ventures, job creation or any other more traditional measure of entrepreneurial success, we may need to focus on more dynamic theories. Focusing on goal setting may even be counterproductive because it gives potential entrepreneurs a direction that may turn out to be false, suggesting an underlying venture opportunity that does not actually exist (Moran and Ghoshal, 1999).

METHODOLOGICAL IMPLICATIONS

Significantly, our study highlights the importance of data replication and data extension to managerial scholarship. The longitudinal findings we observed regarding performance outcomes were unavailable to earlier researchers, who used different techniques to arrive at vastly different conclusions. The preliminary

results concluded after two years of nascent study differed widely from our own conclusions based on six-year performance data. Our findings were clearly evident, robust, and consistent across the population. Unfortunately, there are few opportunities in management studies to allow data replication and extension. Scholars are notoriously protective of their data. Even when using public data, we have no tradition of sharing raw data, as is common in economics. Asking a colleague to share data would typically be viewed as intrusive, as opposed to an opportunity for enhancing scholarship and our body of knowledge. We conclude with an urgent call for scholars and editors to enhance the opportunities of data replication and extension in management research.

Our efforts to understand the particular causes of a unique controversy regarding business planning and success for nascent firms led us to observe the startling absence of study replication and data extension in management scholarship. While quite normative in other scientific disciplines, the importance of repeating identical and similar experiments, verifying data analysis and re-examining source data remains virtually unheard of in our discipline. Our findings in this study showed that erroneously coded data, as well as overly short time horizons, may lead to false conclusions that fail to inform and advise accurately. We bemoan the fact that too frequently, our journals and reviewers are mesmerized by the latest technical advances, often failing to focus on the inherent stability of new models, and their ability to withstand rigorous subsequent evaluation. Without doubt, tenure processes and annual academic monitoring and evaluating play a key role in this “rush to discovery”. However, the result of this expeditious contest leaves the field of management littered with well intended but empirically falsified advice, ranging from matrix management to quality circles to decentralization, and back again to centralization (Abrahamson, 1991). If management and its subdivisions (e.g. entrepreneurship) are ever to be taken seriously outside its own sub-disciplines, we will need to contribute with generalizable theory, knowledge and a larger community of scholarship. This necessitates committing ourselves to higher scholarship standards, including data replication and extension, as an essential activity.

In sum, we conducted an extensive and systematic re-analysis and data extension, replicating previous studies, and critically examining both the methods and the findings of well cited and highly regarded entrepreneurship research. We studied an important contemporary debate (the utility of business planning) by examining two well cited papers in high impact journals that drew significantly different conclusions from the same data: Delmar and Shane, (2003; 2004;) whose work advocated the advantages of business planning, and Honig and Karlsson (2004) who presented a more critical conclusion regarding the merits of planning. Our findings, produced by extending their data by four additional years, identified significant limitations in the choice of sub-samples, showing that heterogeneity severely constrains the ability to accurately forecast long-term organisational behavior with short- and medium-term studies. The sample utilised by Delmar and Shane (2003; 2004) was shown to provide inconclusive outcomes in the long term. In short, scholars should maintain a healthy skepticism regarding initial outcomes of research that have not been well replicated across various populations and environments.

This aspect of our findings highlights the importance of careful sampling (and the consequences of taking shortcuts) as well as the implications of attempting to generalise about entrepreneurial samples that may be unique according to their specific domain, geographical location, and context.

IMPLICATIONS FOR PRACTITIONERS

One important implication of these findings is that efforts to teach planning at the University level may actually be misallocations of pedagogical resources. While entrepreneurs may be required to complete a business plan to obtain financing, or convince investors, plans may fail in assisting with the organisational aspects of entrepreneurial activity. The same implication applies to potential entrepreneurs, who might end up misallocating scarce resources. On the other hand, institutional pressures force most entrepreneurs to write business plans to obtain resources from important stakeholders. One potential solution would be to develop plans for well-defined goals, such as a financial plan, in order to get funding. Perhaps producing a brief overall plan indicating a particular direction may be adequate. However, prospective entrepreneurs should be instructed that plans are conditional and contextual and likely to require significant revision as the organisation develops. Those that provide resources to potential entrepreneurs should consider the limited support a business plan actually provides for venture level performance beyond persistence.

