The Impact of Virtual Embeddedness on New Venture Survival: Overcoming the Liabilities of Newness

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In this article, we examine the impact of virtual embeddedness—the establishment of inter-organizational connections through the use of electronic technologies—on the likelihood of new venture survival. We explore the effects of recent technological and social changes on traditional conceptions of the liabilities of newness. We argue that virtual embeddedness positively affects new venture survival by decreasing the liabilities of newness associated with a new venture’s need to create and manage new roles and systems, lack of extant trust relationships, lack of social capital, and lack of economic capital. This argument has important implications for both the study and management of contemporary new ventures.

The concept of liabilities of newness (Stinchcombe, 1965) has been a key element in scholars’ understanding of the emergence and growth of new ventures for the past 40 years. Liabilities of newness are recognized as a major contributing factor to the failure of new ventures, and venture survival often depends on the ability to overcome or compensate for liabilities of newness (Bruderl & Schussler, 1990; Freeman, Carroll, & Hannan, 1983). Current conceptions of liabilities of newness were developed before recent technological advancements including the Internet, telecommunications, and powerful microprocessors, which are disrupting markets and industries (Atkinson & Court, 1998; Bettis & Hitt, 1995; Shapiro & Varian, 1999). Not only are these technological developments creating new markets and new product possibilities, but they are also fundamentally changing the ways in which firms are able to emerge, organize, and compete (Tapscott, 1999; Teece, 1998). These changes have created opportunities for new ventures to establish and dominate new industries (Atkinson & Court, 1998; Shapiro & Varian, 1999), challenging traditional conceptions of the liabilities of newness. Because vulnerability to
liabilities of newness is a serious threat to new venture survival, the concept should be updated to reflect the technological environment in which contemporary new ventures operate. Understanding the determinants of success and failure for firms operating in today’s economy is a central concern of investors, business scholars, and practicing managers (e.g., Ansari, 2000; Baron & Hannan, 2002; Farrell, 2003; Kotha, 1998).

One important product of these changes for new ventures has been the emergence and increasing importance of virtually embedded ties (Fowler, Lawrence, & Morse, 2004; Lawrence, Morse, & Fowler, 2005). Virtually embedded ties are “interorganizational linkages that are initiated and maintained through electronic technologies and that provide distinctive solutions to the same problems with exchange relationships that are addressed by socially embedded ties” (Fowler et al., 2004, p. 648). Virtually embedded ties represent an important alternative form of interorganizational connection and are particularly important in contexts that combine the demanding exchange conditions (opportunism, complexity, and uncertainty) that have traditionally been associated with social embeddedness (Uzzi, 1997) and highly dynamic competitive environments (Fowler et al., 2004). This combination is a common one for new ventures as they are particularly vulnerable to opportunism, complexity, and uncertainty, and they often enter industries that are very dynamic (Miles, Covin, & Heeley, 2000; Zahra & Neubaum, 1998). Thus, the virtual embeddedness of new ventures is a potentially critical topic for understanding their survival, but one that has not yet been systematically examined.

In this article, we develop a theoretical model of the impacts of virtual embeddedness on new ventures. We follow current entrepreneurship research and theory in defining a “new venture” as one that “has not yet reached a phase in its development where it could be considered a mature business” (Chrisman, Bauerschmidt, & Hofer, 1998, p. 6); this could be conceptualized in terms of a venture that has not yet reached the point of stability proposed in Kazanjian’s (1988) four-stage model, and whose mean age is generally less than 8 years (cf., stages 2–3, in Hanks, Watson, Jansen, & Chandler, 1993). Specifically, we develop a theoretical framework that addresses how recent technological and social changes can be exploited by new ventures and consequently affect their likelihood of survival. We focus on organizational survival because of the traditionally high failure rates of new ventures (Hannan & Freeman, 1977, 1984; Shepherd & Zacharakis, 2003). We conceptualize survival as the opposite of business failure (Barney, 1986; Chrisman et al., 1998), which has been succinctly defined as the termination of a venture as a consequence of actual or anticipated performance below a critical threshold (McGrath, 1997).

This article contributes to our understanding of entrepreneurship in two major ways. First, we reexamine traditional conceptions of liabilities of newness (Stinchcombe, 1965), which are rooted in an image of society that is inconsistent with the conditions facing firms today. We believe that our understanding of liabilities of newness needs to be updated in light of contemporary technological and social changes because the classic treatments on which current research is based (Hannan & Freeman, 1977, 1984; Stinchcombe, 1965) predate those important changes. Updating the concept of liabilities of newness represents an important contribution because it has been one of the foundational elements in shaping our understanding of the dynamics of new ventures (Aldrich, 1999; Hannan & Freeman, 1977; Stinchcombe, 1965). Second, we develop a coherent theoretical model of the significant impact of the Internet and other communication and information technologies on the likelihood of survival for new ventures. Drawing on a variety of sources and examples, we argue that new ventures that exploit virtual embeddedness can decrease the effects of liabilities of newness and therefore increase their likelihood of survival. Because new ventures represent a critical source of innovation, job growth, and value creation, we believe that the factors that affect their likelihood of
survival are of significant importance to our economy and society (Timmons & Spinelli, 2003).

We develop our model in four stages. First, we review traditional approaches to understanding the likelihood of survival for new ventures based on liabilities of newness. Second, we introduce the concept of virtual embeddedness and provide an example of a firm that exemplifies the concept. Third, we examine the impact of a firm’s virtual embeddedness on its liabilities of newness and its likelihood of survival. Finally, we explore the implications of our theoretical framework for management research and practice.

Traditional Arguments Regarding Liabilities of Newness

Liabilities of newness have anchored much of the analysis of new ventures (e.g., Chrisman et al., 1998; Shepherd, Douglas, & Shanley, 2000; Singh, Tucker, & House, 1986). In order to provide a foundation for our exploration of the liabilities of newness in relation to virtual embeddedness, we first examine the traditional arguments regarding the liabilities of newness for new ventures.

