Accepted to publication (07/11/2020) to the Journal of Business Venturing Insights

To get out of the building or not? That is the question: The benefits (and costs) of customer involvement during the startup process

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Nascent entrepreneurs are frequently advised to "get out of the building" and consult with customers before any serious efforts to develop a new product or service are undertaken so they can understand what their potential customers really want/need. Despite the intuitive nature of this advice, it lacks theoretical and empirical bases. As such, the worldwide popularity of the movements this approach has spawned, such as Customer Development and Lean Startup, seems to rest on the unfounded assumption that the benefits of involving customers outweighs the costs. Thus, we theorize about the pros and cons of involving customers early on in the startup process and empirical test our model using data from the PSED II. Our findings suggest that while involving customers early will help entrepreneurs create offerings customers are willing to pay for, it also results in potentially costly delays in the launch of those offerings. We also find that these benefits and costs are magnified when innovativeness is high.

Keywords: Customer Development, customer discovery, customer involvement, knowledge, Lean Startup, learning

1. Introduction

Given that new venture survival and growth are related to the knowledge entrepreneurs gain throughout the startup process (Bird, 1988; Gartner et al., 1999; Honig, 2001; McMullan and Long, 1990), it is no surprise that successful entrepreneurs have been characterized in the academic literature as "exceptional learners" (Smilor, 1997). Consistent with this perspective, Steve Blank (2006) famously advocated that entrepreneurs are best-served by learning first-hand from customers about their wants (a demand-driven construct referring to problems that the customer has asked to be solved (Dimov, 2007a)) and needs (a supply-driven construct referring to problems of which the customer is unaware (Dimov, 2007a)) given his contention that it is only by acquiring this knowledge that entrepreneurs can effectively iterate toward a product/service that actually solves a genuine customer problem. To this end, Blank (2013), and others who have since adopted and advocated this logic (e.g., Ries, 2011), contend that *all* nascent entrepreneurs – not only those founding high-growth tech ventures but also those operating "Main Street" small businesses – should "get out of the building" and consult with customers before any serious efforts to develop a new product or service are undertaken.

Despite the intuitive nature of this advice, most research on customer involvement has focused on established firms (e.g., Cui & Wu, 2016; Feng et al., 2016; Lau, 2011; Lin et al., 2010; Sun et al., 2010), leaving its role in early-stage entrepreneurial ventures unaddressed. This lack of a robust theoretical foundation for and empirical evidence of the efficacy of customer involvement during the startup phase is troubling as it suggests that the prevailing advice for nascent entrepreneurs to get out of the building and talk to customers, as advocated by the Customer Development (Blank, 2006) and Lean Startup (Ries, 2011) approaches that have been adopted by business schools, incubators, and accelerators around the globe (Mansoori, Karlsson,

and Lundqvist, 2019; York and Danes, 2014), rests on the tenuous assumption that doing so not only yields tangible benefits, but also outweighs any costs. To be clear, we are not suggesting that involving customers is an unwise strategy out of hand. We are, however, arguing that this approach must be justified on theoretical and empirical grounds before we accept it as valid (Fredriksen and Brem, 2017; Shepherd and Gruber, 2020). In making this argument, we note an emergent stream of research that has begun to empirically explore, primarily with qualitative and descriptive methods, the application of the Lean Startup approach by entrepreneurial ventures. While this research has provided insight into how startups learn about, implement (Mansoori, 2017), and benefit from (Ghezzi, 2018) the Lean Startup approach as a whole, it is as of yet silent on the specific role that customer involvement (the central component of this approach) plays in helping startups develop products and services that real customers actually end up buying. Given the important role revenues play in generating the cash flows necessary for the emergence, growth, and survival of nascent ventures (Lichtenstein, Dooley, and Lumpkin, 2006), we quantitatively examine the role customer involvement plays in the creation of new ventures.

In undertaking this agenda, we leverage the academic literature on entrepreneurial learning to hypothesize whether and under what conditions nascent entrepreneurs ought to involve customers. We then test our hypotheses by analyzing data from the PSED II. Our findings suggest that involving customers increases the likelihood of making a sale and decreases the speed to making that sale, and that both relationships are magnified the more innovative the offering. Based on our results, we conclude that involving customers early in the startup process is best viewed as a context-specific strategy and not a one-size-fits-all approach.

