Journal of World Business 55 (2020) 101021

Contents lists available at ScienceDirect

Journal of World Business

journal homepage: www.elsevier.com/locate/jwb

Antecedents and outcomes of digital platform risk for international new ventures' internationalization

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ARTICLE INFO

Keywords:
Digital platform risk
International new ventures
Emerging markets

ABSTRACT

With the growing trend of using digital platforms for internationalization, the management of digital platform risks in international markets has become a critical issue. However, academic research in this area is sparse. This study develops and tests a theoretical framework of the drivers and outcomes of digital platform risk for international new ventures (INVs). Specifically, drawing on transaction cost theory, we identify sets of antecedents of digital platform risk including product specificity, foreign market uncertainty, foreign market competition, and home market institutional voids. We examine the effect of digital platform risk on the internationalization scope of INVs. Based on a unique sample of Chinese INVs, our empirical findings indicate that digital platform risk tends to reduce INVs' internationalization scope. However, the negative effect is mitigated by INVs' entrepreneurial orientation. Our proposed drivers of digital platform risk are supported. The paper ultimately discusses the theoretical and managerial implications.

1. Introduction

International entrepreneurship (IE) has become a major theme in international business (Knight & Cavusgil, 2004; Oviatt & McDougall, 1994). IE is defined as "the discovery, enactment, evaluation, and exploitation of opportunities across national borders to create future goods and service" (Oviatt & McDougall, 2005). International new ventures (INVs) are "entrepreneurial start-ups that, from or near their founding, seek to derive a substantial proportion of their revenue from the sale of products in international markets" (Cavusgil & Knight, 2015).

The Internet and advances in information technology (IT) have offered considerable benefits for INVs in international markets. Conventionally, INVs relied on export intermediaries for certain functions of their exporting activity, such as marketing, logistics, financing, and credit (Balabanis, 2000). It has been argued that the Internet is particularly appealing to INVs because it can serve as a low-cost medium for internationalization. For example, a recent report revealed that the emergence of digital platforms, such as Facebook and LinkedIn, offers low-cost means for INVs to connect with foreign customers and replace some functions offered by export intermediaries, which in turn, facilitates their internationalization (Manyika & Lund, 2016).

Despite the emerging trend of using the Internet to shift the landscape of INVs' internationalization in practice, academic research in this area remains limited. Only a few academic endeavors have been made to examine this phenomenon. For example, some recent works have considered the impact of the Internet on the export performance of INVs (Morgan-Thomas & Bridgewater, 2004; Morgan-Thomas & Reuber, 2013; Sinkovics, Sinkovics, & Jean, 2013). Although this line of research has improved our understanding of the effect of the Internet on INVs' internationalization, previous works have exhibited several limitations. First, even though previous works have addressed some of Internet's benefits, such as the enhancement of INVs' export performance, few studies have focused on the dark side of firms' use of the Internet to enter international markets, that is digital internationalization (Pezderka & Sinkovics, 2011; Sinkovics et al., 2013). Specifically, the risk taken by a firm using the Internet to penetrate international markets has not been well documented in previous literature. Extant studies have offered limited empirical evidence on the drivers and outcomes of INVs' risk of use Internet to penetrate international markets. One exception is Pezderka and Sinkovics' (2011) conceptual work on the e-risk for INVs' internationalization. Second, most prior works on the effect of the Internet on INVs' internationalization have focused on firms' adoption of their own websites. For example, Houghton and Winklhofer (2004) examined the effect of INVs' website adoption on the relationship between INVs and their export intermediaries. However,

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https://doi.org/10.1016/j.jwb.2019.101021
Received 17 November 2018; Received in revised form 1 August 2019; Accepted 16 August 2019
Available online 17 September 2019
1090-9516/

INVs generally lack abundant financial and IT resources to maintain their websites; therefore, their use of their websites for exporting is limited (Saban & Rau, 2005). Firms' own websites may suffer from limited digital traffic and may attract only a limited number of visitors. In addition, the maintenance and set-up costs of independent websites are high. The emergence of digital platforms has provided INVs with considerable benefits, such as regular online traffic and low participation and maintenance fees. Online platforms can serve as an effective and efficient medium for INVs' internationalization (Manyika & Lund, 2016). For example, Alibaba, the world's largest B2B platform, serves as an effective and efficient channel for small and medium-sized enterprise internationalization. However, extant studies have paid limited attention to the effect of INVs' use of platforms on their internationalization. Third, previous works on the impact of the Internet on INVs' internationalization have been largely based on INVs in developed markets, such as the United Kingdom and Australia (Gregory, Karavdic, & Zou, 2007; Sinkovics et al., 2013). Few studies have focused on examining the Internet's effect on emerging market INVs' internationalization. A recent work called for more research on how the Internet can shape emerging market INVs' internationalization (Kiss, Danis, & Cavusgil, 2012).

