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Untangling the relationship between new venture internationalization and performance

Stephanie A. Fernhaber

Abstract:

To help untangle the inconsistency in prior performance studies for new venture internationalization, the dynamic capabilities perspective is revisited to consider whether the relationship is more complex than previously assumed. While internationalization requires the reconfiguration of routines and resources, survivability is argued to peak at moderate levels of internationalization where the associated resources and risk is balanced between local and foreign markets. In contrast, sales growth is suggested to peak at either low or high levels of internationalization where a singular market focus and set of capabilities is being exploited. The results confirm that the level of new venture internationalization exhibits an inverted U-shaped relationship with survival, while the opposite U-shaped relationship exists with sales growth.

Keywords: New venture internationalization, Performance, Growth, Survival

Introduction

Research on international entrepreneurship emerged in the late 1980s with the majority of research initially focusing on the underlying motivation for a new venture to internationalize. In part, the young age of a new venture has been argued to serve as an impetus to internationalize (Knight and Cavusgil 1996; Oviatt and McDougall 1995). This is largely due to being able to leverage a new venture's "learning advantage of newness," which implies that younger firms are able to better learn and adapt to changes in the environment than more mature firms (Autio et al. 2000). The presence of a unique product also serves as a motivation for internationalization, as a new venture might want to exploit its innovation before foreign competitors replicate it (Oviatt and McDougall 1995) or take advantage of higher global demand (Dimitratos et al. 2003; Oviatt and McDougall 1995). New ventures have additionally been argued to consider internationalization as a result of opportunities that arise through past international experience (Reuber and Fischer 1997; Bloodgood et al. 1996; Carpenter et al. 2003) or networking relationships (Coviello and Munro 1995; Coviello and Munro 1997; Holmlund and Kock 1998; Oviatt and McDougall 1995; Han 2006). Yet, given the additional costs and risk associated with internationalizing, commonly attributed to the liability of foreignness (Zaheer 1995), it is important to understand whether or not it truly makes sense for new ventures to pursue foreign markets early on (Zahra and George 2002). While studies examining the relationship between internationalization and new venture performance have begun to emerge, the results tend to be in conflict as to whether internationalization results in an assumed positive relationship (Bloodgood et al. 1996; Khavul et al. 2010), has a negative effect (Lu and Beamish 2001), or has no impact at all (Fernhaber and Li 2010; McDougall and Oviatt 1996).

Rooted in the resource-based view, dynamic capabilities theory suggest that it is the routines and processes that enable a firm to reconfigure its resources in response to change that offer a sense of competitiveness (Teece and Pisano 1994; Eisenhardt and Martin 2000), and thus, variance in firm performance (Roberts and Grover 2012; Chien and Tsai 2012; Drnevich and Kriauciunas 2011). As dynamic capabilities are presumed to develop alongside internationalization (Jantunen et al. 2005), such a perspective could be helpful in furthering our understanding of the implications of internationalization on new venture performance. Indeed, a seminal paper by Sapienza et al. (2006) argues that the pursuit of international markets early on by new ventures coincides with the development of key dynamic capabilities and, thus, will have a significant imprinting effect on their ability to both grow and survive. The importance of dynamic capabilities to internationalizing new ventures is confirmed in other studies with an emphasis on being able to adapt to change (McDougall and Oviatt 1996), leverage learning (Weerawardena et al. 2007), and develop specific classes of dynamic capabilities (Prange and Verdier 2011). While insightful, in order to truly reconcile the disarray of findings of new venture internationalization on performance, I suggest that the dynamic capabilities perspective needs to be revisited while keeping in mind that the relationship between new venture internationalization and performance may be more complex than previously thought. Foremost, the recognition must be made that the ability to develop and leverage dynamic capabilities for internationalization may differ based on whether a new venture is just dabbling in foreign markets, balancing a dual market strategy or more fully committing to foreign markets. A more fine-tuned examination of level of internationalization is further justified

by Stray et al. (2001). In their study, two groups of young ventures growing at similar rates were classified as either having a high or low degree of international sales and found to exhibit differing impacts on performance. I similarly suggest that the level of internationalization will differently impact performance, largely due to the varying ability to develop and leverage dynamic capabilities.

Secondly, there is a need to weave insights from the international business literature into the conversation. Although the international entrepreneurship has not yet examined nonlinearity in great depth, the possibility of a more complex relationship between internationalization and performance has been long addressed within the context of multinational enterprises (MNEs). The discussion today in the international business literature revolves around whether the relationship is U-shaped (Lu and Beamish 2001; Ruigrok and Wagner 2003), inverted U-shaped (Gomes and Ramaswamy 1999; Hitt et al. 1997), or even S-shaped (Contractor et al. 2003; Lu and Beamish 2004). Yet, recognizing that new ventures and multinationals differ in several, key ways, caution must be made when applying these findings. As opposed to an almost exclusive focus on profitability by MNEs, the key performance measures for new ventures are typically growth and survival (Sapienza et al. 2006). In addition, new ventures lack an operating history to rely on and experience additional challenges relating to legitimacy and the lack of established routines and capabilities (Stinchcombe 1965). Accordingly, in this study, the dynamic capability perspective is revisited to address the following research question: *Is the relationship between new venture internationalization and performance in terms of survival and sales growth nonlinear in nature?*

The findings have important implications for both academics and practitioners. First, an empirical context is offered to test the propositions set forth by Sapienza et al. (2006), which suggest that international entry will positively affect new venture sales growth but negatively affect survival. I expand their dynamic capabilities approach by theorizing and empirically examining the implications on the extent, or level, of internationalization that is attained by the new venture. In doing so, I offer much-needed clarity into the relationship between new venture internationalization and performance. Second, I exemplify the insight that can be gleaned by bringing the entrepreneurship and international business literatures together rather than studying the areas in isolation. While international entrepreneurship serves as the intersection of entrepreneurship and international business, it is rather surprising that the curvilinear relationship between internationalization and performance for multinational firms that entered the discussion in the 1980s has not yet been critiqued in the context of international new ventures. Third, in terms of practitioners, I contribute by acknowledging both the benefits and the downside of new venture internationalization, depending upon the extent of internationalization attained.