2. Entrepreneurial learning

While Grant (1997: 451) argues that all firms "must specialize in knowledge acquisition," doing so is particularly critical for nascent entrepreneurs given their lack of resources in general (Aldrich, 2000) and the importance of knowledge in identifying and exploiting viable opportunities in particular (Ozgen and Baron, 2007; Politis, 2005). For this reason, Alvarez and Busenitz (2001: 760) maintain that an entrepreneur's knowledge serves as the venture's "critical intangible resource." Yet, because the information upon which knowledge is built is unevenly distributed (Hayek, 1945), most entrepreneurs enter the startup process "in a substantial learning situation" (Gibb and Ritchie, 1982: 35). According to Politis (2005: 401) entrepreneurial learning is "a continuous process that facilitates the development of necessary knowledge for being effective in starting up and managing new ventures." Since individuals enter entrepreneurship from a variety of path dependent histories, learning enables each entrepreneur to update his/her prior knowledge base with new information and experiences (Minniti and Bygrave, 2001). In support of the importance of learning, research suggests that new venture performance is related not only to the entrepreneur's knowledge at the onset of venture creation efforts, but also the additional knowledge s/he gains throughout the startup process (Bird, 1988; Gartner et al., 1999; Honig, 2001; McMullan and Long, 1990). Given the benefits associated with acquiring new knowledge, entrepreneurial success has been attributed to learning in both the academic literature – "effective entrepreneurs are exceptional learners" (Smilor, 1997) – and the popular press – "winners live by a process of customer learning and discovery" (Blank, 2006: iii).

2.1. The benefits of learning from customers

While entrepreneurs can learn from a variety of individuals, such as mentors (e.g., Ozgen and Bandura, 2007), role models (e.g., Van Auken, Fry, and Stevens, 2006), experts (e.g.,

Mansoori, 2017), and venture capitalists (e.g., Baum and Silverman, 2004), we focus on customers given Steve Blank's contention that because only customers possess the information (consciously or otherwise) about what they actually want and need, the only way to learn what to sell to them is by talking with them. According to Blank (2013: 67), a main problem with traditional product development models is that they rarely seek input from the customers; thus, "after months or even years of development, entrepreneurs learn the hard way that customers do not need or want most of the product's features." As such, he advocates a Customer Development approach whereby entrepreneurs learn first-hand from customers about their wants and needs so that they can develop a solution to a genuine customer problem.

Eric Ries, one of Blank's students at UC Berkeley, was greatly influenced by this Customer Development framework. By synthesizing it with insights from lean manufacturing, design thinking, agile development, and his own entrepreneurial experiences, Ries (2009) developed the Lean Startup approach, which is centered around the notion that entrepreneurs "must learn what customers really want, not what they say they want or what we think they want" (Ries, 2011: 38). In other words, given that customers possess knowledge about which entrepreneurs can only speculate – namely, whether and to what degree a product/service in development can actually solve a customer problem – involving customers early on during product development should make it more likely that nascent ventures will ultimately develop offerings that customers are willing to pay for (Sawyerr et al., 2003). In this context, customer feedback is a resource that entrepreneurs use to learn how to better align their offerings with the reality of what customers want and need (Gruner and Homburg, 2000; Yli-Renko et al., 2001).

H1: Early customer involvement is positively related to making the first sale.

According to Jeff Immelt, Chairman and CEO of General Electric, "entrepreneurs are different in many ways … but they also share certain traits. They are fast. They embrace new

thinking. They are geared for disruption and innovation through uncertainty" (Ries, 2011: ix). Despite this characterization, however, not *all* entrepreneurs seek to develop innovative products/services. In fact, the overwhelming majority of businesses have low rates of innovation and operate in established markets (Kirchhoff, 1994). According to Shane (2000), in such cases the entrepreneurs' past work experiences and education, coupled with publicly-available information that is disseminated broadly, can provide the knowledge necessary to sufficiently understand customer problems and serve markets, a point which Blank (2006: 21) acknowledges: "an existing market is pretty easy to understand … the users and the market are known." However, those entrepreneurs that do decide to introduce innovative products or services unlike those currently in the market are likely to face considerable uncertainty about the perceived value of their offering (Knight, 1921) given that customers may not readily understand it and/or the underlying problem it is intended to solve (Shepherd et al., 2000). Taken together, we contend that learning from customers will become more important to the entrepreneur the more innovative the offering.

