Journal of Business Venturing Insights 1-2 (2014) 18–25

Contents lists available at ScienceDirect

Journal of Business Venturing Insights

journal homepage: www.elsevier.com/locate/jbvi

Data replication and extension: A study of business planning and venture-level performance

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ARTICLE INFO

Available online 16 October 2014

Keywords:
Business planning
Nascent Entrepreneurship
Study replication
Data extension
Venture level performance

ABSTRACT

We longitudinally examine outcomes of entrepreneurial business planning to assess effectiveness. Both data replication and extension are used to examine previously published research. Our sample consists of 623 nascent ventures that we follow for more than ten years – from 1998 to 2010. Our findings highlight the importance of data replication, data extension, and sample selection bias. We not only add to the debate regarding the merits or liabilities of planning, but also contribute to evaluating normative research and publication standards by re-examining past research using more comprehensive data and an extended time frame.

1. Introduction: the importance of replication to scientific discovery

Knowledge must be continually verified and tested, lest our theories become canonized. In the field of management, replication studies occur only rarely and are poorly regarded, while theory is held up with near sacred fervor. As Hambrick (2007) points out, "*the requirement that every paper must contribute to theory is not very sensible; it is probably a sign of our academic insecurity; and it is costing us in multiple ways*" (2007:1346). Replication serves multiple ends by providing either validation or raising concerns regarding possible misinterpretations or research errors. As Hambrick asserts, the only way to ensure evidence based knowledge is "*to allow ample testing and replication*" (2007:1350). With this mandate in mind, we now turn to our specific case.

2. Business planning education and venture level performance

Does business planning lead to venture level performance? This is an important question because the growth of entrepreneurship education worldwide is taking place at a rapid rate (Kauffman Foundation, 2008; Solomon, 2007; Kuratko, 2005; Katz, 2003; Vesper and Gartner, 1997). The idea that business planning is useful to entrepreneurs is appealing to entrepreneurship educators. Business planning keeps students busy, is relatively easy to implement, and provides a concrete productive activity for students to present and deliver. Nearly every top selling entrepreneurship textbook provides at least one chapter on business planning. Numerous universities and incubators support this view by holding business plan competitions – some even offer courses training students in effectively competing in these competitions. These activities may influence scholars on this subject.

Although business plan competitions and education are quite common, research regarding the merits of planning has not been definitive. One stream of empirical research tends to view business planning as a rational choice-based process with a positive performance impact (see for example, Delmar and Shane, 2003, 2004; Shane and Delmar, 2004). The other stream

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http://dx.doi.org/10.1016/j.jbvi.2014.09.006
2352-6734/

of research tends to view business planning as independent from performance, and, as such, an activity that provides questionable benefit in the nascent venturing process (Honig and Karlsson, 2004; Karlsson and Honig, 2009; Bhidé, 2000).

While contrasting views about business planning rest on very different theoretical foundations, we note that interesting empirical work originated with the same data set. Honig and Karlsson in their 2004 article (*Journal of Management, cited over 200 times in googlescholar*) used the same data as for studies by Delmar and Shane in 2003 (*Strategic Management Journal, cited over 400 times in googlescholar*); Shane and Delmar (2004), and Delmar and Shane (2004) (*Journal of Business Venturing*). These studies drew contradictory conclusions. Honig and Karlsson highlighted legitimacy, but not performance, while Delmar and Shan's studies asserted that planning activities led to better performance outcomes when measured as non-disbanding or reaching organizational activities. All three articles are based on the exact same data, but used two different subsamples, and two different methodologies. Delmar and Shane used 223 nascent entrepreneurs, and Honig and Karlsson used 396 nascent entrepreneurs. This presents an excellent opportunity to conduct replication, something quite common on science, but less frequently conducted in social science. Due to data complications that we explain shortly, we confined our replication and extension to the Honig and Karlsson (2004) article. For the purpose of brevity, we refer to their paper as H&K, and to the Delmar and Shane (2003) article as "D&S".

In the case of the PSED research (Reynolds, 2000) on which this study is based, both scholarly teams[2] (Honig and Karlsson, 2004; Delmar and Shane, 2003, 2004; Shane and Delmar, 2004) examined the results of business planning at the two- to three-year point, arguably before clear and evident outcomes were available. Short-duration studies, as well as cross-sectional panel data, may be insufficient in fully explaining the role of many business strategies, including entrepreneurial planning. Research has shown that a longer time span is an important factor in observing the impact of business planning (Brinckmann et al., 2010; Delmar and Shane, 2003). In this study, our initial goal was to extend the period of these two well-cited studies by seven additional years, using a longitudinal study of sufficient duration to identify accurate measures of venture-level performance.

3. Replication of H&K

We begin with the sample used by Honig and Karlsson (2004). The paper is derived from the Swedish version of the Panel Study of Entrepreneurial Dynamics. As we have full access to both the original data as well as the more recent follow-up data, our aim was to extend this work.

Original H&K data came from two samples consisting of 49,979 individuals in Sweden who were followed from 1998 until 2010 (see H&K for methodology).[3] H&K indicated they withdrew 207 venture initiatives that were not owned by a physical person, or were considered nascent intrapreneurs – venture initiatives started inside an established organization. Our sample consisted of 396 independent nascent entrepreneurs as obtained from the authors.

H&K argued for a statistical approach with binary time dependent outcomes such as survival and profitability: "We used hierarchical multiple logistic regressions to determine the influence of predictor and control variables on the dichotomous outcomes specified by our hypotheses." (H&K, 2004:38). H&K (2004) suffer therefore from variation in starting point, which they never discuss. However, the consequences from their sampling and method are limited to the variation in starting dates and right censoring.

Our strategy with H&K (2004) was to first recreate their sample, then confirm their results using the same variables, and then extend their analysis to cover up to 10 years of data. This method was aimed at avoiding their problem of right censoring. Extending to ten years adds an important dimension of stability to the profit and survival dependent variables. Our primary objective was to replicate the link between business planning and performance.

The first H&K dependent variable, survival, included a range of options from abandoned by all to resting or run by someone else. The second dependent variable H&K used was whether a venture was profitable at any time. We were able to successfully recreate H&K's data and replicate and extend their analysis.[4] We only report the extension here. The replication yielded exactly the same results as in the original H&K study.

4. Extension of H&K: the results

Appendix Table A1 shows descriptive results replicating H&K and extending them with performance over five and ten years of operation. From our descriptive results it is clear that there are 408 cases in the analysis. However, our regression analysis revealed that with list-wise deletion, we had 396 cases – the exact same number as in the original H&K study. The next step was our extension of the H&K study. Table 1 provides equation one and two, showing that formal business planning has no relation to survival over five and ten years, as neither of the coefficients for formal planning are statistically significant for the dependent variable survival.

[2] One of the current authors was also a team member of one of these scholarly teams.

[3] The PSED sampling approach provides a random sample of nascent individual entrepreneurs, but it does not yield a random sample of nascent ventures. As a result, there is an oversampling of long venture creation processes, as those that terminate or launch are not part of the sample. The authors thank Per Davidsson for making this point.

[4] While one of the authors participated in the original H&K analysis, the current replication was conducted by the unaffiliated author who was unguided by the experienced person.