Theory and hypotheses

Background

The field of international entrepreneurship lies at the intersection of entrepreneurship and international business and, in the case of new ventures, strives to understand why and how a business organization, “from inception, seeks to derive significant competitive advantage from the use of resources and sale of outputs in multiple countries” (Oviatt and McDougall 1994, p. 49).

Many scholars attribute the emergence of new ventures in the international arena to changes in the global business environment (Knight and Cavusgil 1996). For example, due to the rise in international competitiveness and globalization of markets (Porter 1990), there is an increasing role of niche markets. As a result, many new ventures are finding it necessary to focus on specialized or customized products, of which many occupy a global market niche (Madsen and Servais 1997). In addition, the recent advances in process technology are driving the demand for a greater diversity of products on a much smaller scale, allowing new ventures to better compete with multinationals (Dunning 1995). Advances in communication and transportation technology have also enabled information to be more accessible worldwide, reducing the high cost barriers to internationalize (Madsen and Servais 1997). Furthermore, the boundaries of firms, countries, and markets are becoming more blurred, resulting in a greater reliance by internationalizing firms on their networks (Dunning 1995). More often than not, a network is typically dominated by a lead “flagship” firm and consists of many smaller firms in supporting roles (Rugman and D’Cruz 1996). It is through these relationships that a new venture may be prompted to internationalize.

In view of these trends and changes in the global business environment, there are several related firm-specific motivations for new ventures to consider in pursuing internationalization. The young age of a new venture has been argued to serve as a motivation to internationalize (Knight and Cavusgil 1996; Oviatt and McDougall 1995). This is largely due to a new venture’s “learning advantage of newness,” which suggests that younger firms are able to better learn and adapt to changes in the environment than more mature firms (Autio et al. 2000). It is therefore easier for a new venture to adopt a global vision from inception than after routines become set and the firm matures (Oviatt and McDougall 1995). The presence of a unique product also serves as a motivation for internationalization, as a new venture might want to exploit its innovation before foreign competitors replicate it (Oviatt and McDougall 1995) or take advantage of a higher global demand (Dimitratos et al. 2003; Oviatt and McDougall 1995). Qian and Li (2003) suggest that innovative new ventures are likely to internationalize in order to leverage their research and development costs across a greater volume of products and generate extra profits to sustain large-scale R&D operations. New ventures have additionally been argued to consider internationalization as a result of opportunities that arise through past international experience (Bloodgood et al. 1996; Carpenter et al. 2003; Reuber and Fischer 1997) or networking relationships (Coviello and Munro 1995; Coviello and Munro 1997; Holmlund and Kock 1998; Oviatt and McDougall 1995). New ventures may also view internationalization as a necessity due to their existence within a highly competitive environment (Kotha et al. 2001) or a globally integrated industry (McDougall et al. 2003).

In recent years, attention has begun to shift towards better understanding the implications for new venture internationalization on performance. While the literature base is still relatively small, the few studies that do exist offer some interesting observations. Foremost, there are inconsistencies among the findings. For example, multiple studies have concluded a positive relationship between internationalization and performance (Bloodgood et al. 1996; Khavul et al. 2010). Yet, others have found either a negative effect (Lu and Beamish 2001) or no impact at all (Fernhaber and Li 2010; McDougall and Oviatt 1996). One potential cause of the inconsistent findings may be the diverse array of variable operationalizations. While international intensity is by far the most common

operationalization used, other operationalizations have included international entry, international scope, and the presence of foreign direct investment. Yet, even when a specific set of variables is examined, such as the implications of international intensity (i.e., foreign sales as a percentage of total sales) on profitability, there appear to be conflicting results as demonstrated by Lu and Beamish (2006), where a negative result was found, and McDougall and Oviatt (1996), who were unable to confirm any relationship.

Second, it appears that internationalization may have differing results depending upon the measure of performance. This is exemplified in several studies. A 1996 study by Bloodgood, Sapienza, and Almeida found a positive linkage between early internationalization and income, but did not find a linkage for sales growth. Lu and Beamish (2001) examined two measures of internationalization—exporting and foreign direct investment (FDI)—and found different impacts on performance. Exporting had a negative and linear relationship with performance, whereas FDI had a nonlinear relationship with performance whereby low levels of FDI were associated with reduced performance but greater levels of FDI were associated with higher performance. Zhou et al. (2012) confirmed a positive relationship between earlier entry into foreign markets and the growth of international sales. McDougall and Oviatt (1996) found support for a linkage between early internationalization and relative market share, but not profitability. Taken as a whole, these findings confirm the need to examine the implications of new venture internationalization independently for each measure of performance. This is consistent with Sapienza et al. (2006), who similarly argued that strategic actions such as internationalization can have differing effects on key performance indicators such as survival versus growth. The example is given that “firms may increase international growth through aggressive pricing strategies, but such actions may lead to organizational decline” (Sapienza et al. 2006, p. 916).

Third, among the performance variables, it is apparent that least is known about survival. In a recent study by Mudambi and Zahra (2007, p. 333), the authors concluded, “...currently, we do not know much about the survival rates of INVs where the liabilities of newness and foreignness could significantly undermine their viability and increase the odds of their failure.” Compared to profitability and growth, very few studies have examined the implications of new venture internationalization on survival. A few of the notable exceptions include the study by Lee et al. (2012) of Korean small- and medium-sized firms and the study by Giovannetti et al. (2011) of Italian firms, which ironically concluded positive and negative results, respectively. Another study by Coeurderoy et al. (2012) found a positive, linear relationship between new venture internationalization and survival. The limited studies examining survival is likely due to the difficulties in measurement associated with survival. While profitability is argued to be related to survival, additional analysis is warranted.