> *H2: The positive relationship between early customer involvement and making the first sale is strengthened as innovativeness increases.*

2.2. The costs of learning from customers

While learning what customers want and need is important to the entrepreneurial process, so too is the *speed* with which that knowledge is obtained for at least two reasons. First, because entrepreneurial opportunities are fleeting (Busenitz and Barney, 1997; Lévesque, Minniti and Shepherd, 2013) and change over time in substantive ways (Dimov, 2007b; McMullen and Dimov, 2013; Shepherd, 2015), "once a firm is behind, it is difficult to catch up" (Eisenhardt, 1989: 570). Second, because most entrepreneurs enter the startup process in a resource-poor condition (Aldrich, 2000), the longer they persist without revenues, the less likely they are to

survive (Lichtenstein, Dooley and Lumpkin, 2006). In support, Ries (2011: 20, emphasis added) notes that "the goal of a startup is to figure out the right thing to build – the thing customers want and will pay for – *as quickly as possible*." Unfortunately, getting out of the building in order to involve customers in product development efforts is a time-intensive process. Given that startups tend to have small teams and few, if any, employees (Jin et al., 2017), time spent on customer involvement must generally be undertaken by the founders, who cannot dedicate full-time to this task given the myriad other roles they must perform in order to sustain their ventures (Wagner, 2006). Moreover, even once new knowledge is acquired, it is not immediately useful to the startup. Instead, it must be processed and integrated with existing knowledge before it can be applied to products and services in productive ways (Alvarez and Busenitz, 2001; Huber, 1991).

H3: Early customer involvement is negatively related to the speed to the first sale.

Despite Blank's universal advocacy of involving customers in the startups process, he does acknowledge that the innovativeness of a startup's offering will affect the time it takes the startup to learn what it needs to know from customers. As Blank (2006: 22) elaborates, for startups in existing markets producing incrementally innovative products, "this process ought to be a snap, and can be accomplished in a matter of weeks or months;" however, for startups in new markets producing radically innovative products "completing the Customer Development processes may take a year or two or even longer." The main reason for this nuance is that customers often have more difficulty clearly and easily articulating their wants and needs where innovative offerings are concerned (Shane, 2000). In support, research suggests that time to market increases with the novelty of the product (Tatikonda and Montoya-Weiss, 2001).

H4: The negative relationship between early customer involvement and the speed making the first sale is strengthened as innovativeness increases.

3. Method

3.1. Sample

We test our hypotheses with the Panel Study of Entrepreneurial Dynamics II (PSED II), a randomized, longitudinal dataset of individuals from the United States involved in the process of starting for-profit businesses. These individuals were identified from a random-digit-dialing telephone survey of 31,845 adults in the United States conducted between September 2005 and February 2006. From this target population, nascent entrepreneurs, or individuals who have initiated activities intended to culminate in a viable for-profit businesses (Aldrich, 2000, p. 77), were identified as respondents that were [1] were trying to start their own business (for themselves or for their employer), [2] expected to be owners or part owners of the new firm, which would not be majority owned by another business, [3] were active in trying to start the new firm within the previous twelve months, and [4] were still in the startup phase (Reynolds & Curtin, 2007). From this initial screening sample, 1,214 nascent entrepreneurs were identified. Six telephone interviews were then conducted with these individuals at roughly yearly intervals, concluding in April 2011, in order to obtain ongoing information concerning the conditions surrounding their startups. For our analysis, we select only the 591 nascent entrepreneurs who responded that they had a product/service completed and ready for sale by the time of the final interview in order to avoid right censoring (Yang and Aldrich, 2012).

3.2. Measurement model

Following Gartner, Carter and Reynolds (2004), we rely on the following item to measure our two sales-related dependent variables: “Has this new business already received any money, income, or fees from the sale of goods or services?” We operationalize first sale as a dummy variable, with cases assigned a value of one if they responded “yes” to this item at any

point during the data collection process, and zero otherwise. We operationalize speed to first sale as the number of months from the time the entrepreneur first conceived of the idea for the business until the time at which the first sale was made. Due to the skewed nature of this variable, we log-transform it in order to normalize the distribution. Finally, following Capelleras et al. (2010), we then multiply this variable by -1 in order to provide an intuitive measure of speed, where higher values represent faster speeds and lower values represent slower speeds.

