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International entrepreneurship in internet-enabled markets

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ABSTRACT

Despite the increasing numbers of businesses that are already using the internet to pursue international opportunities, and the latent potential for such activity from rising internet adoption levels, the international entrepreneurship literature has paid limited attention to the phenomenon. To address this gap, we review past research in international entrepreneurship, as well as the broader fields of entrepreneurship, international business, marketing, management and management information systems, to identify firm-level resources that are associated with the successful pursuit of international opportunities in internet-enabled markets. We identify three such internet-related firm-level resources: online reputation, online technological capabilities, and online brand communities. We develop a propositional inventory of the expected relationships, identify measures expected to be useful to future scholars in this area, and present the implications of our review for future international entrepreneurship research.

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1. Executive summary

Advances in information and communication technologies have been identified as enablers of international entrepreneurship (IE). By increasing the quality and speed of communications and transactions, and decreasing their cost, such advances have made internationalization more feasible for resource-constrained firms. Despite the increasing numbers of businesses that are currently using the internet to pursue international opportunities, and the latent potential for such activity from rising internet adoption levels, the IE literature has paid limited attention to the phenomenon. We address this gap in the research literature by developing a conceptual model of the organizational resources that are expected to be related to firms' successful pursuit of international opportunities.

This conceptual model was developed through a comprehensive review of literature in diverse fields: entrepreneurship, international business, management, management information systems, and marketing. We identified, from the extant literature on internet-related international entrepreneurship, three resources expected to be positively related to firms' successful pursuit of international opportunities: online reputation, online technological capabilities and online brand communities. From this starting point, we present a theoretically grounded review of the research that has been carried out on each resource. The review spans 33 journals during the period 2000–2010. We developed seven propositions that can be tested in future empirical research, and identified measures that are relevant to them. The review provides IE scholars with a current understanding of how these three resources are being conceptualized and measured, and how and why they are expected to be related to a firm's success in pursuing international opportunities when competing in internet-enabled markets.

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First, an online reputation is important because there is a large pool of competitors in internet-enabled markets. Gaining an online reputation early can yield substantial competitive gains in international internet-enabled markets because there is an increased capacity for herding behavior, with buyers imitating the purchase decisions of previous buyers. There are two aspects of an online reputation: being visible online and being seen as providing high-quality goods and services. In signaling quality, the favourability of online signals, such as online ratings and reviews, is important, as are the volume of signals and the consistency among signals. Signaling is expected to be related to the successful pursuit of international opportunities indirectly, through perceived trustworthiness, given that there are cross-cultural differences in how reputation signals may be perceived.

Second, online technological capabilities are important to the successful pursuit of international opportunities because they can enable a firm to discover and exploit international opportunities better and faster than competitors. Particularly important aspects of a firm's online technological capabilities are a) the extent to which web applications are integrated with back-end databases and systems; b) the firm's ability to customize the online experience for particular markets; and c) the firm's technological opportunism. These are all expected to be a function of top management championship: the extent to which a firm's top managers value online initiatives, and participate in them.

Third, online brand communities can help firms discover, evaluate and exploit international opportunities because they can provide information about buyers, support the buying process and build positive brand meanings. Potential foreign buyers can monitor the community to learn about the firm's offerings from the customer point-of-view, or ask questions of existing buyers. The existence of engaged community members from diverse geographic regions can signal to potential international buyers that the firm can and does serve foreign clients effectively. The firm can use the online community to monitor and reach out to geographically dispersed audiences, thereby avoiding the danger of becoming too isolated from their online foreign markets.

In the final section of the paper, we explore the implications of this review for future research in the area of internet-enabled international entrepreneurship. We discuss the relationship between the three resources focused on in the paper and early internationalization, concluding that we expect firms that acquire and deploy the required resources early in their life to have a higher propensity to engage in internet-enabled international entrepreneurship and to be more successful at it. We identify moderating effects that are likely to affect the propositions presented, as well as the individual- and environment-level factors that may influence firms' successful pursuit of online international opportunities. We outline negative outcomes that may be associated with internet-enabled internationalization, such as a temptation to over-standardize, rash foreign market expansion, and insufficient attention to offline interactions with current and potential buyers. Finally, we highlight some of the challenges of studying internationalization in an online context.

2. Introduction

“It is true that the Internet will change everything. It is not true that everything will change.”

– Paul Deninger, CEO of Broadview Capital Partners, quoted by [Useem \(2000\)](#)

Advances in information and communication technologies have been identified as enablers of international entrepreneurship. By increasing the quality and speed of communications and transactions, and decreasing their cost, such advances have made internationalization more feasible for resource-constrained firms ([Gassmann and Keupp, 2007](#); [Mathews and Zander, 2007](#); [Oviatt and McDougall, 2005a](#)). The truth of these assertions is readily apparent from an ever-increasing number of highly visible examples. Some of these companies provide digital services, such as the online telephone business Skype and the online auction site eBay. Others, like the airline EasyJet, provide conventional products and services, but do most of their transactions and communications online, enabling them to pursue international opportunities quickly after start-up. The proliferation of international online markets over the past decade (cf. [Reuber and Fischer, 2009](#)) has made it possible for ever greater numbers of new firms in an array of industries to be “born global.”

The phenomenon of internet-enabled internationalization seems unlikely to be restricted to high profile cases. While figures on internet-based cross-border trade are not available, there is evidence that even the smallest businesses are active internet users. In 2007 in Canada, for example, 95% of businesses (with 20–99 employees) had internet access, 74% had a website, 69% were purchasing online and 13% were selling online ([Industry Canada, 2009](#)). Data on six sectors in 28 countries reported by the Organisation for Economic Co-operation and Development indicate that, although there is a wide range in the extent to which businesses are purchasing and selling over the internet, online transactions are now common in most of the countries tracked ([OECD, 2009](#)). Over half of all businesses with more than 10 employees in Australia, Canada, Germany, Ireland, New Zealand, Switzerland and the United Kingdom are purchasing online, and over one-quarter of such firms in Australia, Ireland, New Zealand, the Netherlands, Norway, Switzerland and the United Kingdom are selling online.² These numbers translate to millions of businesses that have, via the internet, the potential to pursue international entrepreneurship (IE).

Despite the increasing numbers of businesses that are currently using the internet to pursue international opportunities, and the latent potential for such activity from rising internet adoption levels, the IE literature has paid limited attention to the phenomenon. While recent reviews of the field (see, for example, [Aspelund et al., 2007](#); [Coviello and Jones, 2004](#); [Dimitratos and Jones, 2005](#); [Fischer and Reuber, 2008](#); [Keupp and Gassmann, 2009](#); [Rialp et al., 2005](#)) have pointed out that technology-based

² Data from the U.S. are not included in the tables, and so it is unknown whether the U.S. should be included on either list.

businesses and innovative businesses are likely to become more international, faster, than those that are not, they have not identified research that explores internet-enabled internationalization specifically. The minor extent to which IE scholars have studied the utilization of the internet is not reflective of the social or economic significance of its use by a growing number of international entrepreneurs. We suspect that a key reason for this lag is that the field emerged in what was fundamentally a pre-internet era, prior to the dot com boom and bust (McDougall et al., 1994; Oviatt and McDougall, 1994), and subsequent research has been focused mainly on the explanatory factors identified as those that were most determinant of international new ventures at that time. We believe that an essential step in moving the field forward is the incorporation of internet-related phenomena into our knowledge of the factors influencing the pursuit of international opportunities. That is the purpose of this paper.

Specifically, using a resource-based theoretical framework (Amit and Schoemaker, 1993; Barney, 1991; Penrose, 1959), we review past internet-related international entrepreneurship research to identify the firm-level resources that have been previously studied. We then review past research from the broader fields of entrepreneurship, international business, marketing, management and management information systems, to provide a deeper understanding of these resources, and to develop a conceptual model of their relationship with firms' successful pursuit of international opportunities.

Three aspects of this research scope are important to note. First, we base our theorizing on the widely-used definition of international entrepreneurship formulated by Oviatt and McDougall (2005b, p. 540): “the discovery, enactment, evaluation, and exploitation of opportunities – across national borders – to create future goods and services.” This is consistent with the definition of entrepreneurship put forth by Shane and Venkataraman (2000): “the processes of discovery, evaluation, and exploitation of opportunities” (p. 218). Thus, the firm-level outcome we focus on is firms' successful pursuit of international opportunities when competing in internet-enabled markets. By “pursuit” we encompass the sub-processes of discovery, enactment, evaluation and exploitation. By linking firm-level resources to the pursuit of international opportunities, we are, by definition, developing a model to predict the successful pursuit of such opportunities, and not just the propensity to pursue them.