To address these gaps, this study develops and tests a theoretical framework on the risk of INVs' use of Internet's in entering international markets. Specifically, we focus on the digital platform risk, that is, a firm's threats and risks in participating in a digital platform to enter international markets. Given the increasing importance of digital platforms in the enhancement of firms' internationalization, our research focuses on such two-sided electronic platforms (or electronic marketplaces) that connect seller firms and buyer firms and enable them to negotiate and transact (Thomas, Autio, & Gann, 2014). Drawing on transaction cost economics (TCE) (Rindfleisch & Heide, 1997; Williamson, 1979), we develop and test a framework of the antecedents and outcomes of digital platforms for INVs. TCE has been widely applied in international business literature to discuss entry modes and international channel governance issues (Rindfleisch & Heide, 1997). However, few works have applied TCE to examine firms' online risks. In TCE, transaction-specific investment uncertainty and environmental uncertainty are defined as major sources of a firm's opportunistic behavior in exchange relationships (Rindfleisch & Heide, 1997; Williamson, 1979). Following this logic, we identify four antecedents of digital platform risk for INVs, namely product specificity, export market competition, foreign market uncertainty, and domestic institutional voids. In terms of performance outcomes, we focus on the internationalization scope as a major outcome of digital platform risks. We examine the moderating effect of entrepreneurial orientation on the link between digital platform risk and international diversification. Our proposed conceptual framework is illustrated in Fig. 1.

We expect to make the following contributions. First, drawing on TCE, this study investigates the antecedents of digital platform risk for Chinese INVs. Therefore, this study provides a theory-grounded framework to investigate what drives INVs' digital platform risk, which is an emerging and new type of risk in international business research. Previous works have called for more research on the new type of digitalization risk or e-risk in international business contexts (Pezderka & Sinkovics, 2011; Yamin & Sinkovics, 2006). Further, our work investigates the direct boundary conduction of the internationalization outcomes of digital platform risks for INVs. Most previous works on information systems research have investigated the effect of digital platform risk on consumers' purchase intention (Gefen & Pavlou, 2012; Pavlou & Gefen, 2004; Pavlou, Liang, & Xue, 2007). Few academic studies have investigated the international performance outcomes of digital platform risks in the industrial context. In additional, our work also responds to recent call for more research to integrate digital platform relevant concepts with INVs' internationalizatiron (Nambisan, Zahra, & Luo, 2019). Finally, by investigating Chinese INVs' platform risks, this research responds to the call for more research on the effect of the Internet on INVs from emerging markets (Kiss et al., 2012).

2. Theory and hypotheses

2.1. Digital platform risk in international context

International business scholars have discussed the different types of risks that may affect a firm's operation in international markets, such as country risks, financial risk, and cultural risks (Miller, 1992). With the emergence of Internet and advanced technology, digitalization has transformed global businesses' operation, not only for multination's companies but also for INVs. However, digitalization does not only bring opportunities for multinational enterprises (MNEs) and INVs, it also generates new types of threats and risks. Information systems research investigated the issues of information systems security (Hsu, Lee, & Straub, 2012). Another research discussed how institution structure, such as online feedbacks and third party guarantee systems, affect the online risk for sellers (Pavlou & Gefen, 2004). Some researchers have also tried to address the risks in the international business context. For example, Yamin and Sinkovics (2009) indicated that MNEs can gain more control over their subsidiaries through information systems within global networks. Yamin and Sinkovics (2006) highlighted that INVs operating in foreign markets may lack local presence. This type of online internationalization may pose new threats in terms of “virtual traps”, which may reduce firms' understanding of the local culture and developing of local knowledge. In addition, Pezderka and Sinkovics (2011) conceptualized the idea of e-risk in the international business context. However, previous works are largely conceptual in nature, and empirical work on the drivers and international performance outcomes of digital platform risk is limited.