To measure customer involvement, we turn to Dimov (2010), who identifies respondents in the PSED II that involved customers in the startup process using the following item: "Has an effort been made to talk with potential customers about the product or service of this new business?" Following Dimov's (2010) lead, we rely on this item as a foundation; however, because we are interested not just in *whether* entrepreneurs involved customers, but also *when* they did so, we operationalize early customer involvement by comparing the time at which the entrepreneur indicated talking with customers with the time at which the entrepreneur indicated having made the first sale (Gartner, Carter & Reynolds, 2004). We assign a value of one to respondents that talked to customers before the product/service was completed and ready for sale (i.e., those that involved customers during the product development process), and zero otherwise.

Following prior studies using the PSED II (Hopp and Stephan, 2012; Tornikoski and Renko, 2014) and its close relative, the Global Entrepreneurship Monitor (Reynolds et al. 2005), we measure innovativeness using the following item: "Will all, some, or none of your potential customers consider this product or service new and unfamiliar?" We code responses as follows: 1 = none, 2 = some, 3 = all. Given that we multiply our independent and moderator variables in order to create our interaction term, we center both at their means. Finally, we control for a host of factors that may also affect the likelihood of and/or the speed to making a sale (see Table 1).

----- Insert Table 1 here -----

4. Analysis and results

We use logit regression to test H1 and H2 given the dichotomous nature of our first dependent variable (first sale). Yet, because not all entrepreneurs made a sale, we use a Heckman sample selection model to test H3 and H4 (predicting speed to first sale) in order to control for selection bias by simultaneously estimating [1] the likelihood that the entrepreneur made a sale (selection model) and, for those that have, [2] the speed with which they have done so (effects model). An important condition of the Heckman procedure is that the vector of explanatory variables in the selection model differs from that in the effects model (Winship & Mare, 1992). Thus, we include household income as a control variable in the selection model only, assuming it provides entrepreneurs the personal resources needed to help fund the development of the product to be sold, and industry experience in the effects model only, assuming it provides entrepreneurs with a deeper understanding of the context in which they will sell their products, thereby enabling them to reach that milestone more quickly. As a final point, in conducting our regression analyses, we weight the data using the weights created by the University of Michigan Institute for Social Research. Based on the March 2005 Current Population Survey conducted by the United States Census Bureau, these weights correct for differences in selection probabilities and differential non-response rates so that the estimated results are representative of and, therefore, generalizable to the United States population (Reynolds & Curtin, 2008).

5. Results

We report descriptive statistics and correlations for the model variables in Table 2. These statistics, along with a visual inspection of the data, suggest that all variables are normally

distributed. Moreover, all correlation coefficients are sufficiently low enough to alleviate any concerns that multicollinearity that might confound the results of our subsequent statistical tests.

----- Insert Table 2 here -----

Tables 3 and 4 show decreases in both the Akaike's Information Criterion (AIC) and the -2 log likelihoods from the control models to the full models. Further, we observe significant likelihood ratio tests as the independent variables and interaction terms are added to the models. Based on these statistics, we conclude that all models fit the data well and that each subsequent model fits the data significantly better than the preceding models.

Table 3 reports the results of the hypotheses predicting first sale. Model 2 shows that early customer involvement is positively related to making the first sale ($\beta = 0.67$, $p = 0.03$), suggesting support for H1. Model 3 shows that the interaction term is significant ($\beta = 0.94$, $p = 0.05$) and a subsequent plot of this interaction (Figure 1) illustrates that while involving customers early has almost no effect on making the first sale when innovativeness is low, it has a large positive effect when innovativeness is high, suggesting support for H2.

----- Insert Table 3 and Figure 1 here -----

Table 4 reports the results of the hypotheses predicting the speed to first sale. As Model 2 shows, early customer involvement is negatively related to speed to the first sale ($\beta = –0.63$, $p = 0.001$), suggesting support for H3. Model 3 shows that the interaction term is significant ($\beta = –0.59$, $p = 0.01$) and a subsequent plot of this interaction (Figure 2) illustrates that while early customer involvement reduces the speed to the first sale in conditions of low innovativeness, it reduces that speed even further in conditions of high innovativeness, suggesting support for H4.