In examining a new venture’s likelihood of survival, one of the key factors to consider is its vulnerability to liabilities of newness. These liabilities exist because new ventures usually lack specific sets of resources and capacities that more established organizations have accrued (Stinchcombe, 1965). The lack of these resources and capacities results in new organizations suffering from disproportionate rates of failure (Hannan & Freeman, 1977, 1984). In this section, we draw on classic as well as more contemporary sources (e.g., Goldberg, Cohen, & Fiegenbaum, 2003; Oviatt & McDougall, 1994; Shepherd et al., 2000; Stinchcombe, 1965; Vesper, 1990) to identify and discuss four explanatory mechanisms that underpin the liabilities of newness argument: (1) the need to develop internal organizational systems including roles, relationships, and incentives; (2) the precariousness of trust relationships among strangers; (3) the lack of social capital, both in terms of a lack of resource endowment and of an appropriate network structure; and (4) the lack of economic capital.

The first explanation for a new venture’s liability of newness—the need to develop new organizational roles and systems—exists due to a new venture’s lack of extant routines (Beekman & Robinson, 2004; Nelson & Winter, 1982; Shepherd et al., 2000; Stinchcombe, 1965). New ventures operate at a disadvantage relative to existing firms that already have those roles in place because they must incur the cost of either developing those roles in-house or, where possible, obtaining the benefits of those roles through some form of outsourcing (Nelson & Winter, 1982; Schoonhoven, Eisenhardt, & Lymman, 1990). Furthermore, the development of organizational systems that connect and coordinate organizational roles has “high costs in time, worry, conflict, and temporary inefficiency” (cf., Hannan & Freeman, 1977; Hinings & Greenwood, 1988; Stinchcombe, 1965, p. 148).

The second explanatory mechanism highlights the importance of trust as an advantage for established firms: “New organizations must rely heavily on social relations among strangers. This means that relations of trust are much more precarious in new than old organizations” (Goldberg et al., 2003; Stinchcombe, 1965, p. 149). This reliance on “strangers” leaves the new firm more vulnerable to opportunism than the established firm, which is able to deal primarily with familiar partners (Gambetta, 1988; Lewis & Weigert, 1985). In addition, the new venture may lack legitimacy in the eyes of potential customers who are reluctant to do business with it due to the absence of established trust relationships.

The third explanatory mechanism stems from the criticality of social capital and its relative scarcity for new ventures (Davidsson & Honig, 2003; Greve & Salaff, 2003).
Although a range of definitions of social capital is available (cf., Dess & Shaw, 2001; Putnam, 1995; Tsai, 2000), we adopt that of Nahapiet and Ghoshal (1998, p. 243), who define it as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.” Thus, social capital is simultaneously an element of social structure and a means of facilitating action within a social structure (Coleman, 1990; Nahapiet & Ghoshal, 1998). For the new firm, social capital is the primary link to those resources necessary for firm survival and growth, and while new firms begin with a specific set of social relations, the usefulness of this capital is often limited. The new firm’s founders may not be able to effectively leverage the social capital available to them because their understanding of means–ends relationships within the industry/market is often underdeveloped (Van de Ven, Venkataraman, Polley, & Garud, 1989). New ventures operate at a disadvantage as they work to establish appropriate linkages and engage in their entrepreneurial activities without the supports that those linkages provide.

Finally, the lack of economic capital provides the fourth explanatory mechanism for the liability of newness (Oviatt & McDougall, 1994; Vesper, 1990). Most new ventures have not established the economic reserves accrued by more established firms. Without these reserves, new ventures are more vulnerable to any financial stress, such as might be experienced due to price competition or economic downswings (Pfeffer & Salancik, 1978; Starr & MacMillan, 1990): “In contrast to their larger counterparts, the norm for [new ventures] is resource dependency rather than resource sufficiency” (Steensma, Marino, Weaver, & Dickson, 2000).

The four explanatory mechanisms previously described create a situation in which new ventures face significantly higher likelihoods of failure than do established firms (Bruderl & Schussler, 1990; Freeman et al., 1983; Henderson, 1999; Singh et al., 1986). These relationships were first theorized and have primarily been examined empirically under conditions that are significantly different from those that are faced by many new ventures in today’s economy. In the remainder of this article, we discuss an important aspect of today’s economy that we believe may have a significant impact on these dynamics and explore the ways in which it may affect the likelihood of failure experienced by new ventures.

**Virtual Embeddedness**

The term “virtual embeddedness” refers to the establishment of interorganizational connections through the use of electronic technology (especially Internet-based technologies such as the Web) (Fowler et al., 2004). In this section, we explain the nature of virtual embeddedness, contrast it with traditional forms of embeddedness, and illustrate the concept with a prototypical example of a virtually embedded firm—Peanutpress.com. Then, we explore the impacts of virtual embeddedness on the liabilities of newness for new ventures.

**The Nature of Virtual Embeddedness**

Virtual embeddedness marries one concept—virtual—that is relatively new to organizational research with another—embeddedness—that is well established. The traditional dictionary meaning of “virtual” refers to something having the effects of another thing without being that other thing. In modern parlance, the term “virtual” has become closely tied to the idea of something that is simulated, especially simulated by
electronic technology, so that the state of being virtual is contrasted with that of being physical. Examples of this usage include the notions of virtual memory and virtual reality. In the corporate world, the term virtual has also increasingly been applied to forms of social organizations such as virtual teams, virtual organizations, and virtual markets, where the term combines both the traditional and computer-oriented meanings. These virtual social units utilize electronic technology in attempts to create the benefits of teams or organizations without the costs in terms of time, capital, and other resources that are associated with physically assembled teams and organizations (Boudreau, Loch, Robey, & Straud, 1998; Geber, 1995; Quinn, 1992).