IMPLICATIONS FOR POLICY MAKERS

Business planning is typically a pedagogical tool involved in the start-up process or used by various stakeholders and not directly related to policy makers. However, since business planning has been institutionalised it also concerns policy makers and their influence on various stakeholders in the system. For example, Almi and Innovationsbron are both governed by policy decisions and one of their main tools when screening and evaluating new ventures are business plans. Our research clearly point to one limitation from this. Business plans are not a reliable predictor for venture level performance. The question is of course, what can we do instead of business planning? The short answer to that is we do not know. Despite over ten years of governmentally funded research our knowledge about the nascent venturing process and beyond is still limited. Therefore our wish is simple. Invest in a centre for real time entrepreneurship research. With a focus on both experiments in order to develop new and more efficient tools for entrepreneurs and other stakeholders as well as real time longitudinal research programs. Our research is world leading. There is no other study as thorough and long And still we are only scratching on the surface. We need to focus our attention on this phenomenon. The number of people involved in entrepreneurship deserves better tools and practices in order to provide society with new and more efficient products and services. The way we do it today will never take us further since we do not capture people before they have a business idea and we never follow them for longer than three years. Our research shows that doing so is essential in order to actually study conception, birth, growth, and disbanding of new ventures. Implications for policy makers are straightforward. Invest in one major independent research centre with an aim to study entrepreneurship in real time and over extensive periods of time. Nobody else will be able to do this. Private funds do not have the sustainability and/or the funds. Avoid macro issues, which are well covered by, for example, CESIS and other institutes. Allow this centre to focus only on micro issues that concerns the day-to-day operations of how actors find, develop, and kill venture opportunities.

LIMITATIONS

Given our emphasis on replication and extension, we will be quick to point out the importance of further re-analysis and extension of other studies in order to confirm whether or not our examination is typical or atypical of empirical study in our field. Further, we wish to acknowledge some limitations that bias our study

one way or another. First, we examine Swedish data. While Swedes are notoriously willing to participate in scholarly research (resulting in high yielding response rates), there may be aspects of the Swedish environment that make it atypical of other locations. For one, Swedes enjoy universal health care and a significant basket of social support. These provisions may limit downside risk for nascent entrepreneurs. Second, we were unable to examine the quality of business plans generated. Future research might identify conditions under which particularly well researched or well-written business plans have a significant impact on nascent firm performance. We would welcome such a comprehensive study.

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Table 1 Business planning and changes in plan: Firm formation 1998-2008

Sample 223 (Delmar/Shane sample)	Firm formation			Operating business		
	y1	y2	y6	y1	y2	y6
Gender	-0.012	-0.004	-0.01	2.152	1.054	1.275
Education	-0.033	-0.043	-0.038	1.387	0.956	0.84
Age	-0.015	0.04	0.034	0.988	0.987	1.01
Growth aspirations	0.285***	0.256***	0.235***	1.139	0.998	0.954
Informal plan	0.072	0.039	0.034	2.779*	1.074	0.903
Formal plan	0.356***	0.312***	0.293***	0.972	0.58	0.727
Changed business plan	na	0.25***	0.29***	na	2.363	3.236*
Adj R Square	.24	.25	.26			
F	8.74***	9.57***	9.44***			
Chi-Square				16.053*	6.00	6.00
Nagelke R-Square				.13	.06	.06
Percentage correct				72.3%	79.8%	86.7%
Sample 420						
Gender	-0.018	-0.027	-0.031	1.442	1.288	1.801
Education	-0.021	-0.012	-0.011	1.082	0.859	0.886
Age	-0.028	-0.015	-0.017	1.005	1.001	0.995
Growth aspirations	0.252***	0.269***	0.261***	1.07	1.096	1.071
Informal plan	0.114	0.099	0.094	1.273	0.752	0.716
Formal plan	0.351***	0.302***	0.278***	1.031	0.847	1.016
Changed business plan	na	0.273***	0.292***	na	1.649	2.044*
Adj R Square	.24	.25	.25			
F	15.52***	17.02***	16.46***			
Chi-Square				5.51	7.47	9.90
Nagelke R-Square				.02	.02	.05
Percentage correct				64.9%	69.8%	82%
Sample 623						
Gender	-0.009	-0.007	-0.013	1.652*	1.493	1.605
Education	-0.089*	-0.074	-0.074	0.917	0.88	1.004
Age	-0.035	-0.025	-0.029	1.001	0.999	0.995
Growth aspirations	0.182***	0.158***	0.149***	1.053	1.068	1.031
Informal plan	0.119*	0.116*	0.114*	1.288	0.813	0.59
Formal plan	0.37***	0.307***	0.28***	1.323	1.062	0.902
Changed business plan	na	0.307***	0.323***	na	1.99**	2.167**
Adj R Square	.21	.21	.20			
F	19.88***	19.10***	18.26***			
Chi-Square				7.74	12.88	15.10
Nagelke R-Square				.03	.04	.05
Percentage correct				68.2%	71.6%	82.6%