Extending prior research, we conceptualized the digital platform risk in the context of INVs and refers to the uncertainty and threats INVs face when conducting international exchange on the digital platform. For the purpose of our study, we focused on B2B electronic markets (platforms) that facilitate interactional exchange between sellers (INVs) and their international buyers (Grewal, Comer, & Mehta, 2001; Kaplan & Sawhney, 2000). B2B digital platforms are electronic intermediaries that provide matching, information, promotion, and market research functions enabling INVs to identify potential foreign opportunities in terms of new markets and new customers.

Drawing on TCE (Rindfleisch & Heide, 1997; Williamson, 1979), digital platform risks in our work refers to the opportunistic behaviors and uncertainty on the digital platform in the process of exchange relationship with foreign customers. Previous works have demonstrated that INVs may experience different types of risks and uncertainties when participating in digital platform for their internationalization such as price information exploitation by competitors, destructive relationships with foreign customers and foreign distributors.

We identify some antecedents of digital platform risk including product specificity, foreign market competition, domestic institution voids, and foreign market uncertainty based on notions of TCE. TCE defines transaction hazard as a function of transaction-specific investment and environmental uncertainty (Rindfleisch & Heide, 1997; Williamson, 1979). Prior work on electronic integration has demonstrated that product specificity can be a driver of firms' use of electronic integration in the supply chain context (Grover & Saeed, 2007; Wang, Tai, & Wei, 2006). Applying and extending this logic to digital platform markets, we argued that product specificity is a major source of transaction-specific investment on digital platforms (Mithas, Jones, & Mitchell, 2008). In terms of environmental uncertainty, following Miller's (1993) conceptualization of environmental uncertainties in international business, we incorporated three sets of uncertainties including foreign market competition, domestic institutional voids, and foreign market uncertainty. Competitive uncertainty has been considered a crucial dimension of an environmental uncertainty (Li, Poppo, & Zhou, 2008). Hence, we incorporate it into one of antecedents of

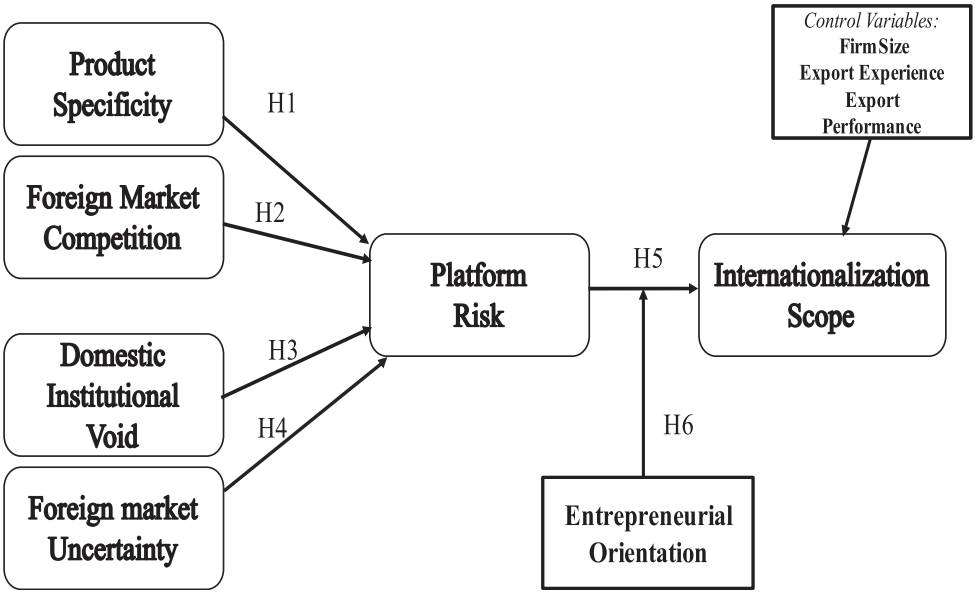

Fig. 1. Perceived Platform Risk and its Drivers and Outcome.