The second concept, embeddedness, refers to the contextualization of economic activity (Dacin, Ventresca, & Beal, 1999; Granovetter, 1985; Polanyi, 1944). Embeddedness is a complex, multidimensional concept that has been understood and used in a wide variety of ways (Dacin et al., 1999). Zukin and DiMaggio (1990) describe four basic forms of organizational embeddedness: (1) structural (inter-actor ties and relationships); (2) cognitive (symbols and frameworks); (3) cultural (shared understandings and meanings); and (4) political (distributions of power and resources). In this article, we focus on structural embeddedness, which describes the effects of inter-actor ties on economic activity. Although previous research has often highlighted either the structure of inter-actor ties (Burt, 1982; Greve & Salaff, 2003; Jack & Anderson, 2002) or the character of the relationship (Coleman, 1990; Davidsson & Honig, 2003), we follow other recent work that have described structural embeddedness as a function of both the linkages between people or organizations and the strength of those linkages (Dubini & Aldrich, 1991; Lawrence, Hardy, & Phillips, 2002; Uzzi, 1997). We adopt this perspective because we believe that both of these dimensions work together to shape a firm’s economic “expectations and opportunities” (Soh, 2003; Uzzi, 1997, p. 36), and that either dimension alone cannot describe the structural embeddedness of a firm.

Virtual embeddedness combines the ideas of structural embeddedness and virtuality: Computer and telecommunication technologies are used to create interorganizational connections more quickly and at a lower cost than is possible through the development of physically based connections. For new ventures, virtual embeddedness can take a variety of forms such as electronic data interchange, web-based direct sales, web auctions, web or newsgroup-based customer support, and other electronic linkages. When a new firm establishes such connections, it can very quickly embed itself in a vast network that includes large numbers of potential consumers, suppliers, and complementors, who gain a rapid access to the new firm and an awareness of it through advertising, search engines, or online communities. While virtual embeddedness may be most obvious among dot-com firms, new ventures that are not Internet-based can also be virtually embedded through electronic ties to other organizations including alliance partners, suppliers, and customers.

Consider an entrepreneur who is interested in establishing an innovative landscape-design practice, which, to be successful, might need to be structurally embedded in the construction and renovation industries. This would involve establishing a set of connections between the new venture and a range of other organizations and individuals: (1) commercial and residential developers and homeowners; (2) complementary services such as architects and home renovators; and (3) suppliers such as nurseries, gardeners, and landscapers. To do so in the absence of virtual connections would entail a great deal of time, cost, and energy invested in face-to-face meetings and presentations. In order to connect to architectural firms, for instance, the entrepreneur might arrange to meet with individual architects as well as make formal presentations at trade and industry conferences. In contrast, such a new venture might gain the benefits of these connections more efficiently and rapidly by establishing a set of virtual relationships. The key to this efficiency would be establishing
links to sites that naturally draw potential clients and complementors. For instance, the new venture might develop a website that connected to architects through their professional associations’ websites, as well as to homeowners and renovators through online discussion forums or home-oriented information sites. The speed and low cost associated with virtual embeddedness allow the new venture to establish a more extensive set of inter-actor ties than would be possible otherwise. Even if the physically embedded firm were to continue to develop connections over an extended period of time, the cost of managing those ties could be prohibitive without a significant internal growth.

The Distinctiveness of Virtual Embeddedness

The speed and efficiency of virtual connections create a form of embeddedness with distinctive characteristics. First, virtual connections tend to be highly focused. While structural embeddedness has traditionally been associated with overlapping, multipurpose sets of inter-actor ties (Granovetter, 1973; Kapferer, 1969), virtual embeddedness is more likely to lead to separate, specialized relationships that are narrower or more targeted in scope. Traditional forms of embeddedness emphasized multipurpose ties in part because of the high costs of developing and maintaining new ties: Developing new ties involved high search costs because of the difficulty of gaining information and high maintenance costs because ties depended significantly on face-to-face contact (Polanyi, 1944; Putnam, 1995). In contrast, the efficiency of electronic ties allows for the development and management of a much greater number of individual connections; organizations need not rely on existing relationships to meet changing requirements, instead they can develop new, focused connections as needs arise.

Second, the contextualization of economic activity associated with virtual embeddedness is a more global, less personal phenomenon. The prototypical image of traditional embeddedness has been the integration of economic and social activity in a geographic community (Putnam, 1995); members of such communities rely on one another for friendship, entertainment, and commerce. In contrast, virtual embeddedness is associated with online communities that are not constrained by physical space; members of an online community can as easily connect with someone halfway around the world as with someone next door. Evans and Wurster (1999) argue that much of the trade-off between information reach and richness has been dissolved by the Internet; we agree and suggest that this dynamic leads to a form of embeddedness in which economic activity is tied to a broader, more cosmopolitan context. These two characteristics—focused connections and global reach—give virtual embeddedness its distinctive character.

We are not arguing here that virtual embeddedness is “better” than physical embeddedness but simply that it is a distinct form of embeddedness that has the potential to provide the benefits of physical embeddedness through different means, and with different costs and benefits. We have argued that the speed and efficiency of virtual embeddedness will lead to the formation of networks composed of distinctively focused connections with a potentially global span. Such a network, we argue, can provide an alternative for economic actors who face demanding exchange conditions and dynamic industries (Fowler et al., 2004); however, such networks may be less suitable to industries that are more stable and in which enduring, multiplexed connections may have a great value (Fowler et al., 2004; Uzzi, 1997).