* p<.05 **p<.01 ***p<.001

Y1 equals one year follow up, y2 equals two year follow up, and y6 equals six year follow up.

Table 2 Business planning and changes in plan: Firm sales and job growth 1998-2005

	Jobs created			Sales		
	y1	y2	y6	y1	y2	y6
Sample 223						
Gender	0.757*	0.135	-0.195	0.084	0.085	-0.018
Education	-0.243	0.567*	0.259	-0.179	-0.15	-0.225
Age	-0.463	-0.253	0.291	-0.086	-0.138	0.012
Growth aspirations	0.442*	0.206	0.337	0.381***	0.319*	0.553***
Informal plan	-0.098	-0.137	-0.05	0.003	-0.039	0.027
Formal plan	0.122	0.322	-0.315	0.245*	0.165	-0.022
Changed business plan	na	0.362	0.634*	na	0.125	-0.038
Adj R Square	.42	.29	.92	.24	.13	.22
F	2.97*	.2.03	16.50	5.02***	2.35*	2.70*
Sample 420						
Gender	0.147	0.147	-0.075	-0.046	0.02	-0.09
Education	0.049	0.049	0.4	0.072	0.021	-0.174
Age	-0.008	-0.008	0.157	0.137	0.143	-0.037
Growth aspirations	0.215	0.215	0.18	0.313***	0.39***	0.496***
Informal plan	-0.145	-0.145	0.271	-0.024	-0.05	0.01
Formal plan	0.1	0.1	-0.074	0.023	0.047	-0.047
Changed business plan	na	0.367	-0.108	na	-0.027	-0.039
Adj R Square	.08	.04	.05	.10	.16	.20
F	1.52	1.26	1.19	3.89***	4.78***	4.52***
Sample 623						
Gender	-0.308	0.078	-0.227	-0.072	0.03	0.043
Education	0.04	-0.031	-0.136	0.083	-0.008	0.057
Age	-0.026	-0.116	0.018	0.035	0.089	-0.056
Growth aspirations	0.453***	0.274*	0.597*	0.389***	0.379***	0.315***
Informal plan	-0.249	-0.253	-0.232	-0.04	-0.063	-0.107
Formal plan	-0.17	0.023	-0.068	0.049	0.075	0.044
Changed business plan	na	0.289*	-0.023	na	0.023	-0.061
Adj R Square	.16	.17	.21	.15	.16	.08
F	2.62*	2.67*	2.46*	7.29***	5.49***	2.51*

* p<.05 **p<.01 ***p<.001

Y1 equals one year follow up, y2 equals two year follow up, and y6 equals six year follow up.

Table 3 Business planning and changes in plan: firm profit and return on equity 1998-2005