Dynamic capabilities perspective on internationalization

A promising source of insight pertaining to the new venture internationalization and performance relationship lies in the dynamic capabilities perspective. An out birth of the resource based view, dynamic capabilities are defined as the “organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die” (Eisenhardt and Martin 2000). Such capabilities, which integrate, reconfigure, gain, and release resources,

provide a differentiating factor in a firm's levels of competitiveness (Teece and Pisano 1994) and thus, performance (Roberts and Grover 2012; Chien and Tsai 2012; Drnevich and Kriauciunas 2011). Given the dynamic nature of opportunities abroad, the reconfiguration of routines has been determined to be a vital component of internationalization (Jantunen et al. 2005). Indeed, within the traditional international business literature, dynamic capabilities have been viewed as fundamental for international expansion (Luo 2000; Tzeng 2008), a catalyst for technology diffusion among countries (Madhok 2000) and argued to have a global dimension relating to the ability to combine resources and coordinate activities pertaining to global relationships (Griffith and Harvey 2001). While dynamic capabilities have been largely explored within technology based industries, such capabilities have also been outlined as critical in the internationalization of other industries such as retailers (Cao 2011). Most notably, the international business literature asserts that dynamic capabilities are developed alongside internationalization and key to performance. As summarized by Augier and Teece (2007, p. 185), "the MNE's ability to respond to—and shape—the changing kaleidoscope of opportunities at home and abroad is critical to success."

Within the international context, new ventures represent an interesting case for examining dynamic capabilities as they have a lack of previous operating experience to reconfigure capabilities from, and similarly, lack the resources to fall back upon that larger organizations commonly have. Yet, it is largely due to the rapidly changing and ambiguous nature of such entrepreneurial activity that dictates the necessity of dynamic capabilities. A seminal paper by Sapienza et al. (2006) argues that the commitment to international markets early on by new ventures coincides with the development of key dynamic capabilities and will have a significant *imprinting* effect on their ability to both grow and survive. Internationalization is argued to be resource intensive and, thus, posited that entry reduces the likelihood of survival in the short term. At the same time, the dynamic capabilities that subsequently develop from the expenditure of resources associated with international entry enhance venture growth. Prange and Verdier (2011) build on the dynamic capability perspective to propose two classes of explorative and exploitative capabilities pertaining to internationalization that can lead to differing effects on growth and survival. Weerawardena et al. (2007) further reinforce the role of dynamic capabilities on new venture internationalization, although with a greater emphasis on the role of learning. This is consistent with earlier studies that emphasize the need for internationalizing new ventures to adapt to the changing environment (McDougall and Oviatt 1996).

While existing studies offer keen insight into the role of dynamic capabilities for internationalizing ventures, I suggest that the dynamic capabilities perspective needs to be revisited to consider the potential complexity that is inferred by the divergent array of findings pertaining to the new venture internationalization and performance relationship. Building on the conceptual study by Sapienza et al. (2006) that recognizes the imprinting effects of internationalization, it is possible that the resulting impact on growth and survival may differ depending upon the size and commitment of internationalization early on in a venture's life. A more fine-tuned examination of level of internationalization is further justified by Stray et al. (2001). In their study of technology firms in the UK, two groups of young ventures growing at similar rates were classified as either having a high or low degree of international sales and found to exhibit differing impacts on performance. I agree that all internationalization is not the same and suggest that the same insight

can be applied to the need to examine the dynamic capabilities built at differing levels of internationalization and their subsequent impact on performance. In particular, there is a need to consider whether new ventures that pursue a nearly exclusive or majority domestic focus are afforded any advantage. Thus, in addition to offering an empirical test of the propositions put forth by Sapienza et al. (2006), I shift the focus from international entry to the extent, or intensity, of internationalization. International intensity was by far the most common way to assess internationalization in prior studies and is thus argued to also aid in being able to understand why the current inconsistencies exist.

Although the international entrepreneurship has not yet examined nonlinearity in great depth, I also propose the need to integrate key insights from the international business literature where scholars have long shifted their attention to the potential existence of such complexity. Early on, it was largely assumed that the relationship between internationalization and MNE performance would be positive due to the many benefits identified, such as increased market power (Hymer 1976), access to cheaper resources (Rugman 1981), or greater learning opportunities (Vernon 1971). However, in response to varied and inconclusive results (e.g., Bühner 1987; Siddharthan and Lall 1982; Buckley et al. 1984), a second wave of studies emerged that considered a nonlinear relationship. Interestingly, there were alternative perspectives as to whether the relationship between internationalization and performance was U-shaped or inverted U-shaped. Proponents of the U-shaped relationship argued that internationalization benefits were attained only after a threshold degree of internationalization was reached due to insufficient scale economics and the liability of foreignness at lower levels of internationalization (Lu and Beamish 2001; Ruigrok and Wagner 2003). On the flip side, the premise of the inverted U-shaped relationship between internationalization and performance is that internationalization increases performance up to an optimal point, but beyond that point, there are increasing costs related to the greater complexity of internationalization, which causes performance to decline with higher levels of internationalization (Gomes and Ramaswamy 1999; Hitt et al. 1997). In more recent years, the conversation has even moved to the possibility of a three-stage relationship between internationalization and firm performance that combines the rationale of the U-shaped and inverted U-shaped arguments (Contractor et al. 2003; Lu and Beamish 2004).

Still, recognizing that new ventures and multinationals do differ in several, key ways, caution must be made when applying the findings. Most notably, MNEs do not face the liabilities of newness (Stinchcombe 1965) that new ventures simultaneously confront as they enter the international arena. While a misstep by an MNE in the international arena might well result in a performance penalty, a serious misstep for an international new venture might well lead to the demise of the venture due to the lack of slack resources. The performance variable, survival, is not commonly tested in the MNE studies with the exception of examining the survival of entry into a new market (e.g., Yigang and Chi 1999), but it is of critical importance to internationalizing new ventures. Second, and somewhat related, is the criticality of growth as a performance variable for new venture internationalization. As noted by Gilbert et al. (2006, p. 927), “whereas the growth of established firms is about sustaining viability, new venture growth is about obtaining viability.” Yet, performance measures in MNE studies tend to focus on profitability, which is found to differ from growth in its relationship with internationalization (Lu and Beamish 2006). Third, while

international new ventures do face the liabilities of newness, they benefit from what Autio et al. (2000) have termed the learning advantages of newness, whereby younger firms enjoy learning advantages in new environments that can spur their growth. Thus, the development of capabilities is intertwined in the internationalization process of new ventures (Sapienza et al. 2006; Jantunen et al. 2005).