Our opportunity-based definition of international entrepreneurship does not limit internet-enabled internationalization to new firms; however, given path dependencies in organizational practices (Teece et al., 1997) and the learning advantages of newness in internationalization (Autio et al., 2000), we expect firms that acquire and deploy the required resources early in their life to have a higher propensity to engage in internet-enabled international entrepreneurship and to be more successful at it. The rationale behind this expectation is discussed further in the Discussion section, once the resources we focus on have been identified and described.

In restricting our focus to one particular outcome, we recognize that other outcomes are also relevant to international entrepreneurship, such as accelerated internationalization (comprised of the speed of initial foreign market entry after startup, the speed with which geographic scope is increased, and the speed with which foreign revenues increase (Oviatt and McDougall, 2005a) and the number of foreign domain websites a firm has (Kotha et al., 2001; Rothaermel et al., 2006). Further, we also recognize that a focus on this construct limits our analysis to demand-side implications of internet-enabled markets and we acknowledge the existence of supply-side implications for global supply chains and the offshore outsourcing of labor (see, for example, Gefen and Carmel, 2008; Klein and Rai, 2009).

A second aspect of our research scope is that we focus primarily on firm-level resources for reasons of tractability and fit with the resource-based view upon which we draw. We recognize the impact on internationalization in internet-enabled markets of environmental factors such as legal, regulatory and tax regimes (Anderson et al., 2010; Zhu and Kraemer, 2005), payment channels and national technological infrastructures (Oxley and Yeung, 2001), and industry norms and geography-based sectoral clusters (Zacharakis et al., 2003) but these are beyond the scope of the current paper.

Third, following Varadarajan et al. (2008: 296), we take a broad view of internet-enabled markets, defined as markets “that enable buyers and sellers to exchange information, transact, and perform other activities related to the transaction before, during, and after the transaction via an information infrastructure network and devices connected to the network based on Internet protocol.” This definition also reflects the recognition that although it was once possible to distinguish “e-businesses” (see Amit and Zott, 2001) from those that are not, it is increasingly common to talk of the extent to which a business is engaged in using the internet to create value or to coordinate value activities with customers (see Barua et al., 2004). Thus, our review is not limited to pure dot com businesses or to businesses that sell digitized products or services.

Our paper makes a contribution to the theory, discourse and practice of international entrepreneurship by developing a model of the firm-specific resources associated with internet-enabled markets that are expected to be related to a firm's successful pursuit of international opportunities. We provide IE scholars with a theoretically-grounded current understanding of how these resources are being conceptualized and measured, and present propositions which can be tested empirically in future research. These insights are important not only for future research investigating internet-related foreign market activity directly, but also as factors to take into account as controls when studying firms that conduct any sales activities online.

In the next section of the paper, we outline the research methods used in our review. We then review the extant literature specifically related to the internet and international entrepreneurship, which reveals convergence on three firm-level resources that are consequential to a firm's internet-enabled international entrepreneurship. In the following three sections of the paper, we discuss each of these three resources in turn, and develop a propositional inventory. In the Discussion section we present the implications of our findings for future IE research.

3. Research methods

In order to ensure that relevant research from disciplines other than international business and entrepreneurship was included systematically in the review, we examined each issue of 33 journals published over more than 10 years, from the first issue of 2000

to the last issue of 2010. This time frame was selected on the assumption that research that is over 10 years old is likely to be dated in such a rapidly changing technological environment. However, we included research published prior to 2000 when it provided insights for the review.

To include the strongest journals in the fields of entrepreneurship, international business, management, management information systems and marketing, and yet keep the systematic search to a tractable volume, we focused on the 33 journals that are shown in Table 1. These journals were chosen because of their inclusion on the *Financial Times* list of 40 journals used for the 2010 MBA program rankings and/or because of their ranking on the 2008 Thomson Reuters list of journal impact factors. While the “management” category is the largest in Table 1, it does not make the coverage unbalanced because many of the journals in this category publish papers in more specialized areas, such as entrepreneurship, international business and management information systems. Although our systematic search was limited to these journals, our review is not. We included research published in other outlets when it was relevant to the discussion.

We used a two-phase search process to locate relevant articles. In the first phase, a research assistant examined manually each article in every issue of these journals during the relevant time period and deemed an article potentially relevant for the review if it had to do with companies doing business in internet-enabled markets. These articles focused on 1) factors that encourage firms to use the internet and factors that lead them to use it successfully; 2) the characteristics of internet use, at either the firm or the industry level; or 3) the consequences of firms participating in internet-enabled markets. This first phase yielded 569 articles.

In the second phase, each of these articles was read by one of the authors to determine whether and where it added value to an enhanced understanding of the internationalization of entrepreneurial firms in internet-enabled markets. We started with papers explicitly on international entrepreneurship and the internet. We identified 21 such papers, as described in Table 2 and summarized in the next section of the paper. Collectively, this existing body of knowledge in the IE field identifies three resources as being important to the successful pursuit of international opportunities, and these served as a foundation on which to structure the broader review of the literature. This broader review was undertaken to discover new theoretical conceptualizations and empirical findings regarding these resources that are of interest to IE scholars studying internationalization in internet-enabled markets. The results of the broader review are described in Sections 5, 6 and 7.

Table 1

List of 33 journals reviewed (2000 to 2010).

Field	Journal
Entrepreneurship	Entrepreneurship Theory and Practice Journal of Business Venturing Journal of International Entrepreneurship Small Business Economics Strategic Entrepreneurship Journal
International business	International Business Review Journal of International Business Studies Journal of World Business Management International Review
Management	Academy of Management Journal Academy of Management Perspectives Academy of Management Review Administrative Science Quarterly California Management Review Harvard Business Review Journal of Management Journal of Management Studies Organization Science Organization Studies Research Policy Sloan Management Review Strategic Management Journal
Management information systems	Communications of the ACM Information Systems Research Journal of MIS Management Science MIS Quarterly
Marketing	International Marketing Review Journal of International Marketing Journal of Marketing Journal of Marketing Research Journal of the Academy of Marketing Science Marketing Science

4. Prior literature on international entrepreneurship in internet-enabled market environments

We began our review by identifying the IE literature related specifically to internet-enabled markets so that we could build on previous findings when reviewing the broader literature. In doing so, we strictly limited our focus to research about IE in the context of the internet. Multiple firm-level factors have been well-documented as being related to IE in offline contexts – such as innovativeness (see Knight and Cavusgil, 2004), business networks (see Coviello, 2006; Mesquita and Lazzarini, 2008; Prashantham and Dhanaraj, 2010), production capacity (see Fan and Phan, 2007), learning (see Jones and Coviello, 2005; Sapienza et al., 2004), knowledge acquisition (see Fernhaber et al., 2009), firm ownership (see George et al., 2005), and managers' international commitment and team dynamics (see Reuber and Fischer, 1997; Reuber and Fischer, 2002) – and there is no reason to believe that they will not be consequential in internet-enabled markets as well. Accordingly, in this review we focus on firm-level factors uniquely associated with online contexts.

We approached the review with a resource-based theoretical perspective, where organizations are viewed as being made up of bundles of resources and capabilities (Amit and Schoemaker, 1993; Barney, 1991; Penrose, 1959). A resource-based theoretical perspective has underpinned international entrepreneurship research from its early days, and has provided an understanding of important resources such as international knowledge and competencies (see, for example, Fernhaber et al., 2009) and social capital and networks (see, for example, Coviello, 2006) that enable early and extensive internationalization.

As shown in Table 2, we identified 21 papers that are specifically related to IE in internet-enabled markets. Collectively they span both B2B and B2C businesses, and diverse countries. Although this is not a large body of literature, an analysis of these papers indicates that three resources have been consistently identified in the extant literature as independent constructs that are consequential to international entrepreneurship: online reputation, online technological capabilities, and online brand communities. However, the extant literature is limited in the extent to which it fully takes into account the recent constructs, measures and relationships that have been published in other fields. Further, six of the 21 papers were published before 2004 and only three were published after 2006, which means that much of the research was done on internet market environments that are now dated. Accordingly, in this section we define each resource and summarize the specific IE research that has been done on each resource. Later in the paper we review the broader literature related to the resource to more fully develop insights as to their relevance and relationship to firms' successful pursuit of international opportunities.

4.1. Online reputation

The first resource that can be discerned within the internet-related IE literature is an online reputation. A firm's reputation is “a perceptual representation of a company's past actions and future prospects that describe the firm's overall appeal to all its key constituents when compared to other leading rivals” (Fombrun, 1996: 72), and so an online reputation is defined as this perceptual representation among online constituents. A firm's reputation has been widely considered to be a valuable resource (Amit and Schoemaker, 1993; Barney, 1991). Firms with favorable reputations benefit because they are more attractive to investors, customers, suppliers, and employees. This attractiveness can yield price, cost and selection advantages that may persist over time (Roberts and Dowling, 2002). Further, reputation involves both visibility and quality (Rindova et al., 2006).