	Profit			Equity		
	y1	y2	y6	y1	y2	y6
Sample 223						
Gender	0.05	-0.004	0.247	0.093	0.029	0.059
Education	0.025	0.043	0.352	-0.065	-0.202	-0.254
Age	-0.294*	0.152	0.069	0.019	0.215	0.241
Growth aspirations	0.173	-0.132	0.302	0.119	0.161	0.075
Informal plan	-0.021	0.036	-0.337	0.062	0.082	0.109
Formal plan	0.274	-0.091	-0.586*	0.193	0.26	0.269
Changed business plan	na	-0.131	0.224	na	-0.055	-0.078
Adj R Square	.11	-.04	.23	.007	.11	.088
F	2.07	.70	2.22	1.10	2.15	1.73
Sample 420						
Gender	0.002	-0.021	0.162	0.062	0.043	0.062
Education	-0.134	-0.12	0.018	0.069	0.116	0.069
Age	0.042	0.026	0.058	-0.023	0.053	-0.005
Growth aspirations	-0.121	-0.124	0.263*	0.172*	0.312***	0.187
Informal plan	-0.008	0.007	-0.053	-0.028	-0.04	-0.102
Formal plan	0.094	0.12	-0.048	0.023	-0.033	0.104
Changed business plan	na	-0.06	0.017	na	0.014	-0.077
Adj R Square	-.01	-.004	.015	.05	.08	.03
F	.81	.93	1.16	2.59*	2.87**	01.44
Sample 623						
Gender	-0.018	-0.039	0.102	0.029	0.032	0.038
Education	-0.127	-0.067	0.098	0.042	0.076	-0.036
Age	0.061	0.084	-0.034	-0.035	-0.06	-0.06
Growth aspirations	-0.203*	-0.112	0.214*	0.247***	0.195*	0.187*
Informal plan	0.087	0.042	-0.091	-0.024	-0.084	-0.022
Formal plan	0.05	0.044	0.052	0.004	0.019	0.072
Changed business plan	na	-0.125	-0.047	na	0.079	-0.079
Adj R Square	.03	.004	.02	.06	.04	.01
F	1.83	1.11	1.24	3.39**	1.96	1.27

* p<.05 **p<.01 ***p<.001

Y1 equals one year follow up, y2 equals two year follow up, and y6 equals six year follow up.

Appendix

Table A Descriptives. mean. standard deviations and sample size

	223 Sample			420 Sample			623 Sample		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Gender	1.72	0.45	223	1.70	0.46	420	1.71	0.45	623
Education	1.21	0.73	220	1.18	0.71	415	1.22	0.70	614
Age	34.73	9.99	223	36.23	9.70	419	36.51	9.53	621
Growth aspirations	12.87	2.02	175	13.01	1.88	330	13.47	2.12	497
Informal Plan	0.50	0.50	223	0.50	0.50	420	0.45	0.50	623
Formal plan	0.20	0.40	223	0.22	0.42	420	0.28	0.45	623
Changed business plan	0.13	0.36	223	0.13	0.36	420	0.12	0.34	622
Firm formation y1	13.31	6.51	223	14.40	6.66	420	14.64	6.35	623
Firm formation y2	16.20	9.04	223	17.57	9.39	420	17.51	8.95	623
Firm formation y6	16.90	9.72	223	18.47	10.20	420	18.28	9.72	623
Operating business y1	0.31	0.46	223	0.36	0.48	420	0.34	0.47	623
Operating business y2	0.23	0.42	223	0.31	0.47	420	0.29	0.45	623
Operating business y6	0.15	0.36	223	0.19	0.39	420	0.18	0.38	623
No of. Jobs y1	5.19	7.76	21	3.74	7.57	43	26.97	181.48	68
No of. Jobs y2	11.11	24.44	19	7.84	19.41	37	9.25	20.30	63
No of. Jobs y6	2.82	2.40	11	4.52	5.73	27	42.24	230.86	42
Sales y1	1914.89	4105.17	103	3031.74	21110.82	207	4350.08	23816.30	273
Sales y2	2696.87	8906.50	75	3522.64	17165.17	157	3816.55	16183.42	196
Sales y6	1192.80	1893.15	49	1943.12	5149.35	113	4802.28	29735.61	141
Profit and loss y1	100.36	317.47	69	2.65	1016.71	140	-114.79	2053.21	185
Profit and loss y2	-158.53	2468.98	68	-23.28	1703.42	151	-73.99	2104.15	192
Profit and loss y6	48.95	201.44	37	186.88	465.33	88	1616.71	17310.17	110
Total equity y1	154.67	403.17	118	261.39	1285.45	240	476.68	2911.53	307
Total equity y2	151.66	352.80	77	508.17	2867.88	164	2638.54	28162.72	204
Total equity y6	148.55	637.11	62	273.81	1613.60	135	423.26	2188.52	170