----- Insert Table 4 and Figure 2 here -----

6. Discussion

In this study, we present a theoretical explanation for how, why, and under what conditions getting out of the building ought to both facilitate and hinder the startup process. In testing our model on large sample of nascent entrepreneurs, we find that while involving customers during product development helps generate initial sales, it also increases the time it takes to make those sales. Moreover, we find that these benefits and costs are magnified when innovativeness is high. Thus, despite the global support for customer involvement as a magic bullet for nascent entrepreneurs, it actually appears to be a double-edged sword. While this conclusion may seem surprising at first blush, when one considers that those advocating involving customers (Blank, 2006; Ries, 2011) developed their models without any theoretical or empirical justification, it is perhaps not surprising at all. It is for this very reason that we believe our study can help bolster these models and, in turn, inform academics and entrepreneurs alike.

To begin, while prior research in the area has invoked a learning perspective (Mansoori, 2017), it has focused on the value of learning *about* customer involvement as one component of the larger Lean Startup approach. While insightful, we extend such work by focusing on the value of learning *from* customers themselves during the startup process and, in so doing, provide the first theoretical justification for why getting out of the building can facilitate the cash flows so desperately needed by resource-poor nascent entrepreneurs. Furthermore, our hypothesis predicting the speed to first sale and our contingency hypotheses addressing innovativeness, establish important boundary conditions that help begin to define the limits of customer involvement. Of course, there are likely other theoretical lenses and contingencies that may also prove useful in understanding customer involvement and so we encourage scholars to consider them in future research so as to continue to build our knowledge of this important phenomenon.

The generation of such knowledge, however, ought not be limited to academic circles. Indeed, given their limited resource profile, coupled with the overwhelming constraints on their time, entrepreneurs themselves would benefit from a better understanding of the benefits and costs of getting out of the building This is particularly important given Blank's (2013) claim that

> Lean Startup techniques were initially designed to create fast-growing tech ventures. But I believe the concepts are equally valid for creating the Main Street small businesses that make up the bulk of the economy. If the entire universe of small businesses embraced them, I strongly suspect it would increase growth and efficiency. (p. 70)

Yet, our findings suggest that for most entrepreneurs, involving customers may have only limited value given that their prior knowledge can likely provide a sufficient foundation for understanding customer wants and needs (Shane, 2000). Yet, even when new knowledge from customers is required to understand how to exploit more innovative opportunities, we find that this learning comes at a significant cost. Thus, while we agree that getting out of the building can yield meaningful benefits to entrepreneurs, we would at the same time advise them to approach customer involvement cautiously and with an appreciation of the costs as well.

While we believe the support we find for our hypotheses sheds new light on the benefits and costs of customer involvement in the startup process, we advise readers to accept our findings with the following three caveats in mind. First, we did not distinguish between whether the products/services the nascent entrepreneurs in our sample were developing were demand- or supply-driven given our contention that both ought to benefit from customer involvement. However, to the extent that customer involvement might operate differently in each case, we advise future scholars to explore these potential nuances. Second, our measure of innovativeness is based on the entrepreneur's assessment of how customers would view the product/service and not the customer's own assessment. While this measure has precedent (Hopp and Stephan, 2012; Reynolds et al. 2005; Tornikoski and Renko, 2014), we acknowledge the possibility that

customers and entrepreneurs may view what is (not) innovative differently. Although measuring customer perceptions directly is not feasible in the PSED II, we encourage future scholars to consider collecting data from customers. Finally, while this research represents a rigorous assessment of customer involvement, it should not be interpreted as a test of the Customer Development or Lean Startup approaches given that both consist of multiple elements. That said, given the central role customer involvement plays in both, our findings should at the very least cause us to question whether these methods apply universally (Blank, 2013).