The extant IE literature suggests that the internet better enables entrepreneurial firms to overcome tangible resource limitations, by reducing communication, search, and interaction costs (Arenius et al., 2006; Berry and Brock, 2004; Chandra and Coviello, 2010; Lituchy and Rail, 2000; Loane, 2006; Moen et al., 2008), and so firms need to acquire the intangible resource of an online reputation in order to compete internationally. Indeed, reputation has been found to be related to the degree of online internationalization of young dot com firms (Kotha et al., 2001).

4.2. Online technological capabilities

The second resource identified from a review of prior research on internet-related IE is the online technology capabilities of entrepreneurial firms and their top management teams. Online technological capabilities are defined as the engagement of “routines, prior and emergent knowledge, analytic processes, and simple rules to turn IT [information technology] into customer value” (Zhu and Kraemer, 2002: 278). The importance of firm-specific capabilities to international entrepreneurship was emphasized at the inception of IE as a field of inquiry (see, for example, McDougall et al., 1994). What differs in internet-enabled markets is that additional, technology-related, capabilities are important. Indeed, Berry and Brock (2004) report that top managers' internet experience is more influential in their use of the internet for internationalization than the more-studied international business experience, and Mostafa et al. (2006) report that this experience is related to managers' entrepreneurial orientation.

Online technological capabilities are an important firm-specific resource in this context, rather than the technology itself, because the sustainability of the competitive advantage from technology lies in the firm's ability to configure and leverage technological components in a rapidly changing technological context (Zhu and Kraemer, 2002). Consistent with this perspective, Morgan-Thomas and Bridgewater (2004) find that firms that make a higher financial and managerial investment in technology are more successful in their use of internet-based export channels. Because there are cross-cultural differences in attitudes and behaviors involved in doing business online (Lynch and Beck, 2001; Rothaermel et al., 2006), knowing how to integrate technology with day-to-day operations (Loane et al., 2004; Moini and Tesar, 2005; Ramsay and Ibbotson, 2006) and marketing-related activities (Lituchy and Rail, 2000; Moen et al., 2003; Nguyen and Barrett, 2006; Sinkovics and Penz, 2006) provides benefits for gaining sales in foreign markets.

Table 2

Prior literature on international entrepreneurship in internet-enabled markets.

Article	Objective	Method	Finding(s) related to the review
Andersen (2005)	To describe how changing economies of information exchange can affect export intermediaries	Conceptual, using transaction cost economics, with examples	Export intermediaries continue to play an important role, but new, internet-based forms of intermediation will appear (e.g. eBay). Intermediaries may attempt to specialize and to strengthen their strategic position in the marketing channel.
Arenius et al. (2006)	To examine the use of the internet as a sales channel, and how it reduced the negative effects of liability of foreignness and resource scarcity	Case study of Futuremark	Using the internet as a sales channel is faster than getting agents and distributors. It reduces the need for different entry tactics for different countries, minimizes travel and distribution costs, and facilitates trial.
Berry and Brock (2004)	To examine the impact of the internet on the internationalization of firms using the perspective of the Uppsala Internationalization Model	Survey of 112 small German technology-based firms	Use of the internet can overcome resource-related barriers to internationalization. Top managers' internet experience influences their use of the internet for internationalization more than their international business experience.
Chandra and Coviello (2010)	To develop a typology of consumers-as-international entrepreneurs	Conceptual, using transaction cost economics, network economics, the resource-based view and the service-dominant view	The internet provides opportunities for individuals to be international entrepreneurs. This has been neglected by international entrepreneurship research to-date, and yet is particularly important for early internationalization in internet-enabled markets.
Katz et al. (2003)	To describe the process of virtual instant global entrepreneurship and supporting market characteristics	Conceptual, using a transaction cost perspective	Intermediaries can play important attestation and operational roles in global selling. They can reduce the need to develop internationalization expertise, which can lead to deskilling.
Kotha et al. (2001)	To examine what firm-specific factors are associated with the propensity of pure U.S.-based internet firms to develop country-specific websites	Archival data on 98 publicly traded U.S. pure internet companies	The number of foreign domain websites of a firm is related to: the firm's media visibility, reach among internet users, number of visitors to all company websites, level of competitive activity and level of cooperative activity.
Lituchy and Rail (2000)	To examine how small inns and bed and breakfasts are using internet technologies to attract guests from other countries	Survey of 114 Canadian and American small inns and B&Bs	On the internet small firms need to distinguish themselves in a much bigger pool of global competitors; however, it diminishes the advantage that large firms have over small firms. Since small firms can now reach more, and more diverse, foreign customers, they need to be able to understand them better.
Loane (2006)	To investigate the behavior and strategies adopted by rapidly internationalizing internet-enabled firms	218 "shallow" cases from Australia, Canada, Ireland, and New Zealand, followed by 53 in-depth interviews.	Firms used the internet in a variety of business functions, with varying sophistication. Firms were looking for ways to coordinate activities and support international growth objectives. Internet adoption was not incremental; it was used at the inception of new business operations, and particularly for knowledge acquisition.
Loane et al. (2004)	To investigate the internationalization strategies of internet-enabled firms	Eight case studies from Ireland, Northern Ireland, Sweden, Belgium, the U.S. and Canada	The internet facilitated rapid internationalization. Competitive advantage arises from how effectively the firm integrates technologies into its business model. First mover advantage can be quickly eroded, but failure to adopt technologies can jeopardize survival. There are opportunities (e.g. richer information) but IT capabilities are needed to take advantage of them.

Table 2 (continued)

Article	Objective	Method	Finding(s) related to the review
Lynch and Beck (2001)	To examine internet-related similarities and differences among people from 20 countries	Survey of, and completion of an internet task by, 515 people working in offices of an international company	There are significant regional differences in internet-related attitudes and behavior. Firms intending to do business internationally need to take them into account when designing their technology.
Moen et al. (2003)	To investigate how small exporting firms use the internet in their international marketing activities	Six case studies of Norwegian software firms	The internet can be used to build and signal the company's image. Standardized products are easier to sell online but may reduce competitive advantage.
Moen et al. (2008)	To investigate the use and market performance effects of information and communication technologies (ICT) with respect to business-to-business marketing activities	Survey of 635 Danish and Norwegian SMEs	ICT reduces entry barriers through access to information and a cost-efficient way to maintain and develop relationships. Managers do not perceive any positive effects on performance through the use of ICT, and believe that it can create barriers in learning about foreign markets when using it for sales activities.
Moini and Tesar (2005)	To examine how managers' perceptions of the benefits and disadvantages of the internet translate into marketing decisions.	Survey of 125 small Wisconsin (U.S.) manufacturing firms	The scope of internationalization through the internet is affected by internal factors such as managers' perceptions of the effectiveness of their use of IT, and their experience with it, rather than external factors such as customer pressure.
Morgan-Thomas and Bridgewater (2004)	To identify the factors that influence success in using internet-based export channels	Survey of 705 British exporters with corporate web sites	The effectiveness with which firms use internet-based export channels is associated with: having their own export sales force, commitment to and investment in internet technologies, and adoption pressures from customers and competitors.
Mostafa et al. (2006)	To examine the extent to which entrepreneurial orientation relates to commitment to the internet	Survey of 71 UK manufacturing SMEs	Owner/managers with higher entrepreneurial orientation have higher commitment to the internet, in terms of resource commitment, use, and perceived benefits.
Nguyen and Barrett (2006)	To examine the knowledge-creating role of the internet in the international business activities of Vietnamese firms	Survey of 306 small Vietnamese firms using the internet for international business activities	Market orientation and learning orientation are related to the use of the internet. The use of the internet is indirectly related to foreign sales intensity through perceptions of information relevance and knowledge internalization.
Ramsay and Ibbotson (2006)	To examine entrepreneurial orientation and motivation related to e-business	Survey of 80 SMEs in Ireland and Northern Ireland	Most owners were motivated to use the internet, especially with respect to customers, but many were using it in an ad hoc way.
Reuber and Fischer (2009)	To investigate what reputational signals are effective in international markets	Archival data on 343 software product sellers listed on Download.com	Three reputation signaling mechanisms – high pricing, advertising, and umbrella branding – significantly impact product trial, but the impact of high prices was negative.
Rothaermel et al. (2006)	To investigate the basis on which pure U.S. internet firms select foreign markets	Archival data on the entries of 179 American internet firms into 39 countries	The size of the international market reduces the negative direct effects of country risk, cultural distance, uncertainty avoidance and power distances on market entry, and enhances the positive direct effects of individualism and masculinity on market entry.
Sinkovics and Penz (2006)	To develop a consumer-based measure of web-empowerment for SMEs	Survey of 306 Austrian consumers	Consumers want to develop online relationships with firms and find company information. Important aspects of websites are security, clarity and simplicity, and the ability to personalize the online environment.