Table B Correlations

Sample 223	1	2	3	4	5	6	7	8	9	10	11	12
1 Gender												
2 Education	-0.039											
3 Age	-0.035	.181**										
4 Growth aspirations	.241**	0.006	0.127									
5 Informal Plan	-0.023	0.027	-0.088	0.003								
6 Formal plan	0.031	0.062	.240**	.219**	-.494**							
7 Changed business plan	0.01	0.106	0.037	0.14	0.002	0.13						
8 Firm formation y1	0.096	0.056	.152*	.374**	-0.05	.381**	.247**					
9 Firm formation y2	0.082	0.076	.179**	.358**	-0.062	.371**	.324**	.953**				
10 Firm formation y6	0.071	0.081	.171*	.336**	-0.061	.356**	.354**	.938**	.993**			
11 Operating business y1	-0.083	0.11	0.029	0.076	-.162*	0.131	0.102	.301**	.311**	.315**		
12 Operating business y2	0.004	0.012	-0.015	0.033	-0.072	0.079	0.125	.178**	.196**	.213**	.583**	
13 Operating business y6	0.005	-0.022	-0.019	0.001	-0.036	0.016	.163*	.167*	.180**	.210**	.431**	.615**
14 No of. Jobs y1	0.208	0.095	-0.261	0.343	-0.279	0.334	0.324	0.112	0.081	0.006	-0.162	-0.169
15 No of. Jobs y2	0.203	-0.45	-0.277	0.259	-0.224	0.233	0.279	0.165	0.141	0.003	-0.277	-0.323
16 No of. Jobs y6	0.105	0.166	0.116	.655*	0.518	-0.486	.872**	0.176	0.443	0.426	-0.087	0.566
17 Sales y1	0.189	-0.168	-0.05	.462**	-0.121	.325**	0.027	.382**	.321**	.284**	-0.047	-0.072
18 Sales y2	0.08	-0.091	-0.102	.386**	-0.15	.290*	0.163	.263*	.296*	.240*	-0.085	-0.068
19 Sales y6	-0.006	-0.203	0.082	.546**	0.078	-0.01	0.009	.371**	.504**	.549**	0.019	.292*
20 Profit and loss y1	0.155	0.039	-0.23	.254*	-0.166	.305*	0.069	.354**	.346**	.292*	0.098	-0.001
21 Profit and loss y2	-0.038	0.013	0.139	-0.192	0.076	-0.148	-0.168	-0.094	-0.087	-0.062	0.093	0.093
22 Profit and loss y6	0.13	0.163	-0.037	0.258	0.076	-0.316	.328*	-0.067	0.095	0.078	-0.094	0.24
23 Total equity y1	0.11	-0.077	0.024	0.181	-0.091	0.178	-0.075	.211*	.209*	.187*	0.142	0.122
24 Total equity y2	0.103	-0.203	.236*	0.225	-0.143	.278*	-0.07	.226*	.245*	.230*	0.109	0.169
25 Total equity y6	0.098	-0.247	0.246	0.137	-0.093	0.209	-0.121	0.194	0.239	0.219	0.098	0.154
	13	14	15	16	17	18	19	20	21	22	23	24
14 No of. Jobs y1	-0.188											
15 No of. Jobs y2	-0.203	.993**										
16 No of. Jobs y6	0.486	0.32	0.251									
17 Sales y1	0.01	.687**	.703**	-0.064								
18 Sales y2	-0.08	.975**	.834**	0.476	.945**							
19 Sales y6	.439**	0.433	0.146	0.624	.586**	.841**						
20 Profit and loss y1	-0.057	.922**	.784**	-0.332	.480**	.835**	0.318					
21 Profit and loss y2	0.052	-.948**	-0.475	0.628	-.819**	-.830**	.412*	-.718**				
22 Profit and loss y6	0.247	.858*	0.058	0.548	-0.332	-0.057	0.055	-0.038	.698**			
23 Total equity y1	-0.002	-0.091	0.038	-0.26	0.128	0.049	0.225	0.068	0.073	-0.251		
24 Total equity y2	-0.074	-0.228	0.187	-0.08	.249*	0.184	-0.009	-0.064	-0.005	-0.217	0.126	
25 Total equity y6	-0.086	-0.296	-0.094	-0.091	0.071	0.126	0.011	-0.093	-0.024	-0.123	0.021	.971**