digital platform risk. Institutional voids have been prevalent in emerging markets and can be a source of environmental uncertainty, which may affect a firm's strategy (Doh, Rodrigues, Saka-Helmhout, & Makhija, 2017). Previous work also shows that institutional voids may affect emerging market INVs' strategy in international markets (Kiss & Danis, 2008). Hence, in our emerging market context, we particularly incorporate domestic institutional as a source of environmental uncertainty which drive digital platform risk. Finally, foreign market uncertainty also played a major role in triggering environmental uncertainty (Cavusgil, Deligonul, & Zhang, 2004; Zhang, Cavusgil, & Roath, 2003). Therefore, we incorporated foreign market uncertainty as another dimension of environmental uncertainty. In terms of the performance outcomes of digital platform risk, we focus on the internationalization scope as a major outcome variable. A previous work on INVs suggested that INVs' ventures into different foreign markets is a key outcome of internationalization (Felzensztein, Ciravegna, Robson, & Amorós, 2015). Therefore, we use the internationalization scope as an outcome variable for digital platform risk. We examine under what conditions the digital platform risk may be stronger or may be mitigated. Few studies have examined the internationalization outcome of digital platform risk. Specifically, we focus on entrepreneurial orientation (EO) as the focus moderator. Because EO is one of the most distinctive features of organizational culture and capability for INVs, it may affect their risk perception and internationalization outcome (Autio, Sapienza, & Almeida, 2000; Autio, George, & Alexy, 2011; Zhou, Barnes, & Lu, 2010). Fig. 1 indicated the conceptual framework and interrelationship between the constructs in the model. In the next section, we further develop these hypotheses.

2.2. Antecedents of digital platform risk

2.2.1. Product specificity

Product specialization refers to the amount of information required to fully specify product attributes (Grover & Saeed, 2007; Mithas et al., 2008). Some products are commodities by their nature and do not require specific information. By contrast, complex products typically necessitate highly specific information or complex descriptions when they are ordered online. We argue that product specificity tends to drive digital platform risk for the following reasons: first, TCE implies that asset specificity tends to trigger safeguard hazards in terms of hold up and opportunism in the exchange relationships (Rindfleisch & Heide, 1997; Williamson, 1979). For products that require highly complex descriptions, intensive coordination is required through the digital platform functions, such as online instant chats with foreign buyers. This tends to increase the uncertainty and risk, which potential foreign buyers can exploit through INVs' private information. Highly specialized products tend to require intensive communication and coordination; that requirement tends to increase the uncertainty and risk to be exploited by competitors on the digital platform. In addition, previous literature on information systems revealed that product specificity tends to increase a firm's propensity of electronic integration to obtain highly intensive coordination instead of using digital platforms such as electronic markets.

Based on the arguments above, we predict that product specificity tends to increase the digital platform risk for INVs.

H1. Product specificity is positively related to digital platform risk for INVs.

2.2.2. Foreign market competition

Foreign market competition refers to the extent to which competition is intensive in the foreign markets (Li et al., 2008). An increased intensity is often characterized by a greater rivalry among incumbents, which can take the form of price wars, more advertising or product offerings, added services, and increased transactions. We argue that foreign competition tends to drive digital platform risk for the following reasons: first, digital platforms have been considered as low-cost mediums helping INVs to explore and exploit more foreign opportunities. The competition in foreign markets may drive firms to participate in digital platform markets to seek additional international opportunities. However, due to the Internet and digital platforms' anonymous nature, dysfunctional competition, such as promotion and counterfeits, is a distinctive feature of digital platforms. Therefore, when competition in foreign markets is fierce, numerous INVs participate in digital platforms, which may incur increases in hidden behaviors or products on digital platforms, such as counterfeits and copycat behaviors from competitors. Previous works have revealed that collaborating with foreign distributors may help firms alleviate foreign competition. Therefore, foreign market competition may further enhance the importance of relationships with foreign distributors or agents. However, INVs' participating in digital platform may strain the relationship with foreign distributors and thus increase the uncertainty and risk on digital platforms. Thus, we predict the following:

H2. Foreign market competition is positively related to digital platform risk for INVs.

