Knowledge-Sourcing Activities and the Success of Early-Stage Ventures

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Abstract

We extend the literature on organizational survival to propose that existing prior knowledge and several knowledge creation mechanisms have differential impact on the survival of early stage ventures. Our model investigates (1) prior knowledge pertaining to the business, (2) knowledge generated through business planning, (3) knowledge acquired through interaction with others, and (4) knowledge generated in the course of running the business (adaptation). Using data on 456 entrepreneurs, we find that each category of knowledge has a significant influence on organizational survival. Our findings have important implications for theory development in the literature on organizational survival, and for public agencies seeking to promote entrepreneurship.

Introduction

The creation of new firms by unemployed individuals is a common phenomenon worldwide. Such firms account for 62% of new firm foundings in Germany (Institut für Mittelstandsforschung Bonn 2005), 30% in Sweden (SCB 1994) and a high proportion in the United States in recent years (Reynolds 1995). Moreover, government programs encouraging entrepreneurship amongst the unemployed have been introduced in a number of countries, including the US, UK, and Australia. Self-employment can be both a refuge and source of income for individuals who experience difficulties in finding standard employment

(Rees and Shah 1986; Evans and Jovanovic 1989; Blanchflower and Oswald 1990). Despite growing interest in this phenomenon amongst scholars and policy makers, little is known about the ability of unemployed individuals to transition successfully into entrepreneurship. We address an important, but unanswered, theoretical question in this context: How do prior knowledge and several mechanisms of knowledge creation influence the likelihood that an individual will succeed in self-employment?

Only a handful of studies have sought to explore the factors that influence an individual's probability of remaining self-employed over time (Le 1999). Existing empirical research examines two general sets of variables on survival rates in self employment: human capital characteristics of founders and organizational characteristics. For example, Brüderl et al. (1992) find that founders' education and work experience, firm size at founding and market entry strategies are among the most important determinants of firm survival. Results by Bates (1990) indicate that educational attainment increases survival rates, age of the business owner is related to business survival in a non-linear fashion, and managerial experience is insignificant. Although existing studies examine important sets of variables, our theoretical understanding of the determinants of firm survival remains fragmented, largely due to the use of public data sets which capture data on limited variables, and partially due to a fragmentation of theories of self-employment.

In this paper we examine the factors that improve an individual's probability of remaining self-employed over time from a more integrated perspective. While continuing to emphasize the importance of human capital and organizational characteristics in new firm survival, we critically extend previous perspectives by providing a richer understanding of the role of knowledge in the creation of new organizations, i.e. the prior knowledge of an individual and the main mechanisms of knowledge creation during firm founding and the early stages of firm development. Specifically, we examine the impact of four important types of knowledge: (1) prior knowledge pertaining to the business activity, (2) knowledge generated through business planning activities, (3) knowledge acquired through interaction with others, and (4) knowledge generated in the course of running the business (evidenced by product line adaptation).

We use a novel data set to investigate these patterns. Our data derives from a detailed survey distributed to the full cohort of unemployed individuals in the Munich (Germany) region who received governmental assistance to support their transition from unemployment to self-employment in 2001 (n= 456).

> Our contribution to the literature on organizational survival is three-fold:
> (1) Our results reveal the importance and the relative impact of prior knowledge and different knowledge creation mechanisms on the likelihood of continued self-employment.

(2) Our findings indicate that the synthesis of knowledge obtained from various sources is a key requirement of successful entrepreneurship.

(3) We factor into our model a certain type of prior knowledge that has been neglected in empirical studies – an individual's ability to use knowledge acquired from other sources – and find that it has an important impact on the likelihood of continued self-employment.

In the following section we review and build on work examining the impact of knowledge on the longevity of new ventures. A description of the context that we study and our data collection and analysis methods follows. We then report on and discuss our findings.