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

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

Table C Correlations

	Sample 420	1	2	3	4	5	6	7	8	9	10	11	12
1	Gender												
2	Education	-.090*											
3	Age	-0.008	.095*										
4	Growth aspirations	.251**	0.065	.120**									
5	Informal Plan	0.034	-0.052	-0.035	-0.04								
6	Formal plan	-0.014	.124**	.153**	.218**	-.565**							
7	Changed business plan	-0.026	.089*	0.006	0.048	0.035	0.069						
8	Firm formation y1	0.061	0.014	.090*	.252**	-0.043	.321**	.272**					
9	Firm formation y2	0.049	0.031	.084*	.222**	-0.009	.269**	.336**	.944**				
10	Firm formation y6	0.04	0.028	0.075	.206**	0.002	.246**	.351**	.924**	.992**			
11	Operating business y1	-0.075	-0.016	0.024	0.024	-0.028	0.02	0.046	.240**	.244**	.245**		
12	Operating business y2	-0.052	-0.029	0.018	0.044	0.024	0.009	.116**	.168**	.222**	.237**	.549**	
13	Operating business y6	-0.049	0.003	0.002	0.004	0.061	-0.031	.124**	.126**	.165**	.197**	.360**	.582**
14	No of. Jobs y1	-0.177	0.134	-0.06	.371**	-0.105	0.138	-0.05	0.11	-0.004	0.034	0.114	0.126
15	No of. Jobs y2	0.191	0.012	-0.161	.310*	-.254*	.280*	.266*	0.091	0.098	0.002	-0.099	-0.166
16	No of. Jobs y6	-0.204	0.207	-0.021	.512**	-0.17	0.233	-0.075	0.149	0.02	0.017	0.185	0.165
17	Sales y1	0.017	0.1	0.085	.382**	-0.09	.180**	-0.046	0.005	0.081	0.084	-0.044	.129*
18	Sales y2	0.084	0.058	0.122	.402**	-0.115	.212**	0.029	0.06	.155*	0.123	-0.056	0.098
19	Sales y6	0.063	0.092	-0.027	.319**	-0.066	0.143	-0.062	0.041	0.082	0.096	-0.078	0.122
20	Profit and loss y1	-0.047	-0.131	0.058	-.207**	0.024	-0.063	-0.116	0.044	-0.008	0.015	0.097	0.078
21	Profit and loss y2	-0.055	-0.076	0.086	-0.131	-0.016	-0.013	-0.131	0.004	-0.002	0.026	0.077	0.108
22	Profit and loss y6	0.085	0.108	-0.016	.226*	-0.084	0.132	-0.047	-0.035	0.016	0.023	-0.104	0.087
23	Total equity y1	0.083	0.045	-0.008	.263**	-0.017	0.084	.124*	0.091	.124*	0.099	-0.005	-0.045
24	Total equity y2	0.056	0.097	-0.039	.222**	-0.067	0.119	0.098	0.009	0.047	0.025	-0.07	-0.062
25	Total equity y6	0.095	-0.027	-0.049	.199*	-0.046	0.126	-0.09	0.117	0.098	0.102	-0.069	0.032
		13	14	15	16	17	18	19	20	21	22	23	24
14	No of. Jobs y1	0.176											
15	No of. Jobs y2	-0.167	.736**										
16	No of. Jobs y6	0.181	.998**	.547*									
17	Sales y1	0.081	.573**	0.116	.619**								
18	Sales y2	-0.071	.888**	.444**	0.251	.782**							
19	Sales y6	0.141	-0.042	.455*	0.017	.775**	.365**						
20	Profit and loss y1	0.05	0.039	-.414**	-.628**	-0.147	0.118	-.507**					
21	Profit and loss y2	0.061	-0.276	-.285*	-0.095	-0.058	-1.188*	0.042	.603**				
22	Profit and loss y6	0.095	-0.164	.462*	-0.097	.697**	.265*	.981**	-.576**	-0.039			
23	Total equity y1	-0.065	.281*	.566**	-0.058	0.049	.189**	-0.008	-.779**	-.197**	-0.039		
24	Total equity y2	-0.051	0.077	.520**	.914**	0.123	.422**	.958**	-.928**	-.415**	.968**	.821**	
25	Total equity y6	-0.053	-0.028	0.118	0.03	-0.016	0.049	-0.004	-0.045	-.237**	-0.024	.249**	.397**