In the section that follows, I therefore expand upon the dynamic capabilities arguments while considering the possibility for a curvilinear relationship between the extent of internationalization and new venture performance. I follow Sapienza et al. (2006) and consider what are argued to be two key aspects of new venture performance that are differentially impacted by internationalization: survival and sales growth. Given that profitability is suggested to contribute to and thus be closely related to survival, I do not offer a separate set of hypotheses but include the measure in the analysis as a robustness test.

New venture internationalization and survival

New ventures lack the legitimacy of existing firms (Stinchcombe 1965) and coupled with a limited resource base and operating history (Aldrich and Auster 1986), survival is a very real threat. The question then becomes: does new venture internationalization increase or decrease its likelihood of survival? Sapienza et al. (2006) argue that internationalization causes a shock to the firm, requiring it to reconfigure routines and to expend resources to adapt to the new competitive pressures, industry practices, and customer demands. Adapting and generating new routines is resource intensive and requires the venture to make substantial investments (Zott 2003). Turning to the international business literature, it is similarly argued that internationalization can detract from profitability, which contributes in part to survival. This is attributed to factors such as impeding coordination costs (Hitt et al. 1997) as well as having to face constraints related to the liability of foreignness (Zaheer 1995). That being said, international business scholars also point out multiple performance benefits to internationalization for MNEs, many of which may pertain to new venture survivability. For example, internationalization is suggested to increase economies of scale (Tallman and Li 1996), provide resources for innovation (Kobrin 1991), and open up additional opportunities to bring in revenue.

The implication for internationalizing new ventures is that survivability is influenced both by the resource intensiveness of capability development and the degree to which benefits are attained. To a certain extent, the net result to the venture can be determined by the level to which international sales are achieved. As noted by Bitar and Hafsi (2007), capabilities emerge over time and are dependent upon learning processes and routines.

As a venture begins to dabble in and increases its reliance on international sales, dynamic capabilities pertaining to internationalization will begin to emerge and become more developed as the venture moves closer to the threshold where capability development impacts the attainment of more international sales, and likewise, when sales efforts abroad translate into learning and routine development. Because the internationalization of new ventures is often limited to exporting in the early stages of internationalization, a venture that is only dabbling in internationalization likely does not experience a significant shock at lower levels of internationalization and can compete

with expending lesser resources. Furthermore, as new ventures begin to rely more on the foreign marketplace, they are reducing their risk pertaining to a reliance on a sole marketplace while more fully exploiting their product potential—adding to their likelihood of survival. Thus, the level of internationalization is proposed to initially exert a positive relationship with new venture survival as the relevant dynamic capabilities become more developed and marketplace risk becomes spread out.

However, at some point, even though the dynamic capabilities threshold may be met and such efforts are translating into higher levels of international sales growth, too heavy of a reliance on foreign markets for revenues may incur a greater cost to the venture than benefit. Given the limited resources of new ventures, the higher costs can be associated with a reconfiguration of routines and needed infrastructure investments or, as put by Sapienza et al. (2006), the shock from internationalization. Indeed, LiPuma (2012) finds that technology-based ventures with very high levels of internationalization tend to pursue an initial public offering (IPO) at a later age and also receive a lesser valuation at the time of IPO. The difficulty in attaining needed resources by highly international ventures could be attributed to a greater element of risk perceived by investors. Furthermore, high levels of internationalization and the building of associated capabilities depicts an intense focus on exploration into foreign markets. Similar to exploration and learning within the innovation context (Cheng and Van de Ven 1996), such activities are focused on growth (Prange and Verdier 2011), rather than the bottom line and require substantial resources to maintain. As inferred by the international business literature, coordination costs can also become an issue at high levels of internationalization (Hitt et al. 1997). For a new venture, with limited resources and set processes in place, this issue can be magnified when the majority of sales are coming in from outside of its domestic headquarters. Thus, while a positive relationship will likely emerge between internationalization and survival, the relationship will eventually level out and turn negative as the new venture reaches higher levels of reliance on international sales. In line with Sapienza et al. (2006), the relationship between new venture internationalization and survival is predicted to be negative, although only after a certain threshold of international sales is achieved. I therefore hypothesize:

H1:

The relationship between the degree of internationalization and the likelihood of new venture survival will be nonlinear, with survival increasing up to an optimal level beyond which higher levels of internationalization lead to survival decline.

New venture internationalization and sales growth

In addition to survival, sales growth serves as a performance variable considered to be especially critical to new ventures (Brush and Vanderwerf 1992; Zahra et al. 2000). International markets represent opportunities for ventures to grow and expand their customer base. From a dynamic capabilities perspective, Sapienza et al. (2006) argue that, as ventures internationalize, they are exposed to uncertainties and risks that force the venture to make structural changes in the organization in order to adapt to its new environment. The new routines and capabilities developed as the organization makes structural changes are later leveraged, and additional markets can be

entered. Such an approach is consistent with McDougall and Oviatt (1996) who found international ventures that frequently changed strategies, indicating leveraging dynamic capabilities in an attempt to adapt to uncertainty in the environment, were able to achieve higher levels of growth. Similar to MNEs who experience strategic change capabilities at the subsidiary level (Birkinshaw and Hood 1998), learning takes place within new ventures as they enter foreign markets at an accelerated pace to be able to completely reconfigure existing routines as dictated by the ambiguous and ever changing environment (Weerawardena et al. 2007; Prange and Verdier 2011). In contrast to survival, new venture internationalization has thus been proposed by Sapienza et al. (2006) to have a positive effect on sales growth.