(continued on next page)

Table 2 (continued)

Article	Objective	Method	Finding(s) related to the review
Wynne et al. (2001)	To examine the role of the internet in the value chain of the tourism industry	Case study of the South African tourism industry	Intermediaries support economies of scope and routinize transactions, which reduces their cost and increases standardization. Even though the internet can lead to disintermediation, there are incentives for buyers and sellers to deal with an intermediary who will offer information and save time and money.

4.3. Online brand communities

The third resource we infer from a review of prior research on internet-related IE is online brand communities. An online brand community is an online “specialized, non-geographically bound community, based on a structured set of social relationships among admirers of a brand” (Muniz and O’Guinn, 2001: 412). As with the first two resources discussed, online brand communities can provide competitive rewards. Increasingly, individual buyers can, and simply want to, communicate with sellers (Schau et al., 2009). Prospective buyers want online information about sellers’ quality to lower their search costs (Chen et al., 2002), and online brand communities can provide positive endorsements. The internet lowers switching costs for current buyers, and so they are easily disrupted by a new competitive entry (Moe and Yang, 2009), but brand communities can foster affective support which increases switching costs (Schau et al., 2009).

In the remainder of the paper we review the broader literature associated with these three resources, developing a propositional inventory through the discussion. The propositions are summarized in Fig. 1. Potential measures of the key independent constructs are identified in Table 3.

5. Online reputation

An internet-enabled market provides the opportunity to gain more efficient access to more, and more geographically distant, prospective customers and other potential stakeholders than is possible in an offline environment. However, there is also a much bigger pool of competitors in such markets (Lituchy and Rail, 2000; Loane et al., 2004; Moen et al., 2003; Petersen et al., 2002; Reuber

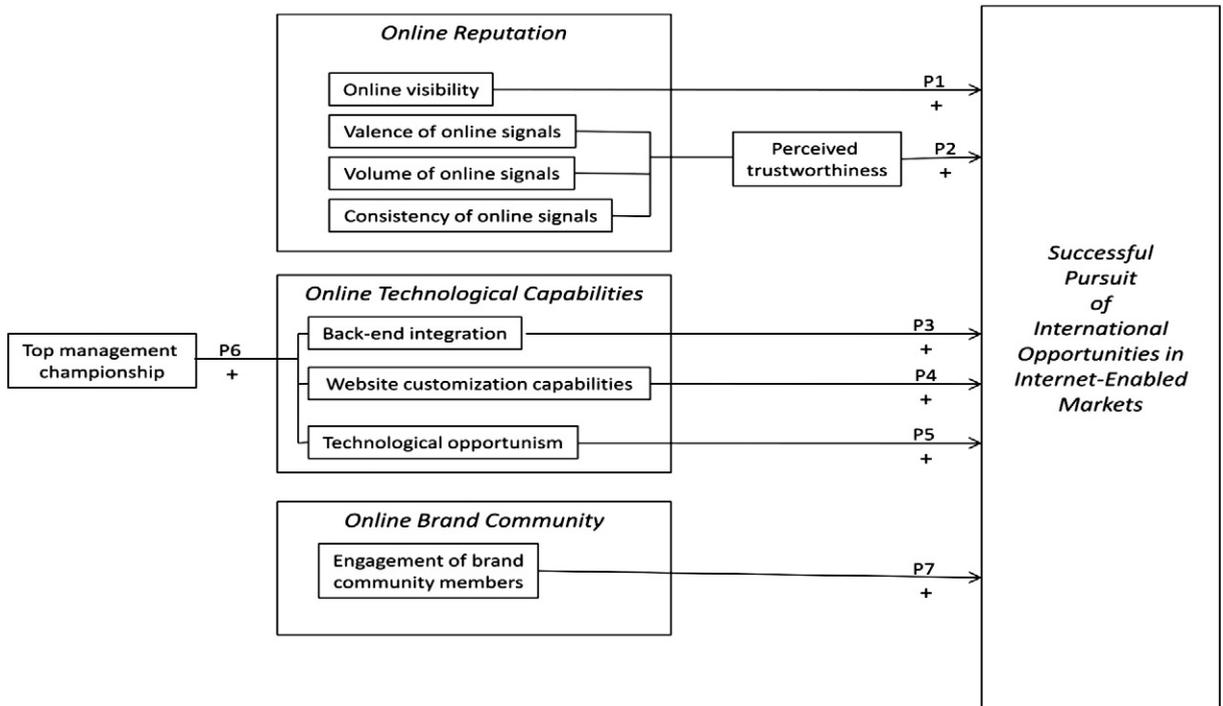


Fig. 1. Propositions related to firms’ successful pursuit of international opportunities in internet-enabled markets.

Table 3

Measures from the research literature related to the independent constructs of the propositions.

Construct	Measure
<i>Online reputation</i>	
Online visibility	No existing measure. A proposed measure is the ranking of its website, compared to those of its competitors, following an online search in its product/market.
Valence of online signals	The average online product rating or review (Chevalier and Mayzlin, 2006; Zhu and Zhang, 2010)
Volume of online signals	Number of online ratings or reviews (Chevalier and Mayzlin, 2006; Zhu and Zhang, 2010)
Consistency of online signals	The coefficient of variation in online product ratings, calculated as the ratio of the standard deviation to the mean rating (Zhu and Zhang, 2010).
Perceived trustworthiness	A 4-item scale measures trust in terms of obtaining information from a seller, and encompasses honesty and competence (composite reliability score is .88). A 6-item scale measures trust in purchasing a product from a seller, and encompasses competence, integrity and benevolence (composite reliability score is .87) (Pavlou and Fygenson, 2006)
<i>Online technological capabilities</i>	
Top management championship	Top management championship is measured on a 7-item scale which separates the participation dimension ($\alpha = .93$) and the beliefs dimension ($\alpha = .80$) (Chatterjee et al., 2002)
Back-end integration	Technological capabilities are separated into back-end integration, measured on a 2-item scale ($\alpha = .86$), and front-end functionality, measured on a 5-item scale ($\alpha = .80$) (Zhu and Kraemer, 2005)
Website customization capabilities	Perceived customization is measured on a 3-point scale ($\alpha = .65$) (Steenkamp and Geyskens, 2006). This is an individual-level measure and would have to be adapted to the firm level.
Technological opportunism	Technological opportunism is measured on an 8-item scale and separates technology-sensing capability ($\alpha = .77$) and technology-response capability ($\alpha = .83$) (Srinivasan et al., 2002)
<i>Online brand community</i>	
Level of engagement of community members	To our knowledge, there does not exist a firm- or product-level measure of the level of engagement of an online brand community. However, Algesheimer et al. (2005) provide individual-level measures of online brand community identification (5-items; composite reliability = .92) and online brand community engagement (4-items; composite reliability = .99) that are positively and significantly correlated with each other and could provide a place to start. The items would need to be specialized to take into account foreign and domestic community members, and be aggregated to the community level.

and Fischer, 2009). In order to stand out in this larger pool and be able to exploit the internationalization opportunities provided, it is important that firms develop an online reputation. Firms need to be both visible online and seen as providing high-quality goods and services. Particularly in new industries, gaining an online reputation early can yield substantial competitive gains in international internet-enabled markets because there is an increased capacity for herding behavior, with buyers imitating the purchase decisions of previous buyers (Duan et al., 2009).

Firms competing in internet-enabled markets can vary greatly in their online visibility. We define a firm's online visibility as its familiarity in the eyes of online stakeholders relative to that of its rivals. In internet-enabled markets, firms can increase their visibility by purchasing keywords from information services such as Google or engaging in search engine optimization (manipulating web site content) so that the firm's website appears at, or near, the top of the list when people do an online search (Liu et al., 2010). Following the logic that potential buyers cannot purchase from firms of which they are unaware, and, *ceteris paribus*, are more likely to purchase from firms with which they are familiar, we expect a firm's online visibility to be positively and significantly related to a firm's successful pursuit of international opportunities in internet-enabled markets, as summarized in Proposition 1 and shown in Fig. 1:

Proposition 1. *The online visibility of a firm is positively related to the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of online visibility. We have not been able to find a measure for this construct in the research literature, but, as indicated in Table 3, suggest that one indicator would be the ranking of its website, compared to those of its competitors, following an online search in its product/market.

While the visibility dimension of reputation has not been widely studied, there is a large literature on the quality dimension. Previous research in both online and offline contexts suggests that there are several ways to signal the quality aspect of an entrepreneurial firm's reputation, and that signaling quality online may be different in some respects than signaling quality offline.