Theory & Hypothesis Development

The extent literature examining the factors affecting the survival of young firms (i.e. continued self-employment) focus on organizational characteristics such as age, industry and number of employees, as well as on founder characteristics such as age, education, managerial experience, and prior organizational experience (Carroll and Mosakowski 1987; Evans and Leighton 1989; Bates 1990; Brüderl, Preisendörfer et al. 1992; Dobrev and Barnett 2005). To this set of factors, we seek to introduce the importance of various sources of knowledge in promoting firm survival.

Knowledge can come from a variety of sources. First, we discuss the role and importance of prior knowledge pertaining to the business activity being pursued. Two important methods by which the fledgling entrepreneur can exploit to increase her knowledge are by engaging in business planning activities and by seeking advice from others. We discuss each in turn. Finally, we discuss knowledge generated in the course of running the business as evidenced by product line adaptation. Note that we differentiate between the above sources of knowledge – which are specific to the business opportunity – with more general knowledge acquired from education, managerial experiences etc. We control for the latter set of variables.

Prior Knowledge

> *Hypothesis 1: Individuals with greater prior knowledge pertaining to the business activity will be more likely to remain self-employed.*

Knowledge Creation through Business Planning Activities

Hypothesis 2a: Individuals who engage in greater strategic planning activity will be more likely to remain self-employed.

Hypothesis 2b: Individuals who engage in greater operational planning activity will be more likely to remain self-employed.

Hypothesis 3a: Individuals who engage in greater strategic planning activity and have knowledge of how to plan strategic content will be more likely to remain self-employed.

Hypothesis 3b: Individuals who engage in greater operational planning activity and have knowledge of how to plan operational content will be more likely to remain self-employed.

Knowledge Acquired through Interaction with Others

Hypothesis 4a: Individuals who acquire knowledge through their networks will be more likely to remain self-employed.

Hypothesis 4b: Acquisition of knowledge from different actors will be differentially beneficial for the entrepreneur's likelihood of remaining self-employed. Banks will have the greatest positive impact, followed by the funding agency. Family will be insignificant because of the wide variance in knowledge and expertise held by family members. Customers are likely to be the least beneficial.

Knowledge Created through Learning by Doing

Hypothesis 5: Adaptation of the product line to better suit the market will decrease the likelihood of failure for all entrepreneurs.

Method

Study Context

Our data set is derived from a sample of the 2001 cohort of entrepreneurs in the Munich, Germany region who received government assistance to support their transition from unemployment to entrepreneurship. Participants were granted "bridging allowances" of, on average, €1000/month to offset living expenses for six months. These funds do not require repayment and the funding allowance is equivalent to the unemployment allowance the individual would have received (Wiessner 2000). Thus, this type of funding is different in nature from the better known start-up investment capital supplied by banks and venture capitalists. Similar support programs exist in Australia, Belgium, Canada, Denmark, Finland, France, Greece, Great Britain, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Sweden and the US (Benus 1994; OECD 1995).

Data Collection

In the spring of 2005 we mailed the survey to all 1892 individuals of the 2001 cohort of funding recipients, accompanied by a cover letter and return envelope. Surveys sent to 441 individuals were returned to us as these individuals could no longer be reached using the 2001 address data supplied to the funding agency. A total of 456 responses were received (response rate of 24.1% based on the size of the full cohort; 31.4% based on the number of individuals who received the survey).

Operationalization of Variables

Dependent Variable

Our dependent variable of interest is the survival time (in months) of the new firm (Brüderl, Preisendörfer et al. 1992). Respondents reported whether they were still active with their self-employment activity or whether (and when) they ceased it. Continued self-employment at the time of the survey was recorded as a right-censored observation.