Yet, while foreign markets represent an opportunity for growth, ventures could alternatively seek growth through more fully exploiting the customer base within domestic market—especially if the domestic market is quite large—or through product development. Pursuing such a strategy would similarly require the development and leverage of dynamic capabilities (Corner and Wu 2012). Consider the example of TiVo, a service provider of digital video recordings that was founded in 1997 with the purpose of bundling its service with existing hardware providers. Within 2 years, the company underwent an IPO and grew from a loss (due to rebates) in 1999 to over \$96 million in sales by 2003 (Tivo Annual Report 2004). TiVo had to initially develop a set of routines and rapidly readjust these routines within the domestic marketplace to focus on multiple partnerships, further developing service attributes, creating alternative sources of revenue, and eventually to developing its own hardware. It was only in more recent years that TiVo expanded geographically into multiple foreign countries, which likely entails the additional reliance on a set of dynamic capabilities pertaining to internationalization that is recognized by Sapienza et al. (2006).

While the above arguments imply that ventures either pursuing a domestic or international strategy could leverage dynamic capabilities to achieve high levels of growth, I further suggest that ventures attempting to do both are not able to achieve as much success in terms of growth. This is largely due to the inability to fully develop and leverage such capabilities. Porter (1980) used the term stuck-in-the-middle to refer to firms that are attempting to pursue both differentiation and cost leadership strategies and, in doing so, get stuck in the middle where they are not doing either strategy effectively. I suggest that the same principle can be applied to a new venture that is pursuing a mixture of foreign and domestic markets. Ventures focusing nearly exclusively on domestic markets are able to leverage the appropriate capabilities that will help it grow and more fully exploit its domestic customer base. Yet, when a venture chooses to dabble in foreign markets, time and resources are being spent towards the development of foreign dynamic capabilities. However, these foreign dynamic capabilities are not yet being fully relied upon or translating to the attainment of a significant level of foreign customers. In a sense, the learning associated with internationalization (Weerawardena et al. 2007; Prange and Verdier 2011) is not being fully tapped and the ventures have less ability to fully develop or leverage such capabilities. At the same time, resources and efforts are being drawn away from the development of domestic capabilities, which is unfortunate as they are being more heavily relied upon given the venture's primary domestic focus.

I therefore hypothesize that the relationship between internationalization and venture sales growth will initially decrease, given that the efforts put forth to develop dynamic capabilities for the international marketplace are not fully being utilized. However, at some point, the resources being devoted to the dynamic capabilities will meet and begin to exceed the level of international sales achieved, resulting in the positive relationship originally noted by Sapienza et al. (2006) between internationalization and sales growth.

H2:

The relationship between the degree of internationalization and the new venture sales growth will be nonlinear, with sales growth decreasing down to a certain level beyond which higher levels of internationalization lead to sales growth increase.

Methodology

Sample

The hypotheses were tested on a sample of high-technology new ventures headquartered in the USA that issued an IPO between 1995 and 2005. Consistent with other new venture studies (i.e., Coviello and Jones 2004; Robinson 1999), firms were only included in the sample if they were 6 years old or less as of the year of IPO. The founding date for the ventures was determined through SDC Platinum and cross-validated through the firm's prospectus. To be included in the sample, the ventures had to be part of the high-technology classification in SDC Platinum (Ranft and Lord 2000) and, specifically, within the computer equipment, biotechnology, and communications sectors. Using IPO data enabled us to have access to a wide variety of financial and internationalization data. Following other studies using IPO venture data (Carpenter et al. 2003; Florin et al. 2003), all firms that were corporately held or the result of a corporate spin-off were eliminated from the sample.

The sample included a total of 253 ventures. The entire sample was used to test the survival hypothesis, while a subset of 202 ventures that were still active as of the third year following IPO was drawn on to test the sales growth hypothesis. The reduced subsample reflects the omission of 38 firms that were deemed to have failed as well as 15 firms that reported zero sales in one of the years in which sales growth was tracked. It is recognized that there is a potential survival bias within my analysis; however, an examination of the age and size characteristics indicated no significant difference. Publicly available datasets, including CRSP, Compustat, VentureXpert, SDC Platinum, and the firms' prospectuses, were relied upon to gather the data.

Variable operationalizations

Dependent variables

Consistent with prior research, *survival* was determined by whether or not the stock was delisted due to negative reasons within 3 years following the IPO year (e.g., Adjei et al. 2008; Fischer and Pollock 2004). Examples of negative reasons include liquidation (codes 400–490) or dropped for other reasons such as being delinquent (codes 520–590). Those ventures whose stocks were

delisted due to a merger were not included in the analysis. A dichotomous variable was therefore created, indicated by “1” if the venture had survived at the end of year 3; and “0” otherwise.

Sales growth was calculated based on the year-on-year percentage change in sales for each of the 3 years post-IPO and then averaged (e.g., Robinson and McDougall 1998). The use of a 3-year time period offers a measure, which is more long term in nature and takes into account fluctuations among the data. Sales data were sourced through Compustat.

Independent variable

Internationalization was operationalized as the percentage of foreign sales at IPO, otherwise known as international intensity (e.g., Bloodgood et al. 1996; Preece et al. 1999). Although there are multiple ways to assess internationalization, the propensity of a venture to internationalize its sales is the most common approach (Keupp and Gassmann 2009) and therefore deemed most relevant to helping reconcile prior studies. These data were sourced through the segments file of Compustat. The measure was then squared in order to assess the curvilinear relationships.