One type of reputational signal is generated by the firm itself. Signaling theory posits that firms self-select different signals to the market depending on whether they are a high quality or a low quality producer (Spence, 1973). Further, these signals are credible

when the organization will incur a loss if they signal untruthfully (Schelling, 1960). Two such reputational signals often studied in offline contexts are higher prices and a greater investment in advertising than competitors. Both are credible signals in offline environments because of the possibility of repeat purchases. With respect to price, a buyer might purchase a low quality product at a high price once, but is unlikely to do so again. With respect to advertising, firms are less willing to invest in advertising when their product is of low quality with a low likelihood of repurchase (Milgrom and Roberts, 1986).

In online environments, however, price and advertising become less reliable signals of quality. People are generally reluctant to pay for things over the internet (Anderson 2009; Reuber and Fischer, 2009), making it difficult to charge a price premium for high quality products. Further, sponsored search advertising, now the dominant form of online advertising, has a pay-for-performance nature (i.e. the firm pays for clicks and not exposure), which reduces the financial penalty of advertising for low quality sellers (Animesh et al., 2010). We therefore expect price and advertising per se to be weak online signals of reputation in international markets and to be unrelated to internet-enabled internationalization.

Beyond signaling quality through price and advertising, however, managers also have the option of signaling quality through the information they disclose online. The valence of an online signal is its favorability (the extent to which it is positive or negative): firms are more likely to disclose information that favors them and to fail to disclose information that could hurt them (Resnick et al., 2000). Prior research has investigated two types of information about the firm that can signal high quality. The first involves third party endorsements. Affiliations with prestigious people and organizations, third-party awards, certifications and testimonials are all reputation-building mechanisms that have been found to be beneficial to disclose for firms operating online (Dewally and Ederington, 2006; Moen et al., 2003). Even though there is low understanding of the meaning behind some of this information, such as third party seals of approval (Beltrami and Stafford, 1993), they can result in more favorable assessments of the quality of unfamiliar firms (LaBarbera, 1982).

The second type of firm-disclosed online quality signal that has been studied is disclosure of the firm's country-of-origin. Country-level associations are considered reputation signals because positive or negative stereotypes of a country's image can impact stakeholders' perceptions of that firm and its products (Gurhan-Canli and Maheswaran, 2000; Han, 1989). There can be big differences in disclosure practice; for example, in a study of software product firms selling through an online channel, only 55% of the firms disclosed their country-of-origin (Reuber and Fischer, 2011). Further, being perceived as global (vs. local) can result in positive stereotypes. For example, perceptions of a brand's globalness have been found to be positively related to perceived brand quality and prestige (Steenkamp et al., 2003).

In addition to signals generated by the firm, the internet era is characterized by a preponderance of online ratings and reviews, reputational signals that are largely outside the firm's control. These are likely to be less uniformly (and positively) valenced than signals disclosed by the firm, and there is likely to be a much greater volume of them. With a higher volume of online signals comes a higher likelihood that there will be inconsistency among them: for example, not all customers are likely to post positive reviews. Thus, in addition to signal valence, signal volume and signal consistency are aspects of a firm's online reputational signals that researchers need to take into account when assessing a firm's online reputation.

Online ratings and reviews differ from word-of-mouth endorsements in offline contexts, because of their scale, their geographic reach and their frequent anonymity (Dellarocas, 2003). Prior research has found that they tend to be overwhelmingly positive (Chevalier and Mayzlin, 2006; Dellarocas and Wood, 2008), and so negative ratings and reviews stand out and have negative consequences for sales (Chevalier and Mayzlin, 2006). Further, there is evidence that when multiple reputation signals are available, consistency across the valence of individual signals leads to perceptions of higher quality than does inconsistency among the signals' valence (Miyazaki et al., 2005). Finally, online reputational ratings have a bigger influence on the sales of less popular products (Zhu and Zhang, 2010). This suggests that a high favorability, volume and consistency of online signals will be particularly influential for the product/service offerings of firms new to a foreign market due to the lack of prior familiarity on the part of buyers in this market.

Thus, whether generated by the firm itself or by entities in cyberspace, we expect three dimensions of online reputational signals – online signal valence, online signal volume and online signal consistency – to influence buyers in geographically disparate markets, and be positively related to the extent to which a firm can successfully exploit international opportunities. However, we expect these to be indirect relationships, mediated by the firm's perceived trustworthiness. Perceived trustworthiness is particularly important in international internet-enabled markets where the firm is unfamiliar (cf. Aldrich and Fiol, 1994; Shepherd and Zacharakis, 2003), and most buyers interact with a seller in only one transaction (Resnick and Zeckhauser, 2002). Online reputation signals are expected to be related to a firm's successful pursuit of international opportunities through perceived trustworthiness rather than directly because the relationship between specific types of reputation signals and perceptions of trustworthiness differ cross-culturally (Sia et al., 2009) and by whether the source (for example, an online reviewer) is known to be geographically close and/or non-foreign (Forman et al., 2008; Lim et al., 2006). This logic is reflected in Proposition 2 and shown in Fig. 1:

Proposition 2. *The perceived trustworthiness of a firm positively mediates the relationship between the valence, volume, and consistency of its online reputational signals and the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of online quality signals. Table 3 identifies measures that are used in other fields to capture empirically the independent constructs of Proposition 2. The valence of online reputational signals is often measured by the valence of the average online product rating or review, while the volume of online reputational signals is often measured by the volume of online ratings or reviews (Chevalier and Mayzlin, 2006; Zhu and Zhang, 2010). These data are readily available on most websites and have been

used to measure firm-level reputation in previous IE research (see, for example, Reuber and Fischer, 2009). The consistency of online reputational signals has been measured directly in past research, through calculating the variation in online ratings (thereby using readily available data) (Zhu and Zhang, 2010), and also has been manipulated experimentally by providing experimental subjects with reputational signals of differing valence (Miyazaki et al., 2005). Finally, Pavlou and Fygenon (2006) provide two measures of perceived trustworthiness, a four-item scale measuring trust in obtaining information from a seller and a six-item scale measuring trust in purchasing from a seller.

6. Online technological capabilities

Capabilities have been identified as important for the successful adoption of information technology (see, for example, Tanriverdi, 2005; Wang and Alam, 2007; Zahra and George, 2002), and for successful international entrepreneurship (see, for example, Knight and Cavusgil, 2004; McDougall et al., 1994; Mudambi and Zahra, 2007). Consistent with this prior research, we have identified, from the extant internet-related IE literature, online technological capabilities as a resource related to a firm's successful pursuit of international opportunities. The quality of a firm's online technology has been found to be associated with lower online customer switching (Chen and Hitt, 2002), better international customer–supplier relationships (Jean et al., 2010), better online market performance (Saini and Johnson, 2005) and better overall firm performance (Barua et al., 2004; Zhu, 2004). Moreover, selecting, developing and implementing the internet technologies that will enable a firm to remain competitive is difficult to do and there are many failures (Uhlenbruck et al., 2006), rendering internet-related technological capabilities rare and valuable among market competitors. Indeed, scholars have argued that online capabilities are themselves a reputational signal (Schlosser et al., 2006). Thus, having online technological capabilities will better enable firms to pursue internationalization opportunities provided in internet-enabled markets.

From a resource-based perspective, Zhu and Kraemer (2005) emphasize the importance of technological integration. They classify e-business functionalities into two types: (a) back-end integration, linking web applications with back-office databases and facilitating internal information sharing; and (b) front-end functionality, providing online product information to customers, facilitating transaction processing and enabling customization and personalization. They surveyed 624 retailers across 10 countries (Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, Taiwan and the U.S.) and found that back-end integration had a bigger impact on international e-business value (impact on firm outcomes) than did front-end functionality. Firms with more integrated back-end functionality (vs. less) are better able to discover international opportunities because they are better able to analyze their data. They are also expected to be able to exploit international opportunities better because they can deliver responses (for example, deliveries or estimates) to customers more quickly, which is valued in an online context. These arguments lead to Proposition 3, as shown in Fig. 1:

Proposition 3. *The back-end integration of a firm's online technology is positively related to the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of back-end integration. Zhu and Kraemer (2005) provide a measure of back-end integration, which is shown in Table 3.