7. Conclusion

This study represents an important step forward in the discussion around customer involvement. Not only does it provide insight into the role customer involvement can play in the startup process, but more importantly, it highlights the valuable role scientific inquiry can play in the development of managerial advice more generally. Rather than merely accept ideas as viable solutions to problems based on anecdotes and/or intuitive appeal, academics have a larger responsibility as skeptics to explain and test those ideas for rigor and generalizability, confirming or rejecting the underlying assumptions on which they are based and identifying their boundary conditions. Unfortunately, the institutionalization of customer involvement in entrepreneurship education at business schools across the globe (including those where the authors work) suggests that we, as a community, need to do a better job. It is our hope that by leveraging theory to hypothesize about both the benefits *and* the costs of customer involvement, and by subsequently subjecting those hypotheses to rigorous empirical testing with a large-scale, randomized dataset, we are not only able to evaluate the customer involvement approach with an appropriately critical eye, but in so doing, underscore the symbiotic relationship between theory and practice.

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Table 1. Control variables

Variable	Operationalization
Gender	Female (1), male (0)
Education	At least a 4-year degree (1), less than a 4-year degree (0)
Race	Dummy variables: White, Hispanic, Black (reference group), Other
Age	Years (logged)
Startup experience	Number of new ventures previously started (logged)
Industry experience	Number of years of previous experience in the industry in which the new venture will operate (logged)
Household income	U.S. dollars (logged)
Social motive	Starting the business in order to help others and/or aid the economy/economic development (1), or not (0)
Local environment	Dummy variables: Urban, Suburban, Rural (reference group)
Region	Dummy variables: Northeast, Midwest, West, South (reference group)

Table 2. Descriptives and correlations

Variable		Mean	Std. dev.	1	2	3	4	5	6	7	8	9	10
1	Gender (female)	0.420	0.493										
2	Education	0.390	0.488	0.088 *									
3	Race (other)	0.059	0.236	0.027	-0.084 *								
4	Race (Hispanic)	0.128	0.334	-0.066	-0.094 *	-0.096 *							
5	Race (white)	0.630	0.484	-0.066	0.078	-0.326 *	-0.498 *						
6	Race (black)	0.160	0.367	0.139 *	0.020	-0.109 *	-0.167 *	-0.567 *					
7	Age	3.632	0.323	0.036	0.236 *	-0.050	-0.075	0.139 *	-0.079				
8	Startup experience	0.427	0.588	-0.002	0.186 *	0.036	-0.038	0.029	-0.047	0.308 *			
9	Industry experience	1.6027	1.143	0.192 *	0.039	0.057	-0.042	0.052	-0.073	0.288 *	0.118 *		
10	Household income	10.968	0.868	-0.112 *	0.229 *	-0.048	-0.047	0.121 *	-0.099 *	0.121 *	0.201 *	0.025	
11	Social motive	0.060	0.237	-0.044	-0.087	0.086 *	0.045	-0.094 *	0.014	0.076	-0.015	-0.005	-0.035
12	Context (urban)	0.356	0.479	-0.025	0.005	0.018	0.118 *	-0.245 *	0.162 *	0.015	-0.067	-0.003	0.052
13	Context (suburban)	0.414	0.493	0.020	0.110 *	-0.042	0.004	0.063	-0.040	-0.023	0.029	-0.004	0.045
14	Context (rural)	0.230	0.421	0.005	-0.134 *	0.028	-0.139 *	0.205 *	-0.137 *	0.010	0.043	0.008	-0.112 *
15	Region (Northeast)	0.170	0.376	-0.013	0.008	0.070	-0.073	0.010	-0.016	0.009	-0.016	0.085 *	0.036
16	Region (Midwest)	0.212	0.409	-0.038	-0.112 *	-0.095 *	-0.022	0.097 *	-0.029	-0.024	-0.088 *	-0.012	-0.121 *
17	Region (West)	0.241	0.428	-0.005	0.060	0.080	0.116 *	0.007	-0.186 *	0.071	0.127 *	-0.018	0.049
18	Region (South)	0.377	0.485	0.046	0.035	-0.044	-0.028	-0.096 *	0.201 *	-0.050	-0.026	-0.040	0.033
19	Innovativeness	0.000	0.658	0.006	0.075	0.007	-0.040	-0.031	0.067	0.061	0.021	-0.023	0.001
20	Early customer involvement	0.000	0.484	0.072	0.117	-0.014	-0.151 *	0.071	0.019	0.016	0.013	0.047	0.091
21	First sale	0.839	0.368	0.031	0.026	-0.080	-0.076	0.124 *	-0.057	-0.017	0.070	0.085 *	0.054
22	Time to first sale	-2.361	1.395	0.024	0.010	-0.089	0.048	-0.004	0.020	-0.083	0.029	-0.077	-0.005