An Example of a Virtually Embedded New Venture: Peanutpress.com

As a start-up, Peanutpress.com exemplified the idea of virtual embeddedness in a new venture. Founded in 1998, Peanutpress.com is an electronic book publisher that offers
contemporary fiction and nonfiction books, newspapers, and magazines for reading on handheld computers such as the Palm series and Windows CE machines. In March 2001, Peanutpress.com was acquired by Palm Inc. Articles and press releases about the acquisition indicate that the company was acquired because of its dominant position in electronic books for handheld devices. Although Peanutpress.com is no longer an independent company, we believe that it is an excellent example of the concept of virtual embeddedness.

Peanutpress.com established itself as a leading publisher with nonexclusive rights to a large selection of books including a variety of best sellers such as *Angela’s Ashes*, *The Notebook*, and *Like Water for Chocolate*. It did this in an industry in which interorganizational connections to authors and distributors have become increasingly important, and where rights to hot-selling properties have become more deeply embedded within the large media conglomerates produced by megamergers (The Economist, 1998; Miller, 1999).

In contrast to these highly integrated corporations, Peanutpress.com became virtually embedded in overlapping sets of networks that included the electronic publishing industry, the consumer-oriented e-commerce infrastructure, and what became known as “the Palm economy”—the network of software and content developers and distributors committed to the Palm Connected Organizers. While the electronic publishing of books and magazines for consumers was in its very early stages as an industry, major players such as Microsoft, Adobe Systems, and Barnes & Noble were still establishing their technical and strategic positions (CNN.com, 2000; Media Central, 1999, 2000). Rather than wait for standards to be set by others, Peanutpress.com embedded itself within existing virtual networks that offered ready access to customers, suppliers, and means of distribution. Peanutpress.com offered its products only on the Web where anyone with Internet access and a credit card can download its free offerings or purchase one of its best sellers. The key element in the firm’s virtual embeddedness, however, was its connection to Palm’s organizers, which in January of 2000 had over 80 percent of the handheld computer market (PC World News, 2000)—with only a few mouse clicks, any of Peanutpress.com’s offerings could be on a person’s Palm organizer in a few minutes. Offering best-sellers, popular books series, and classic texts over the Web for reading on the most popular handheld computer, Peanutpress.com gained the benefits of a huge network of interorganizational connections by plugging itself into an existing virtual network. Peanutpress.com illustrates the potential for virtual embeddedness to allow new firms to compete in ways that would otherwise be either unavailable or costly and time intensive.

**The Effects of Virtual Embeddedness on Liabilities of Newness**

In order to systematically explore the potential impact of virtual embeddedness on the survival rates of new ventures, we examine here the relationship between virtual embeddedness and each of the four explanatory mechanisms associated with the liabilities of newness argument: (1) the need to create new roles and systems; (2) the precariousness of trust relationships among strangers; (3) the lack of social capital; and (4) the lack of economic capital. Although there is some overlap among these mechanisms, such as the relationship between trust and social capital, we examine them separately for the purpose of clarity. New ventures suffer from liabilities of newness relative to established firms primarily because they lack the physical embeddedness that provides established firms with information regarding roles and systems, and access to trust-based relationships, social capital, and economic capital (Bruderl & Schussler, 1990; Jack & Anderson, 2002). We are not arguing that physical embeddedness cannot provide these same benefits to new
ventures but rather that the tendency for new ventures to lack physical embeddedness heightens the importance of virtual embeddedness with respect to overcoming liabilities of newness. A summary of our arguments is presented in Table 1.

**Roles and Systems**

The first explanatory mechanism associated with the liability of newness involves the need to create and manage new organizational roles and systems. When creating these roles and systems, new firms are at a disadvantage because they have little to no organizational knowledge or memory (Huber, 1991) and a limited understanding of means–ends relationships (Van de Ven et al., 1989). We argue that the potential for firms to become virtually embedded can diminish this liability in at least two ways. First, virtual connections make it much easier for a new venture to locate individual or organizational service providers. Second, required services can often be contracted and delivered through virtual connections.

Web-based commerce has made a broad variety of relatively specialized skills more easily accessible to a wide range of firms (Kaplan & Sawhney, 2000). Online job-search sites such as Monster.com and careerbuilder.com allow new firms to scan thousands of resumes in order to identify potential employees. Other websites provide access to many different types of contracted services including accounting, consulting, and financial services. A Maryland-based entrepreneur who started an international consulting business 5 years ago reported that he found his accountant through a website that listed providers of professional services. He was able to scan the services provided, check references, and read testimonials from other clients through the Internet, and he retained the accountant without ever meeting him in person. Similarly, this consultant has used the Internet to locate subcontractors for various consulting engagements worldwide. Without the ability to become virtually embedded in a global network of consultants, it would be extremely difficult for a small consulting firm to take on significant international engagements. This entrepreneur reported that virtual embeddedness had allowed him to compete successfully with larger, well-established consulting firms.

Virtual connections can also facilitate outsourcing for a new venture. While large firms have long been able to outsource significant parts of their operations, newer, smaller firms are now also able to do so on an ongoing or *ad hoc* basis (Beekman & Robinson, 2004). Key organizational functions such as human resource management, accounting, marketing, and manufacturing are available through websites in which they can be

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**Table 1**

Benefits of Virtual Embeddedness for New Ventures

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<tr>
<th>Sources of liabilities of newness</th>
<th>Benefits of virtual embeddedness</th>
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<tr>
<td>Need to create roles and systems</td>
<td>Reduces the need to create new roles and systems by facilitating access to and the acquisition of external skills, services, and systems</td>
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<tr>
<td>Lack of trust-based relationships and legitimacy</td>
<td>Provides a substitute for trust through a widespread dissemination of information regarding the reliability of trading partners</td>
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<tr>
<td>Lack of social capital</td>
<td>Facilitates the creation and management of interorganizational ties</td>
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<tr>
<td>Lack of economic capital</td>
<td>Increases access to a greater range of potential capital providers</td>
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purchased in a variety of ways including fixed-price purchases and auctions (Kaplan & Sawhney, 2000; Nunes, Wilson, & Kambil, 2000). Rather than having to do it all, new ventures can concentrate on developing and exploiting their core competencies while outsourcing other functions.