Control variables

Several control variables were utilized, and all were measured as of the new ventures' IPO year. It is feasible that several firm-level characteristics play a role in influencing a venture's international intensity. Foremost, firm age and size may influence international intensity given the additional operating resources to leverage (Burgel and Murray 2000; Kotha et al. 2001; Reuber and Fischer 2002; Zahra et al. 2000). To calculate the *age* at IPO, the founding year of the new venture was identified through SDC Platinum and cross-referenced within the firm prospectus. The founding year was then subtracted from the IPO year to arrive at the age at IPO. The total number of *employees* of the venture was sourced through Compustat and used to assess firm size. As the development of unique products has been advanced as a key motivation to internationalize (Autio et al. 2000; Knight and Cavusgil 2004; Oviatt and McDougall 1994) and encourage growth, *R&D intensity* was controlled for by calculating the expenses allocated to R&D divided by sales. A dummy variable was also used to consider whether or not the venture had utilized *venture capital financing*, as such a relationship could give the venture the resources needed to enter foreign markets. The presence of venture capital financing was determined through VentureXpert. As the sample was drawn from three high-technology *industries*, including computer equipment, biotechnology, and communications, dummy variables were created to control for any influences specific to each industry. A dummy variable was included to control for whether or not the venture undertook an IPO during the *dot-com* bubble years of 1999–2000 (Bruton et al. 2010). Lastly, a control variable was included for the *international asset intensity* of the new venture, which is operationalized as the percentage of foreign assets to total assets in the year of IPO. By doing so, consideration is made for effects related to investments directly in foreign markets.

Analysis

Internationalization is a strategy that not all ventures in the sample have chosen. Accordingly, to consider the bias that may result, a Heckman selection procedure was undertaken. In the first stage of the Heckman-type model, a model is developed for the probability of internationalization. Based

on prior research, this included the original control variables of firm size, age, R&D intensity, VC backing, industry segment, whether or not the firm underwent an IPO in a bubble year and international asset intensity. In addition, consistent with prior studies (Bloodgood et al. 1996; Carpenter et al. 2003), the top management team international experience variable was included. The international experience was determined by examining the IPO prospectus for each of the ventures and creating a count of the number of top management team members with prior international work experience. This included whether the member had held a position overseeing the international component for a previous employer or had worked in a foreign company or the foreign subsidiary of a US-based company.

In the second stage of the model, a correction is made for the internationalization selection by incorporating these predicted individual probabilities into the estimation of the final model. The first hypothesis required an examination of internationalization on survival, a dichotomous variable. Therefore, a probit model with selection was determined to be appropriate. For the testing of the second hypothesis on sales growth, which is a continuous variable, a two-step Heckman selection model was used.

Results

Descriptive statistics

Correlations, means, and standard deviations are presented in Table 1. The average new venture in the sample was 3.71 years old (ranging from 0 to 6 years old) as of their IPO year and had \$44.50 million in revenue. Approximately 78 % of the ventures had received venture capital backing prior to the IPO. The average international sales for the full sample were 11 % of total sales. For the 94 ventures that were international as of the IPO year, the average international sales were 30.02 % of total sales. In the 3 years following IPO, 38 ventures were determined to have failed. The average annual sales growth was 105 %. In terms of the correlations, an interesting observation is that the new venture internationalization exhibited a correlation of 0.02 ($p > 0.05$) and -0.16 ($p < 0.05$) with survival and sales growth, respectively.

Table 1

Descriptive statistics and pairwise correlations ($n = 253$)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	3.71	1.41	1.00											
2. Size (employees)	0.35	0.66	-0.20	1.00										
3. TMT international experience	0.92	1.13	-0.03	-0.07	1.00									
4. VC backing	0.78	0.42	0.05	-0.06	-0.09	1.00								
5. R&D intensity	4.09	22.07	0.13	-0.07	-0.06	0.03	1.00							
6. Industry dummy	0.25	0.44	0.13	-0.10	-0.11	0.00	0.26	1.00						
7. Industry dummy	0.38	0.49	-0.14	0.09	0.08	0.09	-0.11	-0.46	1.00					
8. IPO bubble year	0.50	0.50	-0.02	-0.01	0.16	0.25	-0.08	-0.22	0.16	1.00				
9. International asset intensity	0.01	0.06	-0.02	0.05	-0.08	0.04	-0.04	-0.06	-0.04	-0.19	1.00			
10. New venture internationalization	0.11	0.21	0.17	-0.06	0.06	0.05	-0.07	0.05	-0.08	0.02	0.21	1.00		
11. New venture survival	0.85	0.36	0.02	0.01	-0.16	0.04	0.06	0.14	-0.19	-0.16	0.02	0.02	1.00	
12. New venture sales growth ^a	1.05	1.52	-0.15	-0.06	0.07	0.10	0.40	0.10	0.02	-0.07	-0.07	-0.16	0.08	1.00

Correlations greater than 0.13 are significant at the $p < 0.05$ level

^a $n = 209$ (subsample of survived firms)

Findings

The results can be found in Tables 2 and 3. In each case, the controls were entered in the first model, followed by the internationalization variable, and finally, in the third model, the squared internationalization variable that tests the curvilinear relationships.

Table 2

Probit regression with Heckman selection for new venture survival

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Control variables						
New venture age	0.02	(0.13)	0.06	(0.12)	-0.01	(0.13)
New venture size	0.04	(0.09)	0.05	(0.09)	0.06	(0.11)
VC backing	0.63	(0.39)	0.60	(0.41)	0.28	(0.36)
R&D intensity	-0.17**	(0.07)	-0.16**	(0.07)	-0.20***	(0.07)
Industry dummy	1.25***	(0.43)	1.37***	(0.45)	1.42**	(0.63)
Industry dummy	-0.37	(0.39)	-0.33	(0.38)	-0.22	(0.36)
IPO bubble year	-0.76**	(0.36)	-0.75**	(0.35)	-0.72*	(0.39)
International asset intensity	-3.03*	(1.82)	-2.83	(2.00)	-2.78	(2.24)
Independent variables						
Internationalization			-0.62	(0.75)	4.00**	(1.64)
Internationalization squared					-6.20***	(2.06)
Constant	1.811**	(0.83)	1.82**	(0.89)	2.23**	(0.90)
Rho	-0.58	(0.18)	-0.62	(0.20)	-1.00	(0.01)
Chi squared	22.49***		23.82***		24.54***	
Change in Chi squared			0.69		9.11***	

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (censored obs. = 159, uncensored obs = 94)