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

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

Table D Correlations

Sample 623	1	2	3	4	5	6	7	8	9	10	11	12
1 Gender												
2 Education	-.113*											
3 Age	-0.015	0.067										
4 Growth aspirations	.234**	0.02	.183**									
5 Informal Plan	0.062	-0.048	-0.055	0.013								
6 Formal plan	-0.05	0.08	.220**	.193**	-.532**							
7 Changed business plan	-0.042	.108*	0.037	.126*	0.03	0.093						
8 Firm formation y1	0.051	0.039	.143**	.343**	-0.018	.339**	.295**					
9 Firm formation y2	0.032	0.06	.144**	.359**	-0.01	.312**	.344**	.955**				
10 Firm formation y6	0.022	0.065	.138**	.347**	-0.004	.292**	.360**	.937**	.992**			
11 Operating business y1	-0.069	0.02	0.058	0.057	-0.062	0.053	0.037	.283**	.274**	.271**		
12 Operating business y2	-0.03	-0.034	0.04	0.08	0.017	0.03	.100*	.209**	.246**	.255**	.566**	
13 Operating business y6	-0.073	-0.008	0.008	0.034	0.035	-0.039	.115*	.136**	.169**	.194**	.391**	.593**
14 No of. Jobs y1	0.228	0.115	0.053	0.236	-0.085	0.181	.312*	0.226	0.166	0.104	-0.025	0.035
15 No of. Jobs y2	0.163	-0.132	-0.048	0.202	-0.232	0.232	0.23	0.121	0.129	0.025	-0.018	-0.053
16 No of. Jobs y6	-0.017	0.351	0.162	0.384	0.221	-0.103	0.083	0.28	0.329	0.338	0.245	0.315
17 Sales y1	0.042	0.066	.177*	.312**	-0.06	0.132	-0.037	-0.05	0.053	0.039	-0.056	0.092
18 Sales y2	0.074	0.081	.190*	.412**	-0.096	.193*	0.004	0.024	0.135	0.105	-0.048	0.121
19 Sales y6	0.014	-0.122	-0.018	.459**	0.136	-0.057	-0.021	.354**	.397**	.430**	0.066	0.178
20 Profit and loss y1	-0.025	-0.127	0.058	-0.114	-0.089	0.073	-0.067	0.069	0.038	0.061	0.08	0.092
21 Profit and loss y2	-0.054	-0.13	0.047	-0.128	-0.091	0.08	-0.079	0.043	0.021	0.04	0.057	0.086
22 Profit and loss y6	0.179	0.007	0.08	.274*	0.034	0.004	0.029	.271*	.291**	.309**	0.017	0.106
23 Total equity y1	0.093	0.067	0.015	.208**	-0.017	0.078	.191**	.161*	.170**	.145*	0.024	0.03
24 Total equity y2	0.092	0.141	0.074	.326**	-0.004	0.075	0.052	-0.009	0.064	0.035	-0.109	-0.024
25 Total equity y6	0.066	0.068	0.044	.192*	-0.12	.181*	-0.072	0.128	0.1	0.095	-0.065	-0.071
	13	14	15	16	17	18	19	20	21	22	23	24
14 No of. Jobs y1	-0.189											
15 No of. Jobs y2	-0.184	.898**										
16 No of. Jobs y6	0.339	-0.038	0.364									
17 Sales y1	-0.014	0.115	0.094	.619**								
18 Sales y2	-0.064	.859**	.357*	-0.001	.935**							
19 Sales y6	.193*	0.057	0.209	.406*	0.164	.718**						
20 Profit and loss y1	0.051	0.261	0.1	-0.12	-0.111	0.082	0.213					
21 Profit and loss y2	0.036	0.124	0.071	-0.279	-0.019	0.009	.316**	.968**				
22 Profit and loss y6	0.123	0.246	0.345	0.373	-0.042	.378**	.677**	.362**	.531**			
23 Total equity y1	-0.069	.694**	.555**	-0.001	0.026	.254**	0.102	-.418**	-.525**	0.163		
24 Total equity y2	-0.084	-0.054	0.077	0.336	.551**	.530**	0.008	-.926**	-.805**	-0.07	.497**	
25 Total equity y6	-0.059	-0.054	0.156	0.344	-0.031	-0.04	-0.003	-0.05	-.528**	-0.08	0.103	.982**

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

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



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