A second dimension of online technological capabilities that is expected to be associated with internet-enabled internationalization is a firm's ability to customize the online experience for particular markets. Website customization facilities promote effective communication with customers in specific regions, which in turn is critical to building an international presence via the internet (Singh and Kundu, 2002). This capability is important because prior research shows that there are cross-cultural differences in how buyers buy online and relate to website characteristics (Lynch and Beck, 2001). For example, in a study of over 8000 consumers from 23 countries and 30 large consumer packaged goods companies, Steenkamp and Geyskens (2006) found that the perceived value a consumer derived from visiting a brand website was influenced by the country they were from. The importance of website characteristics such as perceived privacy/security and the inclusion of local content varied across consumers from different countries, and influenced their overall perceptions of a website's value. Focusing specifically on trust, a recent study found that the most effective trust-building mechanisms in website content differed between prospective Hong Kong internet shoppers and their Australian counterparts (Sia et al., 2009). Collectively, these studies suggest that those firms which can customize their websites to take into account the preferences and biases of potential buyers from different cultural backgrounds are likely to be better at exploiting international opportunities, leading to Proposition 4, as shown in Fig. 1:

Proposition 4. *A firm's website customization capabilities are positively related to the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of customization capabilities. In Table 3, we identify Steenkamp and Geyskens (2006) measure of website customization as one that can be used in further research in this area because it was developed specifically to be used in multiple countries and in seven languages, and was subjected to rigorous convergent and discriminant validity testing. It is an individual-level measure and would need to be adapted to the firm level.

So far in the discussion we have focused on online technological capabilities but not online *dynamic* technological capabilities. Rindova and Kotha (2001) point out that an internet-enabled international market environment is one characterized by hypercompetition (D'Aveni, 1994) and high-velocity (Eisenhardt and Martin, 2000). In a longitudinal analysis of Yahoo! and Excite,

they provide evidence that firms competing in such an environment need dynamic capabilities because they need to regenerate their competitive advantage on an ongoing basis. In particular, they show that firms' strategies change so often that firm performance is more likely to stem from the ability to select market positions and resources than to achieve and protect them. This suggests that a dimension of firms' online technological capabilities involves pre-adoption processes.

A useful construct to capture these ideas is that of technological opportunism (Srinivasan et al., 2002). Technological opportunism is a sense-and-respond capability with two components. Technology-sensing capability is "an organization's ability to acquire knowledge about and understand new technology developments" (p. 48), while technology-response capability is "an organization's willingness and ability to respond to the new technologies it senses in its environment that may affect the organization" (p. 49). In other words, the sensing capability involves identifying, scanning and evaluating innovations, while the response capability involves monitoring, staving off threats, experimentation, and/or adoption. Srinivasan et al. (2002) found that technological opportunism was related to the adoption of innovative technology. Although the relationship between technological opportunism and internet-enabled internationalization has not been studied, it is logical, following Rindova and Kotha's (2001) arguments on the need to regenerate competitive advantages in internet-enabled market environments, to expect a positive relationship between technological opportunism and a firm's successful pursuit of international opportunities. Firms with a greater sensing capability are likely to be better able to discover such opportunities and firms with a greater response capability are likely to be better able to exploit such opportunities. This logic leads to Proposition 5, as shown in Fig. 1:

Proposition 5. *The technological opportunism of a firm is positively related to the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of technological opportunism. Srinivasan et al. (2002) provide a firm-level measure of technological opportunism, which is shown in Table 3.

Finally, our review of the literature indicates an important antecedent to a firm's online technological capabilities: top management championship. Numerous studies across disciplines have concluded that a firm's top management is an important determinant of the successful adoption of internet-related technologies (see, for example, Brews and Tucci, 2004; Chatterjee et al., 2002; Piscitello and Sgobbi, 2004). Top management championship is important because success depends on setting a strategic direction, developing the necessary resources and capabilities and institutionalizing the strategy among internal and external stakeholders (Montealegre, 2002). Thus, top management championship has both an attitudinal dimension and a behavioral dimension, and is defined as positive top management team beliefs about the value of online initiatives, as well as participation in those initiatives (see Chatterjee et al., 2002; Srinivasan et al., 2002).

This line of reasoning is consistent with a strong tradition of IE research showing that the beliefs and behaviors of a firm's top managers affect its internationalization (for example, McDougall et al., 1994; Oviatt and McDougall, 1994; Reuber and Fischer, 1997; Reuber and Fischer, 2002; Rialp et al., 2005). It suggests that top management championship is related to firms' internationalization through mediation. As shown in Fig. 1 and reflected in Proposition 6, we expect top managers' championship of online technological initiatives to impact firms' online technological capabilities, which, in turn, impact their successful pursuit of international opportunities:

Proposition 6. *The relationship between top management championship of online technological initiatives and a firm's successful pursuit of international opportunities, when competing in internet-enabled markets, is positively mediated by three dimensions of online technological capabilities: back-end integration, website customization capabilities and technological opportunism.*

Operationalization of top management championship. In Table 3 we recommend the Chatterjee et al. (2002) measure of top management championship because it has a behavioral and an attitudinal dimension and exhibits high reliability.

7. Online brand communities

Scholars in the area of international entrepreneurship have long recognized that having well-developed social networks with stakeholders facilitates internationalization (Coviello, 2006; Coviello and Munro, 1997; Fernhaber et al., 2009; Fernhaber and McDougall-Covin, 2009; McDougall et al., 1994; Mesquita and Lazzarini, 2008). The internet has a strong and unique role in providing new forms of intermediation (Andersen, 2005; Katz et al., 2003) and particularly in empowering consumers (Chandra and Coviello, 2010). Online consumers are using the internet to communicate with each other and to forge and sustain relationships between themselves and the firms they do business with (Sinkovics and Penz, 2006). These types of online interactions can provide companies with important information about their markets (Wynne et al., 2001), and so have the potential to enable firms to discover, evaluate and exploit international opportunities.

The marketing literature has established that online brand communities facilitate value co-creation by consumers and companies. Online brand communities may be initiated by a firm or by buyers or users of its products. In either case, the practices that are common in online brand communities can: enable brand use (especially for novices); enhance brand perceptions outside the brand community; provide affective support for community members that serves as a switching cost; provide solutions to users experiencing challenges; and help to build additional, positively valenced, meanings of the brand among community members (Schau et al., 2009). Whether online brand communities are initiated by the firm or by outside stakeholders, companies can monitor them to learn about product and company perceptions; leverage active users' insights to provide customer support; and stimulate positive word of mouth by incenting community members to review new products or services (see, for example, Kozinets et al., 2010; Mayzlin,

2006; Schau et al., 2009). To reap benefits from online communities, firms must invest in understanding and honoring the mores and norms of the community (Porter and Donthu, 2008). This typically requires human resources to be invested in monitoring and interacting with online communities (Kane et al., 2009).

Online brand communities are likely to be a valuable resource associated with internet-enabled internationalization in part because online communities are not geographically bounded; they readily span national borders (Chandra and Coviello, 2010; Mayzlin, 2006). The key characteristic of an online brand community that is relevant to a firm's successful pursuit of international opportunities is the extent to which community members are engaged with it in terms of actively discussing products or services and how to use them. When community members are thus engaged, potential foreign buyers can simply monitor the community to learn about the firm's offerings from the customer point-of-view, or can raise questions in a forum that is populated by other buyers who may be presumed to be less biased sources of information than the firm itself. Engagement of community members from diverse geographic regions can signal to potential international buyers that the firm can and does serve foreign clients effectively. Engagement on the part of the firm itself allows it to effectively monitor and reach out to geographically dispersed audiences and to avoid the danger of becoming too isolated from their online foreign markets (cf. Yamin and Sinkovics, 2006). This logic leads to Proposition 7 as shown in Fig. 1:

Proposition 7. *The level of engagement of a firm's online brand community is positively related to the firm's successful pursuit of international opportunities, when competing in internet-enabled markets.*

Operationalization of the level of engagement of an online brand community. Much of the research on how people are engaged in online brand communities is quite recent and has been qualitative in nature. As indicated in Table 3, we were unable to find a firm- or product-level measure in the literature. A starting point for IE researchers who wish to develop a measure to use in future research is a paper by Algesheimer et al. (2005), who provide individual-level measures of online brand community identification and online brand community engagement. These measures would need to be specialized to take into account foreign and domestic community members, and be aggregated to the community level and/or firm level.

8. Discussion

We have identified, from the extant literature on internet-related international entrepreneurship, three resources expected to be positively related to firms' successful pursuit of international opportunities: online reputation, online technological capabilities and online brand communities. In this paper, we take the identification of these resources as a starting point, and present a theoretically grounded review of the research that has been carried out on each resource. The review spans 33 journals, representing five different business areas, during the period 2000–2010. In doing so, we developed seven propositions that can be tested in future empirical research, as shown in Fig. 1. As an additional means of helping future researchers who work in this area, we specified measures from the literature (or suggested new measures) that will be useful in such future empirical research and itemized them in Table 3. This review provides IE scholars with a current understanding of how these three resources are being conceptualized and measured, and how and why they are expected to be related to a firm's success in pursuing international opportunities when competing in internet-enabled markets. In the remainder of the paper we build on these contributions and discuss the implications of this research for future research on internet-enabled international entrepreneurship. We begin with a discussion of contextual factors that might limit the applicability of our propositions.