This opportunity potentially diminishes the need for both the creation of new roles and the structuring of new systems since the roles are prefabricated and the incentive and monitoring systems are selected from a relatively standardized set. In the case of Peanut-press.com, for instance, the firm was able to leverage existing external marketing and distribution systems that allowed it to fulfill its services to customers more quickly and efficiently than if it had had to develop these capacities internally. In summary, we argue that the degree to which a new venture is virtually embedded will increase the firm’s likelihood of survival by reducing its need to create and manage new roles and systems.

**Proposition 1:** Virtual embeddedness facilitates new ventures’ access to and acquisition of external skills, services, and systems.

**Trust Relationships**

The second mechanism that leads to the liability of newness stems from established firms’ access to trust relationships, which potentially has two significant negative impacts on new ventures. First is the issue of the new venture’s own legitimacy: New ventures have a greater difficulty engaging in transactions in which buyers need to trust them, because buyers of goods or services are unable to do so on the basis of any existing trust relationship with the organization. Put more simply, buyers simply do not “know” the new venture and so have no reason to trust it. The second impact is the reciprocal version of the first: New ventures lack trust relationships with other organizations, including potential suppliers and partners, and so they are left relatively more vulnerable to opportunism than their established counterparts.

We argue that the opportunity for new firms to become virtually embedded can significantly diminish both impacts of this liability not by increasing the level of trust they enjoy but by providing substitutes for trust through a rapid and widespread dissemination of information regarding the reliability of trading partners. Organizational research on trust has articulated a number of substitutes for trust, particularly emphasizing social structures and processes that work on the basis of power or control (Bachmann, 2001; Mayer, Davis, & Schoorman, 1995) including legal contracts and remedies (Sitkin & Roth, 1993), hierarchical control, dissemination of performance information, and the alignment of interests through rewards and sanctions (Goldberg et al., 2003; Shepherd & Zacharakis, 2003; Sohn, 1994). This research demonstrates the potential for alternative mechanisms to overcome trust-based problems and provides a foundation for our arguments regarding the potential for technology-based trust substitutes.

Although the lack of face-to-face contact associated with Internet-based relationships may suggest the exacerbation of the problem of trusting strangers, these relationships often involve information system-based alternatives to trust. These can be either formal or informal and include rating systems on auction sites where participants are encouraged to rate each other, and the ratings are aggregated and publicly disclosed, as well as the customer testimonials (positive or negative) that proliferate on online communities (e.g., USENET newsgroups, AOL chat rooms, profession-specific web-based forums). What is critical about these systems is the transparency they impose on exchange relationships, the rapid dissemination of information on potential trading partners, and the greater capacity to access and utilize this information.
Collectively, these features allow for the development and dissemination of reputations at a much faster rate than could be accomplished otherwise and consequently work to align the interests of buyers and sellers. Thus, these Internet-based information systems act as substitutes for trust-based relationships by reducing the risk inherent in interorganizational relationships. Moreover, Internet-based information systems provide substitutes for trust much more efficiently and at a lower cost than do traditional substitutes such as contractual safeguards and hierarchical controls (Williamson, 1985). These systems have developed along with a broad set of norms on the Internet that value the free flow of information above almost anything else (Barlow, 1994; Gates, 1999). Consequently, the norms that govern virtual discussions tend to encourage the open exchange of information regarding vendors’ practices and products.

Together, the technological systems and the cultural values of the Internet provide a powerful alternative to trust relationships and have the potential to significantly diminish both the new venture’s lack of legitimacy in the eyes of potential buyers and its exposure to opportunism on the part of its partners and suppliers. While new ventures lack trust relationships with potential buyers, they may be able to offset that disadvantage by leveraging systems that establish their reputation more quickly and more widely than would otherwise be possible. Similarly, as new ventures begin to engage in critical partnerships and supply arrangements, they can rely on electronic forums and other communication mechanisms to both alert them of potential opportunism and motivate potential partners to act with integrity. For example, the reputation of Peanutpress.com as a trustworthy vendor of quality e-books spread rapidly through newsgroups and web-based forums devoted to Palm products and systems. In contrast, other vendors of Palm-oriented products who have failed to deliver on their promises have met with rapid and widespread criticisms through these same systems. The end result of these systems and cultural values is a significant increase in the transparency of exchanges that lowers the risks of dealing with strangers for both new ventures and their exchange partners. Thus, we argue that the degree to which a new venture is virtually embedded will increase its likelihood of survival by reducing the impact of a lack of extant trust relationships.

Proposition 2: Virtual embeddedness provides a substitute for trust through widespread dissemination of information regarding the reliability of trading partners.

Social Capital

The third mechanism is driven by a new venture’s lack of external connections, and consequent lack of social capital (Freeman et al., 1983; Stinchcombe, 1965). We argue that virtual embeddedness can work to diminish this liability by facilitating the rapid and efficient establishment of external connections.

Social capital has been defined as “the sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu & Wacquant, 1992, p. 119). Although some scholars have associated the development of trust relationships with social capital, we focus here on two other important effects of social capital: the transmission of knowledge about technology and markets, and the facilitation of collective action (Peredo & Chrisman, in press). Together, these effects of social capital provide an intangible organizational advantage (Chrisman et al., 1998; Nahapiet & Ghoshal, 1998).