Independent Variables

information available on request

Analytic Method

We estimate the process by which the formerly unemployed transition out of self-employment (i.e., remain self-employed) using event history methods (Yamaguchi 1991; Blossfeld and Rohwer 2002). Although these transitions are duration dependent, we know little about the parametric form of the

dependence. Because our goal is to specify the rates of transition as functions of our variables of interest rather than the duration dependence (cf. Carroll and Mosakowski 1987), we rely on non-parametric specifications by using the Cox proportional hazards model (Cox 1972). The Cox model is specified as follows:

$$r(t) = h(t) \exp(b_1 X_1 + \ldots + b_n X_n)$$

In the Cox model, $h(t)$ is an unknown nuisance function that influences every sample member in the same fashion. The X's are independent variables of interest, and the b's are coefficients that estimate the effects of the variables. This model can be estimated using partial likelihood techniques (Cox 1975).

Results

Our preliminary findings are presented in Table 1. It provides results from Cox proportional-likelihood analyses of the transition out of self-employment. The coefficients represent the hazard ratio, with ratios lower than one indicating that a transition out of self-employment is less likely, and ratios greater than one indicating that a transition out of self-employment is more likely. Model 1, the baseline model, includes the control measures. It shows that human capital has strong effects on the likelihood of remaining in self-employment. For instance, education has a significant non-linear influence on the likelihood of remaining in self-employed, with the likelihood of self-employment increasing in increasing educational attainment before decreasing. In addition, the likelihood of remaining employed decreases significantly the longer the respondent was unemployed previously. Other significant control factors include innovativeness, which has a negative influence on the likelihood of remaining self-employed, and investment in the activity, which has a positive effect on continuing self-employment. Somewhat surprisingly, having market and sales knowledge of the activity decreases the likelihood of remaining in self-employment.

Insert Table 1 about here

Consistent with our prior knowledge hypothesis, Model 2 shows that specific prior knowledge significant increases the likelihood of remaining in self-employment. Model 3 shows that, contrary to our expectations, greater intensity by respondents in analyzing and planning for the strategic content of the self-employment activity significantly reduced the likelihood of remaining self-employed, with analysis and planning of operational content having a positive albeit insignificant influence on continued self-

employment. Models 4 and 5 indicate, however, that the influence of planning on self-employment depends significantly on whether the respondent had knowledge related to the planning content. In particular, Model 4 shows that greater intensity in planning for the strategic content of the self-employment activity significantly increases the likelihood of remaining in that activity the greater the management knowledge a respondent has. Similarly, Model 5 shows that increasing intensity of planning for the operational content of self-employment significantly increases the likelihood of remaining employed if respondents have strong prior marketing and sales knowledge.

Model 6 of Table 1 shows that the sources where respondents obtained their knowledge vary in their influence on the likelihood of remaining self-employed. Respondents who relied on banks for opportunity recognition and business planning experienced a significantly increased likelihood of remaining self-employed, whereas respondents who relied on customers for opportunity recognition and business planning experienced a significantly reduced likelihood of remaining self-employed. In addition, respondents who relied on families for assistance experienced an increased, albeit insignificant, likelihood of remaining self-employed, whereas respondents who relied on the founding office experienced a slightly decreased (insignificant) likelihood of remaining self-employed.

Model 7 of Table 1 indicates that adaptability on the part of the respondent significantly increased the likelihood of remaining self-employed. In particular, respondents who made unplanned product line changes were much more likely to continue their self-employment activity than respondents who made no such change. Although respondents who made planned product line changes also experienced an increased likelihood of remaining self-employed—relative to respondents who made no product line changes—the difference was not significant.

Models 2 through 7 of Table 1 show that each of the four important types of knowledge that we examine in this article had significant separate effects on the likelihood of remaining self-employed. For example, the chi-square contrast comparing Model 1 (controls) to Model 2 (adding specific prior knowledge) indicates that prior knowledge significantly improved the fit of the model ($\chi2$ difference=12.12, df=1, $p<0.0005$). Similarly, adding planning variables in Model 3 significantly improved the fit of the model relative to Model 1 ($\chi2$ difference=6.54, df=2, $p<0.038$), as does adding the assistance from others measures ($\chi2$ difference relative to Model 1=15.11, df=5, $p<0.005$), and the adaptation measures ($\chi2$ difference relative to Model 1=20.19, df=2, $p<0.00005$). Moreover, Model 8, the full model, provides evidence that the significant effects for each knowledge type held when all types of knowledge and

controls were included in the proportional likelihood analysis ($\chi 2$ difference relative to Model 1=57.95, df=9, p<0.000001).