8.1. Contextual limitations

A discussion of context is important because it establishes where and when theories are applicable and research findings should be expected to hold (Johns, 2006; Zahra, 2007). In our case, one contextual factor constitutes a boundary condition which restricts the generalizability of all the propositions presented here: the extent to which there are market-related barriers to entry. While markets are becoming increasingly global, some are characterized by high structural barriers to entry for foreign firms, such as jurisdictional regulations and cultural barriers to adoption (Porter, 1986). To the extent that such market-related barriers are present, we cannot expect firm-specific resources to be significantly related to a firm's success in pursuing international opportunities.

A question that could be posed is whether the propositions are more or less applicable to particular types of firms (for example, technology-based firms vs. non-tech firms; pure dot com firms vs. bricks-and-mortar firms), particular types of products and services (for example, digitized vs. tangible products and services) or particular types of customer bases (for example, B2B vs. B2C businesses). We think that the answer to this question is "no" because we see these characteristics as being endogenous to the model presented here. From a resource-based perspective, there is variation in what firms attempt to do, and what they succeed in doing well, and classifications like these are becoming difficult to apply to many companies unequivocally. Increasing, and increasingly effective, use of the internet, through the three resources discussed here, is enabling entrepreneurial firms to conduct more demand-side activities online, to digitize their products and services to a greater extent and to sell to both business and consumer markets to a greater extent; indeed Chandra and Coviello (2010) point out that the distinction between businesses and consumers is blurring. An example of an entrepreneurial firm that is pushing these boundaries is FreshBooks.com, which provides invoicing services, a category of offering which is generally not considered international, technology-based, digitized or consumer-facing. Yet, its demand-side activities are almost exclusively online, it has developed digitized products which can be integrated

with the digitized products offered by other firms, it has an active brand community and it treats its business users like consumers. Only 14% of the firm's customer base is from its domestic market. This example points out that entrepreneurial firms can change the nature of their competition through their activities in internet-enabled markets, and gain more success in pursuing international opportunities than was hitherto possible for firms of their type.

8.2. Avenues for further research

8.2.1. Early internationalization

Because internet-enabled markets constitute a means for entrepreneurial firms to pursue international opportunities, we have used an opportunity-based definition of both entrepreneurship (Shane and Venkataraman, 2000) and international entrepreneurship (Oviatt and McDougall, 2005b), which do not distinguish between early and later internationalization. However, given that there are path dependencies in organizational practices (Teecce et al., 1997) and learning advantages of newness in internationalization (Autio et al., 2000), it is possible that there are relationships between early internationalization and the development of the resources that we have posited to be related to successful pursuit of international opportunities in internet-enabled markets. We believe that exploring these relationships will be a fruitful direction for future research in this area.

Specifically, one question for future research is whether firms that internationalize earlier are able to develop online reputations that better enable them to pursue international opportunities successfully. We speculate that this might be the case because it seems likely that firms that internationalize early will be able to accumulate online reputational signals – such as awards, ratings and endorsements – from the foreign markets served. These should signal that the firm is successful in doing business there, leading to a more favorable assessment from buyers in those foreign markets of the firm's trustworthiness (see Forman et al., 2008; Lim et al., 2006). Conversely, if a firm operates solely in a domestic market for some extended period prior to foreign market entry, it is likely that online signals will be dominated by those based in the domestic market. Future research is needed to verify these assumptions and to provide insights on their implications.

Another question for future research is whether the online technological capabilities of firms that internationalize earlier via internet enabled markets better equip them to pursue international opportunities successfully. We know that knowledge of international markets is needed to be able to transform technological components into value for customers. In particular, as has been discussed, it is important to be able to provide multiple ways of interacting with the firm online because the effectiveness of a particular tactic can vary cross-culturally. Future research should examine whether assimilating this new foreign knowledge is likely to be easier for younger firms than for older firms (cf. Autio et al., 2000).

Further, future research should examine whether firms that internationalize early and, in doing so, develop online brand communities early, have an advantage in terms of pursuing international opportunities successfully. It seems reasonable to expect this, since early internationalization through internet-enabled markets is more likely to result in a higher proportion of foreign buyers in a firm's online brand community. This should not only signal to foreign customers that the firm can serve them effectively, but also provide the firm with valuable information about foreign buyers. At the same time, early internationalization enables the firm to develop the capabilities at an early age to monitor and manage the international aspects of its online brand communities. In general, the benefits, costs and challenges of international online brand communities are a ripe area for future IE research.

8.2.2. Moderating effects

A different direction for future research is to investigate the moderators of the propositions presented here. We have currently left them unspecified because a large number of potential moderators can be identified theoretically, and to try to include all possible moderators would have made this review excessively lengthy and speculative. Their investigation is better suited to future empirical research.

One of the key questions in regard to moderators is whether they are at the product, firm or industry level. It is possible that the moderators relevant to each factor are at a different level of analysis. For example, moderators of the relationships between online reputation (and, by extension, perceived trustworthiness) and the successful pursuit of international opportunities may be product-level characteristics. This seems plausible because reputation is an uncertainty-reducing mechanism (Shapiro, 1983) and buyers are uncertain about the products offered by new and unfamiliar firms, in addition to being uncertain about the firm itself (Ghose, 2009; Shepherd and Shanley, 1998). This suggests that when there is more product uncertainty – for example, when the product is riskier or is an experience good rather than a search good – online reputational signals will be more strongly related to demand-side outcomes such as foreign sales (cf. Gurhan-Canli and Batra, 2004; Huang et al., 2009; Reuber and Fischer, 2011). Testing this assumption is a question for future research.

In contrast, it seems likely that moderators of the relationships between online technological capabilities and successful pursuit of international opportunities could be firm-level characteristics related to marketing competencies, because marketing competencies are needed to exploit the potential benefits that can ensue from technological innovation, such as customization, richness and high reach (Park et al., 2004). Empirical studies have shown that marketing competencies can moderate the impact of a firm's technological competencies on firm-level outcomes, with a beneficial impact on export performance (Prasad et al., 2001) and e-commerce performance (Saini and Johnson, 2005), but future research is needed to determine their generality. For example, in the Prasad et al. (2001) study only 68% of the responding firms had their own web site, and this proportion would almost certainly be much higher today, while Saini and Johnson (2005) focused their attention on a single industry, that of e-brokerage service providers.

In regard to moderators of the relationship between the level of engagement of an online brand community and the successful pursuit of international opportunities, it may be industry-level characteristics that matter because the benefits of an online brand community are likely to differ across industries. In particular, future research can examine where there is a stronger relationship in new, emerging industries and in fast-paced industries because learning requirements are higher for both the firm and potential buyers in these environments.

Without future research, it remains unclear whether product, firm, and/or industry level factors moderate the relationships we have proposed. We suggest that researchers who seek to explore moderators will benefit from considering that different levels of moderating variables may matter in each case.

8.2.3. Individual- and environment-level factors

In addition to examining possible moderating effects of the propositions identified here, future research should also consider other antecedents of firms' successful pursuit of international opportunities beyond the firm-level resources identified here. We have identified top management championship as an individual- or team-level concept, but others may be relevant as well. One potentially promising avenue of research at the individual level of analysis, specifically related to online markets, is the use of social media by founders and the online human branding of founders, both of which can enable them to acquire resources from, and visibility among, a wide array of potential stakeholders (Fischer and Reuber, 2010; Fischer and Reuber, 2011). In other words, future research should examine how, and the extent to which, the online traits and behaviors of founders impact the ability of their firms to pursue international opportunities in internet-enabled markets.

At the environmental level, two factors worth considering in future research are participation in e-markets and in online innovation communities. In an e-market, buyers and sellers come together in a market-space to exchange information and complete transactions; for example eBay and Amazon. Sellers are motivated to join e-markets to reduce the cost of transactions and/or to signal quality through affiliation with other market participants (He and Chen, 2006).

E-markets vary in terms of the extent to which they are internationalized. In their study of the U.S.-based e-market Download.com, Reuber and Fischer (2009) report that sellers in the software product categories they examined were from 25 countries, with the largest percent from a single country (the U.S.) representing only 47% of the sellers that disclosed their country-of-origin. Further, potential buyers visiting the website were from a large and diverse collection of English-speaking and non-English-speaking countries, with the largest percent from a single country (again the U.S.) representing an even lower 26%. Not all electronic markets are so international, however. Although it is not possible to know the country-of-origin of sellers on other e-markets without studying them in detail, information about the visitors to their websites (potential buyers) is available through Alexa.com, a website that provides information about web traffic. Data from this site indicate that e-markets differ widely in the extent to which they attract potential buyers from diverse foreign markets. For example, compared to the 26% of visitors from the single most represented country on Download.com, 67% of visitors to etsy.com, an e-market for handmade goods, are from the U.S., and 77% of visitors to Dawanda.com, another e-market for handmade goods, are from Germany.