For new ventures, the impact of social capital evolves throughout the life of the firm (Hite, 2003; Hite & Hesterly, 2001). As firms evolve and grow, the kinds of ties on which
they rely and the needed benefits of those ties also change and grow. Initially, new ventures are typically dependent upon the friends and family of the entrepreneur, or upon the entrepreneurial team, as they search for resources to employ (Larson & Starr, 1993). Referred to as personal embeddedness by Hite, this type of leveraging of social capital at emergence is based upon a configuration of primarily identity-based embedded ties (Hite & Hesterly, 2001). While these ties facilitate firm emergence, they are typically not sufficient to sustain growth. As the firm’s activities become more complex, its need for information and the scope of its collective action also increases in complexity. Consequently, a sustained growth in a new venture will tend to be dependent upon bridging ties that tend to be less personal in nature and span structural holes within the focal firm’s network (Burt, 1992).

We argue that virtual embeddedness facilitates the ties that are especially associated with sustained growth. The ease and speed with which virtual ties are created and disposed of increases the ability of a venture to find and forge the network of weak links that will increase the firm’s exploitation of structural holes and allow the firm to grow on a sustained basis (Batjargal, 2003; Hite & Hesterly, 2001). In the publishing industry, for example, established firms have an access to a set of authors, marketing representatives, distributors, and retailers that add value to their publishing activities. A new firm entering this industry would traditionally need to spend a great deal of its time and resources establishing these connections. In contrast, Peanutpress.com has rapidly gained social capital through its virtual embeddedness in electronic markets and distribution systems. Its ability to enter this market swiftly and successfully exemplifies the ease of entry associated with Internet-based networks, as the new firm was able to plug itself into a large, multipurpose network, diminishing the need to negotiate idiosyncratic deals with each individual stakeholder. The social capital that is derived from virtual embeddedness is predominantly structural in nature (Nahapiet & Ghoshal, 1998). While the ties associated with virtual embeddedness may not be as rich as those that are associated with traditional embeddedness, the strength of these weak ties (Granovetter, 1973) allows new ventures to mobilize network-based resources necessary for survival in their early stages. These dynamics lead us to argue that the degree to which a new venture is virtually embedded will increase its likelihood of survival by decreasing the impact of a lack of social capital.

**Proposition 3a:** Virtual embeddedness increases the number of interorganizational relationships available to new ventures.

**Proposition 3b:** Virtual embeddedness increases the speed with which a new venture can establish interorganizational relationships.

**Economic Capital**

The fourth explanatory mechanism supporting the liability of newness argument stems from the tendency for new ventures to lack a slack and often even sufficient economic capital. The liability faced by many new ventures is that they are unable to assemble the tangible resources necessary to ensure firm survival and growth (Baum, 1996; Chrisman et al., 1998). A firm needs a variety of resources, both tangible and intangible, to survive, but economic capital provides perhaps the most obvious example (Oviatt & McDougall, 1994; Vesper, 1990).

We argue that virtual embeddedness lessens the degree to which a lack of economic capital presents a liability for new ventures for three key reasons. First, the opportunity for virtual embeddedness allows new ventures to rapidly gain the efficiencies associated with network forms of organization, such that “resources can be gained and competitive advantages realized without incurring the capital investments of vertical integration”
Second, virtual embeddedness makes it easier for potential investors to become aware of a new venture and gather the information they need to make an informed investment decision. Many entrepreneurs tell us that their company’s website (especially the investor-relations section) plays an important role in attracting investors to their companies. Potential investors are able to access a wide variety of information about the company that otherwise would be difficult and time-consuming to collect. Third, virtual embeddedness also facilitates a faster and easier access to a greater number and range of capital suppliers. Previously, the ability of new ventures to “shop” for capital was limited by their own time, energy, and geography, as was the ability of capital providers to find opportunities to fund. Now, the Internet provides a wealth of options for new firms seeking sources of capital. Websites such as vfinance.com and venturecapital.org, where new ventures can post their business plans for examination by venture capitalists and angel investors, link widely dispersed networks of entrepreneurs and capital providers, and so allow a far greater range of equity funding opportunities to emerge.

Vfinance.com works as a virtual clearing house and matchmaker for its clients. Those that submit information (the website claims 1 million per year) are filtered electronically and shared with potential partners. Vfinance.com claims to have facilitated matchmaking for 8,000 clients, approaching $1 billion in capital investment (website). The Wayne Brown Institute (WBI [http://www.venturecapital.org]) is one of the most successful venture accelerators in the United States, with its Alumni companies raising in excess of U.S.$1.5 billion in private equity. Entrepreneurs electronically submit an eight-page executive summary of their business plan, which is evaluated and scored. Entrepreneurs receive an electronic analysis of their plans, and those who meet a specific hurdle are invited to present their plans to venture capital firms at arranged conferences. According to Brad Bertoch (personal communication, July 29, 2005) (president of WBI), venture capitalists are attracted by the consistently high-quality deal flow that comes from the number of plans submitted to WBI and by the quality of their screening process. Close to 60 percent of all firms that present at WBI conferences receive some level of funding within 12 months of their presentation.

While obtaining funding through the channels mentioned in the previous discussion requires personal contact and relationship building, access to those sources of funding has been tremendously increased by the speed and efficiency of virtual ties, which are highly focused and global in reach. A firm need not look in its backyard or even in the nearest city for funding; rather, it may now search out multiple, geographically dispersed potential partners in a much more efficient manner.