* $p < 0.05$

Table 2. Descriptives and correlations (continued)

Variable		11	12	13	14	15	16	17	18	19	20	21
1	Gender (female)											
2	Education											
3	Race (other)											
4	Race (Hispanic)											
5	Race (white)											
6	Race (black)											
7	Age											
8	Startup experience											
9	Industry experience											
10	Household income											
11	Social motive											
12	Context (urban)	0.093 *										
13	Context (suburban)	-0.139 *	-0.625 *									
14	Context (rural)	0.057	-0.406 *	-0.460 *								
15	Region (Northeast)	0.022	-0.037	0.083 *	-0.055							
16	Region (Midwest)	0.007	0.038	-0.117 *	0.094 *	-0.235 *						
17	Region (West)	0.035	0.031	0.041	-0.083 *	-0.256 *	-0.292 *					
18	Region (South)	-0.054	-0.030	-0.002	0.037	-0.352 *	-0.403 *	-0.438 *				
19	Innovativeness	0.093 *	0.056	0.008	-0.073	-0.046	0.040	0.071	-0.061			
20	Early customer involvement	0.002	0.063	-0.008	-0.063	0.070	0.060	-0.023	-0.085 *	0.006		
21	First sale	-0.017	-0.040	-0.034	0.085	-0.120 *	-0.024	0.004	0.109 *	-0.108 *	0.084 *	
22	Time to first sale	-0.066	-0.054	0.139	-0.098	0.029	0.051	0.039	-0.098 *	0.145 *	-0.196 *	n/a[1]

* $p < 0.05$

[1] The correlation between first sale and time to first sale cannot be computed because the variable first sale is a constant for all cases in which a speed was calculated.

Table 3. Weighted logit regression: First sale

	Model 1		Model 2		Model 3	
Variable						
Intercept	2.06		0.03		0.15	
Gender	0.22		0.15		0.08	
Education	-0.12		-0.20		-0.22	
Race (other)	-0.01		0.23		0.21	
Race (Hispanic)	-0.31		-0.03		-0.07	
Race (white)	0.80	*	0.90	*	0.86	*
Age	-0.40		-0.17		-0.26	
Startup experience	0.13		-0.01		-0.05	
Household income	0.15		0.31		0.34	
Social motive	0.06		0.00		-0.17	
Context (urban)	-0.59		-0.92	*	-0.99	*
Context (suburban)	-0.58		-0.57		-0.62	
Region (Northeast)	-1.28	***	-1.76	***	-1.67	***
Region (Midwest)	-0.80	*	-1.12	**	-1.09	**
Region (West)	-0.42		-0.86	*	-0.89	*
Innovativeness	-0.39	*	-0.43	*	-0.10	
Early customer involvement			0.67	*	0.70	*
Innovativeness*early customer involvement					0.94	*
Model fit						
AIC	438.63		390.48		388.48	
-2 log likelihood	445.09		409.72		409.72	
Likelihood ratio test			29.557	***	7.99	**

Maximum likelihood estimation method
N= 500
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Weighted Heckman regression – effects model: Speed to first sale

	Model 1		Model 2		Model 3	
Variable						
Intercept	-0.82		-0.97		-1.13	
Gender	0.07		0.10		0.13	
Education	0.01		0.12		0.12	
Race (other)	-0.58		-0.57		-0.52	
Race (Hispanic)	0.21		0.01		0.08	
Race (white)	-0.10		-0.14		-0.09	
Age	-0.50	*	-0.49	*	-0.47	*
Industry experience	-0.03		-0.02		-0.01	
Startup experience	0.19		0.19		0.21	
Social motive	-0.45		-0.35		-0.32	
Context (urban)	0.01		0.15		0.18	
Context (suburban)	0.40	*	0.45	*	0.48	**
Region (Northeast)	0.49	*	0.60	*	0.57	*
Region (Midwest)	0.32		0.43	*	0.42	*
Region (West)	0.19		0.27		0.29	
Innovativeness	0.33	**	0.33	**	0.19	
Early customer involvement			-0.63	***	-0.72	***
Innovativeness*early customer involvement					-0.59	**
Model fit						
AIC	2040		1904		1898	
-2 log likelihood	492.88		458.455		456.58	
Likelihood ratio test			137.70	***	7.50	**