Discussion & Conclusion

Extent theoretical and empirical work on new firm survival hinges on general human capital and organizational characteristics as predictive variables. In this study, we extend prior research by examining the role of prior knowledge and several mechanisms of knowledge creation during firm founding and early firm development, while taking into account prior findings on human capital factors and organizational founding characteristics.

This study makes three key contributions to our theoretical and empirical understanding of success in self-employment. First, our results reveal the individual and relative impact of prior knowledge and different knowledge creation mechanisms on the likelihood of continued self-employment. Second, our findings indicate that the synthesis of knowledge obtained from various sources is a key requirement for successful entrepreneurship. We thus present both a more refined understanding of the role of human capital in the survival of new firms, and also offer an improved understanding of the methods by which an individual can increase the chances of firm survival by extending the knowledge they possess.

Third, our results point out the importance of "how-to" knowledge in the area of strategic and operations planning, i.e. an entrepreneur possessing prior knowledge in an industry different from the one he seeks to enter who possesses planning experience may be able to at least partially compensate for his lack of prior knowledge. Prior theoretical writings suggest the importance of this type of knowledge (e.g., Hayek 1945), yet we are not aware of any study that has offered empirical support for this assumption or that links it to organizational survival.

This research is of particular relevance to governmental and private agencies seeking to spur small business development amongst the unemployed. These findings suggest mechanisms by which to screen applicants, as well as mechanisms to further develop applicants, e.g. agencies can check to see if applicants possess prior knowledge relevant to the proposed business activity and/or can encourage applicants to acquire knowledge components through planning activities or outside sources.

References

references available on request

Table 1. Cox proportional-likelihood models of the transition out of self-employment

	Model 1		Model 2		Model 3		Model 4	
Controls								
Male	1.13	(.26)	1.15	(.27)	1.17	(.27)	1.16	(.27)
Age	1.03	(.11)	1.10	(.12)	1.04	(.11)	1.08	(.11)
Education	.83*	(.06)	.82**	(.06)	.84*	(.06)	.83*	(.06)
Education Squared	1.00*	(.00)	1.00*	(.00)	1.00†	(.00)	1.00†	(.00)
Work Experience	1.02	(.02)	1.01	(.02)	1.02	(.02)	1.01	(.02)
Manufacturing	1.70	(.59)	1.43	(.50)	1.62	(.56)	1.69	(.59)
Construction	.47	(.29)	.38	(.24)	.48	(.30)	.47	(.29)
Wholesale/Retail	1.35	(.48)	1.27	(.45)	1.36	(.48)	1.31	(.47)
Finance	1.98*	(.68)	2.18*	(.75)	2.02*	(.70)	1.94†	(.67)
Tourism	2.25	(1.25)	2.37	(1.31)	2.26	(1.25)	1.88	(1.05)
Transportation	1.87	(1.40)	1.60	(1.20)	2.26	(1.71)	1.92	(1.45)
Health/Social	2.02	(.68)	1.99*	(.68)	2.16*	(.74)	2.36*	(.81)
Education	.75	(.41)	.56	(.32)	.83	(.46)	.74	(.41)
Management Knowledge	.89	(.11)	.85	(.11)	.85	(.11)	.80†	(.10)
Market/Sales Knowledge	1.22†	(.15)	1.28*	(.16)	1.14	(.14)	3.90**	(1.91)
Duration Unemployed	1.15*	(.06)	1.12*	(.06)	1.15*	(.06)	1.16**	(.07)
Innovativeness of Idea	1.23*	(.12)	1.31**	(.13)	1.16	(.12)	1.12	(.11)
Founding Partner	1.57	(.45)	1.45	(.42)	1.59	(.46)	1.59	(.46)
Investment	.81***	(.05)	.83**	(.05)	.79***	(.05)	.80***	(.05)
Prior Knowledge								
Specific Prior Knowledge			.68***	(.07)				
Planning								
Strategy Intensity					1.39*	(.20)	3.97**	(1.74)
Operations Intensity					.95	(.14)	.99	(.15)
Strategy Intensity * Business Knowledge							.72**	(.09)
Operations Intensity * Operations Knowledge								
Assistance from Others								
Bank								
Customer								
Family								
Founding Office								
Adaptation								
Adaptability								
Planned Product Change								
Log-Likelihood	-531.9		-525.9		-528.6		-524.8	
N	441		441		441		441	