Table 3

Regression with Heckman selection for new venture sales growth

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Control variables						
New venture age	-0.06	(0.05)	-0.06	(0.06)	-0.05	(0.05)
New venture size	-0.02	(0.05)	-0.02	(0.05)	-0.02	(0.05)
VC backing	0.46**	(0.19)	0.46	(0.19)	0.58	(0.19)
R&D intensity	-0.05	(0.05)	-0.05	(0.05)	-0.05	(0.05)
Industry dummy	-0.24	(0.20)	-0.24	(0.22)	-0.22	(0.21)
Industry dummy	0.05	(0.17)	0.05	(0.17)	0.06	(0.16)
IPO bubble year	-0.41***	(0.15)	-0.41***	(0.15)	-0.40***	(0.14)
International asset intensity	-1.26	(0.97)	-1.26	(0.99)	-1.09	(0.96)
Independent variables						
Internationalization			0.00	(0.32)	-1.82**	(0.77)
Internationalization squared					2.61***	(1.01)
Constant	0.72*	(0.40)	0.72†	(0.40)	0.64†	(0.39)
Rho	0.11		0.11		0.17	
Sigma	0.61		0.61		0.59	
Lambda	0.07	(0.24)	0.07	(0.24)	0.10	(0.23)
Chi squared	19.72**		19.72**		27.87***	
Change in Chi squared			0.00		6.63***	

† $p < 0.1$; * $p < 0.05$; *** $p < 0.01$ (censored obs. = 121, uncensored obs. = 81)

The first hypothesis predicted that new venture internationalization would have a curvilinear relationship with the likelihood of survival, with a slope that is positive at lower levels of internationalization and negative at higher levels of internationalization. When only the linear relationship between internationalization and survival is tested in model 2 of Table 2, the internationalization variable is negative but not significant. Yet, when the squared internationalization variable enters the equation in model 3 of Table 2, the internationalization variable becomes positive and significant ($\beta = 4.00$, $p < 0.05$) while the squared internationalization variable is negative and significant ($\beta = -6.20$, $p < 0.01$). To better depict the nature of this relationship, I have graphed the results. As shown in Fig. 1, the slope is indeed positive at lower levels of internationalization and negative at higher levels. The inflection point, or the point at which the relationship first changes from positive to negative, is when the new venture has 44.51 % international sales. Thus, Hypothesis 1 receives support.

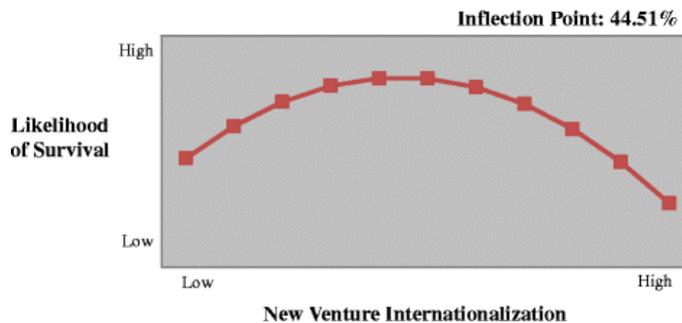


Fig. 1 Relationship between new venture internationalization and survival

The second hypothesis also posited a curvilinear relationship between new venture internationalization and sales growth, but in the opposite direction as with survival. In this case, a U-shaped relationship was predicted with a slope that is negative at lower levels of internationalization and positive at higher levels of internationalization. Model 2 in Table 3 indicates a negative but not significant linear relationship between internationalization and sales growth. This negative relationship remains in model 3 for the internationalization variable but moves to being significant ($\beta = -1.82, p < 0.05$). The squared internationalization variable is positive and significant ($\beta = 2.61, p < 0.01$). Figure 2 offers a graphical depiction of this relationship and demonstrates that the slope is initially negative at lower levels of internationalization and then becomes positive at higher levels. The inflection point is when a new venture reaches 47.12% international sales. Hypothesis 2 therefore also receives support.

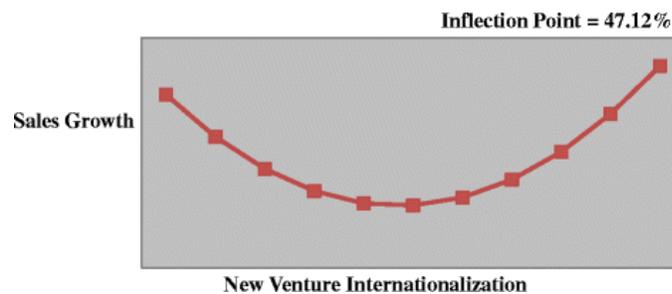


Fig. 2 Relationship between new venture internationalization and growth

Robustness tests

Given the frequency with which profitability has been used in prior studies (e.g., Fernhaber and Li 2010; Khavul et al. 2010; Lu and Beamish 2006), an additional analysis was conducted to determine the nature of the relationship between profitability and international intensity. Three different operationalizations of profitability were considered, including the return on assets (ROA), net income and the return on sales (ROS). The measures were calculated for each of the 3 years post-IPO and then averaged. The results from the two-step Heckman selection models suggested an inverted U-shaped relationship, although the relationship with ROS and net income were only approaching significance ($p < 0.15$) and ROA was marginally significant ($p < 0.10$). Interestingly, a linear relationship in each of the cases was not found to be significant. The nature of the inverted U-shaped relationship was in line with the findings between international intensity and survival.

Within the international business literature, the nonlinearity of the internationalization and performance relationship has also been suggested by some scholars to exhibit a three-stage relationship otherwise depicted as an S-shape (e.g., Lu and Beamish 2004; Contractor et al. 2003). To ensure that the internationalization–performance relationship for new ventures in the sample was being correctly observed, a cubic term for international intensity was calculated and added to each of the regressions. While the cubic term was not significant in the regressions for sales growth, ROS, or net income, an S-shaped cubic relationship was found to be approaching significance in the relationship between new venture internationalization and survival ($p < 0.15$) and marginally significant with ROA ($p < 0.10$). While the relationship between internationalization and survival/ROA initially increases and then decreases, ventures that exhibit very high levels of internationalization experience an increase once again in the likelihood of survival and ROA.