Similarly, new ventures in search of debt financing can bypass their local banks by working with Internet-based bank brokers, such as LendingTree.Com, which track the policies and rates of a large number of geographically dispersed banks. LendingTree.Com provides users with links to providers of commercial lending products (lines of credit, commercial property, and factoring) who are interested in working with businesses that match the new venture’s profile. Companies such as VenCore Solutions (vencore-solutions.com) provide an entry to venture leasing opportunities through their websites. Venture leasing is a hybrid between traditional leasing and venture capital that allows a new venture to raise money for equipment and infrastructure without diluting its equity position. Still other companies, such as the Harbor Group (theharborgrp.com), facilitate funding opportunities through their web technology. New ventures can use their web resources to produce an offering that complies with the Securities and Exchange Commission’s regulation D exemption. This offering is electronically submitted to The Harbor Group, which then responds electronically with a menu of ways in which they can help raise the funding (typically fee-based).
Other forms of capital such as government grants have also been made more accessible through web-based information and application processes. Although the stock of capital available for investment at any given point in time will depend upon overall economic and market conditions, a greater access to a broader range and a larger number of capital suppliers should increase the likelihood that quality new ventures will be funded. Consequently, we argue that the degree to which a new venture is virtually embedded will increase its likelihood of survival by decreasing the impact of its initial lack of economic capital.

**Proposition 4:** Virtual embeddedness increases new ventures’ access to economic capital.

**Summary Relationship**

We have argued that virtual embeddedness reduces the impact of each of the four mechanisms—the need to develop organizational roles and systems, a lack of trust relationships, a lack of social capital, and a lack of economic capital—that lead to a liability of newness. Through the externalizing of new roles and systems, the systematic development of substitutes for trust, the rapid development of structurally based social capital, and the ability to gain access to and substitute for economic capital, new ventures that are able to leverage electronically facilitated interorganizational connections, and especially those that are engaged in Internet-based commerce, may be able to overcome the threats that stem from their relative youth. These arguments lead to our summary proposition.

**Proposition 5:** All other things being equal, the degree to which a new venture is virtually embedded will increase its likelihood of survival.

**Conclusion**

In this article, we have developed a theoretical framework that addresses how the virtual embeddedness of new ventures affects their likelihood of survival. We have reexamined the effects of liabilities of newness on new ventures in the information economy and argued that the dynamics involved are significantly different from those at work in the traditional economy. Our theoretical model suggests that virtually embedded new ventures experience diminished liabilities of newness and a resultant increase in the likelihood of survival. Our model has several important implications for research and practice.

**Implications for Research**

This article’s first implication for research is that the relationships we have proposed here need to be examined empirically. We have proposed an overarching relationship between virtual embeddedness and organizational survival, and a set of more specific relationships between virtual embeddedness and the mechanisms that underlie liabilities of newness. We believe that these proposed relationships could provide the foundation for a range of studies, some of which might flesh out the mechanisms through which these relationships operate, while others might test the relationships directly. Although we have indicated in our arguments the mechanisms through which we believe virtual embeddedness will have an impact on new venture survival, the scope of this article has meant that
we have only begun to sketch out these processes: In order to examine these mechanisms and processes in greater depth, we suggest that researchers engage in qualitative case studies that focus on how managers in new ventures utilize the Internet and associated technologies to overcome their age-based disadvantages. Such studies will be important both for the construction of a better theory and for better measures of such concepts as virtual embeddedness, and also for the identification of best practices and the organizational competencies necessary to achieve and leverage virtual embeddedness.

In order to test the relationships we have proposed, several issues need to be resolved, including the measurement of key constructs and the design of research studies. With respect to measurement, the key challenge for researchers will be the operationalization of virtual embeddedness. Examining this new construct will first entail the careful development of measures that reliably and validly capture its essence. Prior studies of embeddedness provide a limited insight; traditionally, embeddedness has been measured by the duration and multiplexity of a relationship so that a longer and more multiplex relationship was assumed to represent a larger degree of embeddedness (Gulati, 1994; Seabright, Levinthal, & Fichman, 1992; Uzzi, 1999). We have argued that virtual embeddedness is characterized by a lack of multiplexity, so the absence of multiplexity (i.e., a single-purpose tie) could be an indicator of virtual embeddedness. We have also argued that the ability to form new ties very quickly is characteristic of virtual embeddedness; however, virtual connections can last a long time, so the duration of a relationship does not differentiate between physical and virtual embeddedness. In addition, when studying new ventures, most relationships will be relatively new, which further limits the usefulness of duration as a discriminatory variable.

The measurement of virtual embeddedness will be particularly challenging because it is unlikely to be a discrete and obvious characteristic of firms; most firms will employ a wide variety of both virtual and physical connections. Consequently, measurement will likely necessitate the development of a multidimensional scale that would include a variety of strategies and approaches to achieving virtual embeddedness, such as the use of web-based customer forums, electronic linkages among alliance partners, and web-based technical support. One key to developing such a measure will be an exploratory broad-based research that documents the range of potential strategies. A second related issue concerns the use of relative versus absolute measures of virtual embeddedness: Virtual embeddedness could be measured relative to a firm’s competitors, so that competing firms with greater numbers of electronic connections or means of connecting might be considered to have higher levels of virtual embeddedness; alternatively, virtual embeddedness might be measured relative to a firm’s own physical connections, so that the extent to which a firm relies on virtual rather than physical connections would determine its virtual embeddedness score; another approach would be an absolute measure, simply “counting” a firm’s number of electronic connections or channels for connection. Each of these possibilities has potential trade-offs; we believe that the relationships we have proposed here are most likely to be associated with relative measures of virtual embeddedness that account for both a firm’s strategic context (and so compare across competing firms) and its operational context (and so compare virtual to physical connections and thus account for such issues as firm size and general degree of embeddedness).