Note: †p<.10; *p<.05; **p<.01; ***p<.001 two tailed tests. Coefficients represent hazard ratios of transitioning out of entrepreneurship. Standard errors are in parentheses.

Table 1 (continued). Cox proportional-likelihood models of the transition out of self-employment

	Model 5		Model 6		Model 7		Model 8	
Controls								
Male	1.17	(.27)	1.19	(.28)	1.20	(.28)	1.34	(.33)
Age	1.05	(.11)	1.05	(.11)	1.01	(.11)	1.09	(.13)
Education	.83**	(.06)	.84*	(.06)	.84*	(.06)	.82**	(.06)
Education Squared	1.00†	(.00)	1.00†	(.00)	1.00*	(.00)	1.00†	(.00)
Work Experience	1.02	(.02)	1.02	(.02)	1.02	(.02)	1.01	(.02)
Manufacturing	1.58	(.55)	1.85†	(.65)	1.65	(.58)	1.36	(.49)
Construction	.52	(.33)	.48	(.30)	.51	(.32)	.39	(.24)
Wholesale/Retail	1.25	(.45)	1.36	(.49)	1.55	(.56)	1.36	(.50)
Finance	1.90†	(.66)	2.03*	(.70)	2.32*	(.80)	2.53**	(.89)
Tourism	1.84	(1.08)	1.76	(.99)	2.58†	(1.44)	2.06	(1.17)
Transportation	2.18	(1.64)	1.96	(1.52)	2.21	(1.67)	2.53	(1.99)
Health/Social	2.21*	(.76)	2.41*	(.84)	2.11*	(.71)	2.60**	(.91)
Education	.77	(.42)	.51	(.29)	.80	(.44)	.35	(.24)
Management Knowledge	2.17†	(.92)	.88	(.11)	.87	(.11)	.80†	(.10)
Market/Sales Knowledge	1.15	(.14)	1.27†	(.16)	1.28*	(.16)	1.33*	(.18)
Duration Unemployed	1.17**	(.07)	1.15*	(.06)	1.17**	(.07)	1.13*	(.07)
Innovativeness of Idea	1.16	(.12)	1.18†	(.11)	1.26*	(.12)	1.19†	(.12)
Founding Partner	1.71†	(.49)	1.67†	(.48)	1.69†	(.48)	1.71†	(.52)
Investment	.80***	(.05)	.83**	(.06)	.80***	(.05)	.83*	(.06)
Prior Knowledge								
Prior Knowledge							.61***	(.07)
Planning								
Strategy Intensity	1.36*	(.19)					1.36*	(.20)
Operations Intensity	2.61*	(1.23)					1.01	(.16)
Strategy Intensity * Business Knowledge								
Operations Intensity * Operations Knowledge	.76*	(.09)						
Assistance from Others								
Bank			.68†	(.16)			.62*	(.15)
Customer			1.45***	(.15)			1.42***	(.16)
Family			.97	(.10)			.97	(.10)
Founding Office			1.05	(.09)			1.07	(.09)
Adaptation								
Adaptability					.36***	(.08)	.30***	(.07)
Planned Product Change					.63	(.21)	.54†	(.18)
Log-Likelihood	-525.8		-524.3		-521.8		-502.9	
N	441		441		441		441	