It seems likely that firms that are able to participate in, or create, international e-markets are more likely to be visible to foreign buyers. This participation is likely to facilitate internet-enabled internationalization (Andersen, 2005; Katz et al., 2003; Wynne et al., 2001), but is unlikely to be a firm-specific resource unless the firm has the resources to participate more effectively than rivals. For example, there could be a competitive loss for a hotel that chooses not to participate in Tripadvisor.com, but there is unlikely to be a competitive advantage if the hotels' rivals are also participating in that e-market. Where a competitive advantage could come into play is through the hotel's online reputational signaling via the e-market's platform (for example, the number of stars a hotel receives). Given the number, diversity and influence of e-markets, future research is required to investigate the full implications for successful pursuit of international opportunities of participation in international e-markets of various kinds.

A second type of facilitator for some types of firms may be participation in online innovation communities. Rather than being oriented around customers or markets, such communities tend to be oriented around producers. An open innovation community is a "group of unpaid volunteers who work informally, attempt to keep their processes of innovation public and available to any qualified contributor, and seek to distribute their work at no charge (Fleming and Waguespack, 2007: 166). Although the first open innovation communities consisted largely of academic computer scientists, they have now spread to other arenas, such as genomics, sports equipment and publishing (Franke and Shah, 2003). If a firm is in an environment that features a relevant innovation community, participating in it may be beneficial. Participation can enable firms to be more innovative and have more information about the innovations of other community members (Franke and Shah, 2003). Moreover, being seen as a leader in such communities is particularly beneficial because the firm will be seen as a technological leader. Not only will this facilitate introductions to individuals and other organizations, the firm is more likely to be able to influence industry standards in their favor (Dahlander and Magnusson, 2005), benefits which have been found to be associated with international sales (Mesquita and Lazzarini, 2008; Moen et al., 2003). Again, though, participating in, or even leading, an online innovation community may result in a firm-specific advantage in foreign markets only if the firm is unique among its competitors in this regard. Thus, future research is required to determine the factors that render participation in online innovation communities necessary to avoid competitive loss, and those that are associated with competitive gains.

8.2.4. Negative outcomes

In taking a resource-based theoretical perspective and considering the relationship between firm-specific resources and firms' successful pursuit of international opportunities, this review has focused on a positive outcome. However, in offline contexts, there is not always a positive relationship between greater internationalization and overall firm performance (Bloodgood et al., 1996; Lu and

Beamish, 2001; McDougall and Oviatt, 1996; Westhead et al., 2004), and this is likely to be the case for online contexts as well. Negative outcomes may stem from internet-enabled internationalization, and these are important to consider in designing future studies.

One negative consequence could be a temptation to over-standardize a product or service offering. For example, Bierman and Hitt (2007) found that globalization is accompanied by the increasing commoditization of the legal profession and Moen et al. (2003) found that standardization cuts into the profit margins of software product firms, even though standardized products are easier to sell online. Thus, questions for future research have to do with the trade-offs involved in standardization and how firms should go about achieving the optimal level.

A second negative consequence could be rash foreign market expansion. Petersen et al. (2002) point out that setting up a website can render a firm more visible to foreign partners and customers, leading to more unsolicited orders, and this can result in foreign market entries that are more numerous and faster than had been anticipated. The dangers of such a scattershot “market skimming” strategy are supported by Bingham's (2009) study of Singaporean, Finnish and American software firms. He found that a deliberate, coherent selection of markets characterized successful (but not unsuccessful) foreign market entries for two reasons. First, entering easier markets before more difficult markets allows managers to build their experiential bases, from more similar markets to less similar markets, or from smaller, less visible markets, to larger, more visible markets. Second, successful entries in early, easier markets can serve as signals to more difficult, subsequent markets, thereby enabling firms to manage external perceptions of their legitimacy and competencies. Research is required to explore whether this peril is especially acute when international opportunities are pursued via internet-enabled markets, or whether certain characteristics of the online context provide some insulation from these dangers in some cases.

Related, Yamin and Sinkovics (2006: 340) argue that firms engaged in online internationalization are susceptible to a “virtuality trap” which is a “perception by the internationalizing firm that the learning generated through virtual interactions obviates the need for learning about the target market through non-virtual means”. This virtuality trap stems from a greater isolation from the host market in online compared to offline entries, and a greater time compression between entries. Drawing on O'Grady and Lane's (1996) research on psychic distance and interviews with managers experienced with cross-border activities, they propose that online internationalization can reduce the extent to which managers perceive differences across foreign markets, thereby serving as a barrier to learning about important differences that exist and having a negative impact on firm performance. Clearly, research is necessary to determine the extent to which firms pursuing international opportunities through internet-enabled markets are vulnerable to this trap, and the mechanisms they use to avoid it.

We highlight these areas for future research because, although coherent market sequencing and accurate market perceptions are important in offline markets too, the dynamics of competing online seem particularly likely to foster incoherent market entry sequences and the virtuality trap. This is because there are strong pressures to gain and maintain a first mover advantage due to online herding behavior (Duan et al., 2009) and winner-take-all markets. Profitability can be seen as less important than establishing a large and committed base of users, which can result in a sense of urgency, accelerating aspirations, execution problems, and decision speed emphasized at the expense of decision content (Perlow et al., 2002). An important future contribution to the IE field will lie in showing how entrepreneurial firms can withstand these pressures – and/or mitigate their negative consequences – as they pursue international opportunities.

Moreover, there is evidence that first movers do not necessarily win in online markets. A study of 98 newspapers in four countries (France, Germany, the Netherlands and the United Kingdom) – all of which used the internet as a distribution channel – indicates that there are demand-side advantages to being an early player in an internet market; however, it is better to be an early follower than a market pioneer because pioneers can make costly technological mistakes which subsequent entrants can learn from (Geyskens et al., 2002). Srinivasan and Moorman (2005) arrive at similar conclusions from another perspective. They argue that customers in early markets have different preferences and expectations than customers who buy when the market is more established. This means that firms which try to build customer loyalty early and quickly, by appealing to the earliest customers, can be disadvantaged when targeting the more numerous later customers. Research is needed to investigate the international aspects of this danger, and, in particular, the implications for early entry in foreign markets.

8.2.5. Challenges in studying internet-enabled internationalization

Finally, there are three key challenges for future researchers studying internationalization via internet-enabled markets. The first is the need to specify new measures. We have identified measures that can be useful for IE researchers, but all need to be adapted to this context and there are two notable gaps as indicated in Table 3: we were unable to find a measure of online visibility in the research literature, and available measures of online brand communities are at the individual-level of analysis rather the firm-level, stemming from their recent genesis in the consumer behavior field.

The second challenge for IE researchers is data collection. At first glance, it seems very attractive to have a myriad of diverse data available online through firms' websites and the websites of market or information intermediaries. However, the data are extremely voluminous and change quickly (for example, as users post product reviews online) and researchers need to think about how they will collect a potentially very large volume of data in a time frame that fits their research question. For example, in cross-sectional studies, data for dependent variables and independent variables should be collected simultaneously. To collect quantitative online data, it may be necessary to include more programming skills on research teams; for example, some researchers in online contexts use JAVA “spiders” to visit websites on a regular basis to collect data automatically (see Forman et al., 2009). To collect qualitative online, it may be necessary to become familiar with the methodology of netnography (Kozinets, 2002), which is ethnography adapted to the online environment.

A final challenge for IE researchers is the need to specify the technological context of their studies in a fine-grained manner. Specification is needed because broad labels can obscure real differences. For example, the label “social media” encompasses a vast array of activity, and there are substantial differences across different social media channels such as Twitter and Facebook (Fischer and Reuber, 2011). Specification is also needed because there are likely to be limits to the extent to which scholars can rely on research results from past technological environments, given the speed with which practice changes in this area of business activity. For example, Leamer and Storper (2001) and Globerman et al. (2001) argue that the differences in international business due to the internet will be evolutionary rather than revolutionary and that a local physical presence and face-to-face contact will continue to be necessary to establish trust. However, with the increased sophistication of communication mechanisms, such as Skype, more effective customization and trust-generating mechanisms, and a greater familiarity of exchange partners with these mechanisms and with online transactions in general, the internet-enabled market environment circa 2001 is very different from the internet-enabled market environment of today. These arguments based on observations made in earlier technological eras cannot simply be assumed to still be true; contemporary evidence is required.

Although these research challenges are real, we hope that this review helps researchers in the field of international entrepreneurship understand how they are being addressed in other fields. Just as internet-enabled markets are providing international opportunities for entrepreneurial firms, we believe that they are also providing opportunities for international entrepreneurship scholars.

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