The issue of research design must also be considered if studies are to test the relationship we have proposed. We see two possible analytical designs. The first alternative follows closely from the form of the arguments we have presented: Such a design would explore the effect of virtual embeddedness on each of the explanatory mechanisms associated with liabilities of newness. This would require exploratory qualitative research
similar to the ethnographic fieldwork conducted by Uzzi (1997, 1999) in his studies of the garment and banking industries. Detailed interviews with entrepreneurs would explore their ties to other organizations and the extent to which they are virtually and physically embedded. Respondents would be asked to describe the benefits they derive from both virtual and physical embeddedness. In addition, entrepreneurs would be specifically asked about their use of virtually embedded ties to develop and access new interorganizational arrangements, substitutes for trust, social capital, and economic capital. This detailed qualitative research would provide a preliminary test of the validity of our model and enhance our understanding of the underlying dynamics.

A second and simpler research design could be used to test the overall impact of virtual embeddedness on survival by locating virtual embeddedness as a moderator of the traditionally proposed relationship between venture age and likelihood of survival. This would require a longitudinal study that examined survival rates of firms in one or more industries over time. Ideally, the research would include two types of comparisons: Survival rates of new firms with a high virtual embeddedness would be compared to survival rates of new firms with a low virtual embeddedness, and survival rates of new firms would be compared to survival rates of established firms. If our model’s predictions are correct, within a given industry, we would expect to see that the survival rate of new ventures with high levels of virtual embeddedness is similar to the survival rate of established firms and greater than the survival rate of new ventures with lower levels of virtual embeddedness. A more nuanced study might also consider the speed at which a new venture becomes virtually embedded because new ventures that become embedded sooner may increase their survival prospects.

Finally, it will be useful to understand the interaction of virtual and physical forms of embeddedness. To achieve this understanding, qualitative studies, both ethnographic and case based, could be used to explore the mechanisms and processes through which these forms of embeddedness interact, and what kinds of internal and external conditions drive new ventures toward particular mixes of the two kinds of embeddedness. It is likely that different industry environments will foster different combinations of virtual and physical embeddedness (Fowler et al., 2004), but how new ventures implement and manage these mixes will be critically important to their success.

Implications for Entrepreneurs

Our model presents important implications for the founders and managers of new ventures. We do not make the claim that virtual embeddedness should replace traditional embeddedness, nor do we intend to say that it is always superior; rather, we propose that virtual embeddedness gives new ventures the opportunity to gain some of the benefits of embeddedness more quickly and efficiently than would otherwise be possible. The lack of traditional embeddedness for most new ventures heightens the importance of virtual embeddedness in overcoming liabilities of newness.

The first place where entrepreneurs should look is to see which roles and systems (components) can be better or more efficiently performed elsewhere. A new venture’s understanding of the value proposition it brings to the market has always been important to its survival. One implication of virtual embeddedness is that it becomes even more advantageous to understand the components of that value proposition and make decisions as to what organizational systems and roles are better and more efficiently fabricated through virtually embedded ties rather than through internal development. The identification of a roughly standard process that can be outsourced may be difficult, but we believe (see also Davenport, 2005) that we are moving toward some level of
commoditization of processes. The Supply Chain Council (http://www.supply-chain.org) has developed a process reference model (SCOR 7.0) that includes metrics and benchmarks on many different processes from planning to delivery and return. The commoditization of processes and the ability to access providers in a virtual manner will allow entrepreneurs to more effectively limit the liabilities of newness due to lack of roles and systems.

New ventures often suffer from a lack of trust relationships. In order to diminish this liability, entrepreneurs can utilize virtually embedded ties to establish transparent relationships with new partners that can overcome this problem. They must, however, search out ways to validate and substantiate claims made through virtual means. The low cost of establishing virtually embedded ties means that entrepreneurs will be well served by constructing large, robust networks so that information on potential partners can be validated across a range of sources. The key to finding “ideal” partners in such a world is the search for partners who provide high levels of transparency in all their dealings—ideally, naming and providing access to customers, employees, and other stakeholders. The flip side of this is also important as entrepreneurs work to build the legitimacy of their own businesses. Entrepreneurs should consider how they portray themselves electronically and what experience potential stakeholders will have with this portrayal. One transparency-oriented strategy that is becoming more prevalent is for entrepreneurs to set up a blog where they can provide an ongoing information stream and commentary to stakeholders. Another technique is to make it easy for satisfied stakeholders to spread a positive reputation for the new venture (i.e., make it easy for visitors to e-mail promotions, product/service information or company profiles to their own networks). Reputation is critical and should be built and guarded carefully.

Entrepreneurs can diminish the effect that the lack of social capital has on the chance of survival by leveraging existing networks within their industry. This may mean regularly contributing to the chatrooms of suppliers or customers, as well as finding forums where identified stakeholders reside and becoming a positive contributor to those forums. Lastly, entrepreneurs can increase their chance of survival by minimizing the liability of lack of economic capital. We would encourage entrepreneurs to limit the amount of capital needed at start-up by outsourcing nonessential processes—bootstrapping as it has commonly been called in the popular press—and to connect with as many different capital providers as possible. The speed and efficiency of virtual ties make it possible for a firm to contact many more providers of capital than was possible in the past. Obtaining funding has always required finding the right match between provider and seeker; an access to more providers will increase an entrepreneur’s chance of finding that match.

The virtual embeddedness that now characterizes many firms is changing the traditional rules of engagement for new ventures that compete with established firms. Virtual connections to suppliers, customers, alliance partners, and information sources allow small start-up firms to gain many advantages that are normally associated with older, larger firms without the complacency and sluggishness that often afflict large, established firms. A virtually embedded firm can enjoy the best of both worlds—blending the speed, agility, and creativity of a small firm with the power, connections, and reputation of a large firm. We believe that our model provides a clear message for start-up firms—the possibility of virtual embeddedness is rapidly becoming a competitive necessity.

In conclusion, our model explores the implications of recent and ongoing changes to the business environment. We argue that the ability to become virtually embedded is changing the dynamics of competition by creating new opportunities for new ventures to overcome liabilities of newness and to compete on a more equal footing with large, established firms.
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