In their 2006 paper, Sapienza and colleagues emphasize the imprinting effect of the internationalization activity of new ventures. Given that the effect of a strategy undertaken by a new venture, such as their propensity to internationalize, may take varying time to take effect, it seems logical to observe a lag between the international activity observed and the subsequent performance outcome. As a robustness test, I tested a 1-year lag in addition to the 3-year lag used in the analysis. Interestingly, while the 3-year time frame is significant, the 1-year lag is not. This suggests that the commitment to internationalization early on in a new ventures life does impact its subsequent growth and survival, but that the impact is not necessarily seen immediately, but takes time to occur.

Discussion

This study reveals several important findings. First and most important, the results provide strong support for the existence of a curvilinear relationship between internationalization and performance for survival and sales growth. While the conceptual arguments of Sapienza et al. (2006) suggested that internationalization would have a negative impact on survival and a positive impact on sales growth, these relationships held only for ventures that had higher levels of internationalization. The opposite relationship is found for new ventures just dabbling in foreign markets and that exhibit lower levels of internationalization. Survival exhibited an inverted U-shaped relationship with internationalization, while sales growth had a U-shaped relationship with internationalization.

The strong support provided for a curvilinear relationship between internationalization and performance helps new venture scholars begin to untangle the inconsistencies in research findings on the relationship between internationalization and performance. Many of the past studies have tested only linear relationships. Interestingly, had this study only tested a linear relationship, a significant relationship between internationalization and survival or growth would not have been found. It is acknowledged that new ventures are distinctly different from MNEs in that new ventures face liabilities of newness, are typically much smaller in size, and lack the slack resources of many MNEs. Nonetheless, it is important that new venture scholars look not only to the entrepreneurship literature but also integrate research from the international business literature.

The curvilinear relationship provides further evidence that there are both advantages and disadvantages to internationalization and that advantages and disadvantages apply to new ventures as well as to MNEs. At lower levels of internationalization, new ventures increased their likelihood of survival (and profitability) but were unable to reap higher levels of sales growth. As ventures reached high levels of internationalization, they experienced greater sales growth but also faced a greater risk of mortality. The inflection points for survival and sales growth were 44.51 and 47.12 %, respectively. Thus, internationalization had a positive impact on the venture's ability to survive up to the point of approximately 45 % of the venture's sales coming from international markets and a negative impact on sales growth up until the point whereby the venture's international sales intensity exceeded approximately 47 %. The closeness of the inflection points for these two very different measures of performance is interesting, especially given the opposite direction of the relationships. It is reasonable to suppose that as the ventures in this sample surpassed about 50 % of internationalization sales, ventures were able to grow more rapidly because their investment and penetration in international markets positioned them to take greater

advantage of sales opportunities; however, the level of investment and coordination needed to support this level of internationalization also placed their survival and profitability in jeopardy. An underlying assumption of the model put forth by Sapienza et al. (2006) is that survival and growth do not necessarily covary. This study supports this assertion.

Limitations and future research

While this study helps to untangle the relationship between internationalization and performance, there are several words of caution associated with the findings and, accordingly, opportunities for future research. A major limitation pertains to the sample used to test the hypotheses, which was composed of IPO high-technology ventures, most of which had received venture capital backing. As only a small percentage of ventures ultimately pursue an IPO, the sample may not be reflective of all new ventures. Future testing among privately held and non-technology firms would be especially insightful. It would also be useful to examine whether the hypotheses hold in more complex situations, such as when internationalization requires more investments in foreign markets or there is a heavier reliance on information and communication technologies. As the sample was based on ventures within the USA, where the domestic market is fairly large, it would be interesting to examine the performance implications for ventures in emerging markets or smaller countries.

In this study, performance was examined over a 3-year period. While there does not seem to be any consensus among scholars on the optimum timeframe for measuring performance, 3 years may not be the most appropriate length of time. A longitudinal analysis would also be welcomed, in which new ventures are followed from inception. Furthermore, although the measure of internationalization that I chose is the most commonly used measure, there are other important measures of internationalization (e.g., ratio of foreign assets to total assets, number of countries in which the venture has sales), which may have different impacts on performance and should be examined.

Another avenue for future research would be to further examine the implications of geographic diversification on the relationship between the level of internationalization and new venture performance. In a recent study of Polish exporters, Cieřlik et al. (2012) concluded that two viable strategies included concentrating on a single market or a more balanced approach where a small number of key markets are targeted in conjunction with penetrating other markets. Yet, a more fine-grained analysis of the performance implications and possibility of curvilinear relationships would be welcome. In other research, Rugman and Oh (2010) highlight the tendency for internationalizing firms to focus on regional markets. It would be interesting to examine whether new ventures differ in their level of regional internationalization and whether the performance implications for new ventures would be the same as multinationals.

As described by Staw (1981), the escalation of commitment literature suggests that firms tend to continue investing in a strategy or project that has considerable prior investment despite evidence that the costs to do so outweigh the benefits. This explains why, perhaps, some new ventures pursue an extremely high level of international sales even though it is not as profitable to do so. Yet, as extremely high levels of international commitment also translates to higher sales growth, an alternative interpretation is that venture managers give more credence to sales growth than to

profitability in their decision making. Future research on this topic is warranted, as well as towards understanding how ventures balance the tradeoffs between grow and survival.

Conclusions

In summary, this study helps untangle the inconsistencies previously found in the relationship between new venture internationalization and performance. By revisiting the tenets of dynamic capabilities for new venture internationalization (Sapienza et al. 2006) while simultaneously intertwining the international business literature, new inferences are able to be drawn regarding the curvilinear relationship between the level of internationalization being pursued by a venture and performance. Specifically, new venture internationalization is found to exhibit an inverted U-shaped relationship with the likelihood of survival. In contrast, internationalization exhibits the opposite U-shaped relationship with sales growth.

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