Maximum likelihood estimation method
N= 535
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1. The moderating effect of innovativeness on the relationship between early customer involvement and first sale

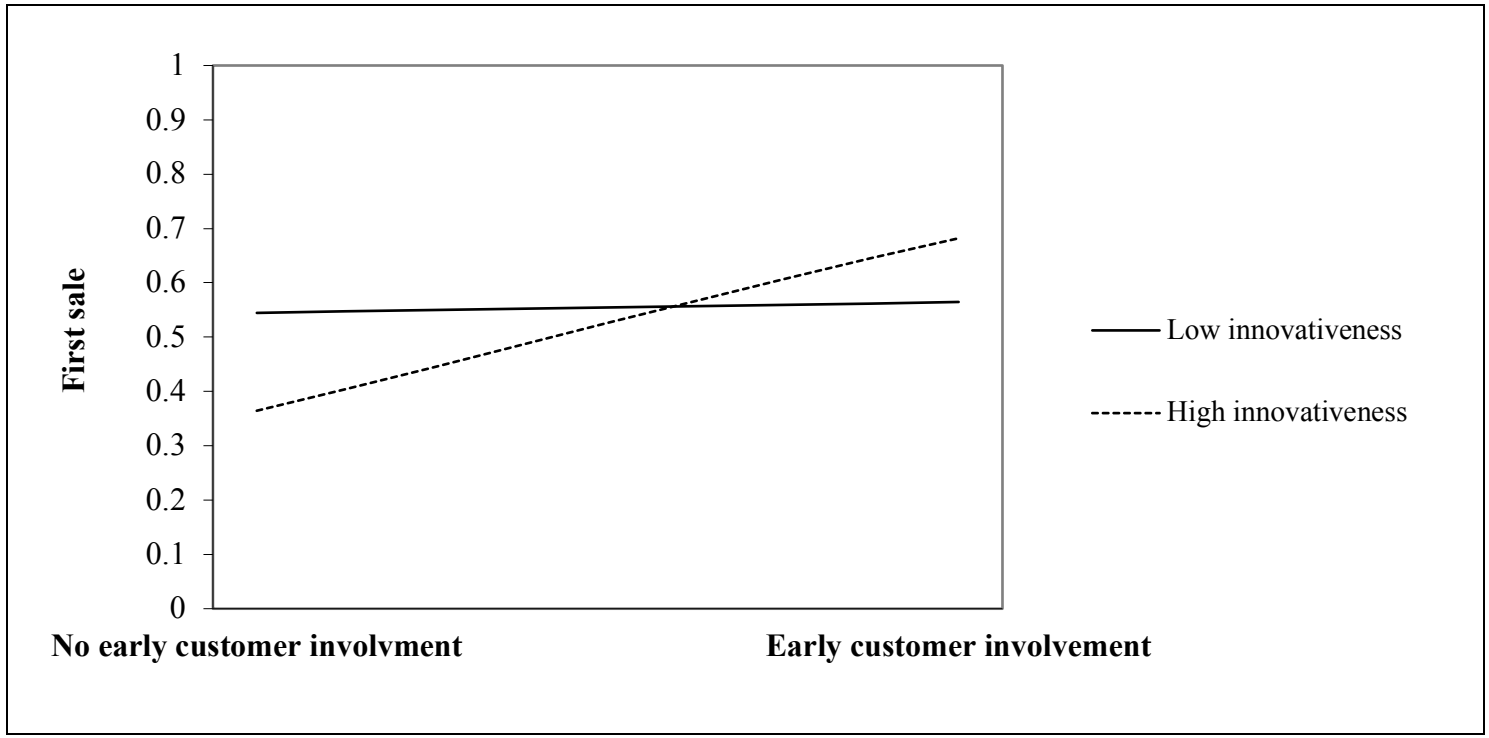

Figure 2. The moderating effect of innovativeness on the relationship between early customer involvement and speed to first sale