2.2.3. Domestic institutional voids

Domestic institutional voids refer to the absence or underdevelopment of institutions that enable and support market activity (Doh et al., 2017). Intensive institutional voids are often characterized by a problematic legal and regulatory enforcement at home, reflected by unlawful or unethical corporate behaviors such as counterfeit and dysfunctional completion (Sheng, Zhou, & Li, 2011). Institutional voids reflect institutions that hamper the cases in which buyers and sellers can interact. Emerging markets are often characterized by different types of institutional voids, such as lack of efficient factor markets for example finance, labor, and trade intermediaries. We argue that domestic institutional voids may enhance the digital platform risk for the following reasons: first, institutional voids pose greater challenges for INVs at home to access resources and intermediaries for their internationalization. The emergence of digital platforms such as online B2B electronic markets can help INVs overcome these institutional voids at home and serve as an alternative export intermediary. Therefore, we consider that INVs tend to be more active in digital platforms when these institutional voids at home are highly intensive, which in turn may drive highly opportunistic behaviors in digital platforms, such as counterfeits and the exploitation of private information. A previous work argued that institutional voids may enhance the likelihood of opportunistic behavior (Doh et al., 2017). Therefore, the institutional imprint at home may drive INVs to act highly opportunistically when participating in digital platforms. Thus, we predict the following:

H3. Domestic institution voids are positively related to digital platform risk for INVs.

2.2.4. Foreign market uncertainty

Foreign market uncertainty refers to the extent to which a foreign market is volatile and unpredictable (Li et al., 2008). Intensive foreign market uncertainty is often characterized by the unpredictability of market demand, customer, and competitor behavior. We argue that foreign market uncertainty can enhance digital platform risk for the following reasons: first, as the uncertainty increases, INVs would need more information to analyze the foreign market situation. The relationship with foreign customers and distributors helps offer foreign market information and reduces environmental uncertainty (Cavusgil et al., 2004). However, participating in digital platforms may strain the existing relationship with foreign customers and distributors (Li, 2004). When environmental uncertainty increases, it becomes highly risky to participate in digital platforms for INVs. TCE considers that an unpredictable foreign environmental may enhance opportunistic behaviors (Rindfleisch & Heide, 1997) from foreign customers and competitors, which may increase digital platform risks.

H4. Foreign market uncertainty is positively related to digital platform risk for INVs.

2.3. Performance and boundary condition outcome of digital platform risk

In addition to the antecedents of digital platform risk, we discuss the performance and boundary conduction of digital platform risk. Specifically, we focus on the internationalization scope as a focal outcome construct of INVS' digital platform risk. The internationalization scope refers to the diversity of the markets the INVs have entered (Felzensztein et al., 2015). Prior research examined the different internationalization outcomes of INVs (De Clercq, Sapienza, Yavuz, & Zhou, 2012). However, the internationalization scope has attracted little attention. We argue that digital platform risk has a negative effect on the internationalization scope for the following reasons: first, digital platform risk may strain INVs' relationship with foreign distributors and customers. This may lead to a reduced purchase intention and less transactions from foreign distributors and customers, which in turn reduces INVs' motivation of venture into multiple foreign markets. Further, previous work on INV has argued that relationship with foreign distributors and customers may affect INVs' international performance (Cavusgil et al., 2004; Knight & Cavusgil, 2004). Second, digital platform risk can incur opportunistic behaviors from foreign competitors and customers, such as the exploitation of private information and counterfeit. This tends to reduce INVs' ability of entering multiple markets. Therefore, we predict the following:

H5. Digital platform risk is negatively related to the internationalization scope of INVs.

We further examine the boundary condition of the negative relationship between platform risk and internationalization scope. Specifically, we focus on the EO. EO refers to the INVs' predisposition to engage in entrepreneurial processes, practices, and decision making, characterized by their organizational culture for innovativeness, risk taking, and proactiveness (Zhou, 2007). EO has been considered a central construct in INVs research (Cavusgil & Knight, 2015; Felzensztein et al., 2015; Zhou & Wu, 2014). Previous work argued that EO may affect INVs' internationalization scope. For example. Knight and Cavusgil (2004) shows that EO can affect INVs' international performance. With an organizational culture of proactiveness and risk taking, INVs are ready, willing, and able to enter multiple foreign markets to explore foreign opportunities. For example, Felzensztein et al. (2015) revealed that emerging market INVs can enhance their internationalization scope with EO. Therefore, the negative effect of digital platforms on the internationalization scope is expected to be reduced under high EO. Academic literature indicated that EO may enhance INVs' foreign networking capabilities and market knowledge capabilities (Zhou et al., 2010). This may overcome firms' opportunistic behaviors on the digital platforms, which in turn, may reduce the negative effect of digital platform risks on the internationalization scope. Thus, we predict the following:

H6. EO positively moderates the negative effect of digital platform risk on the internationalization scope of INVs.

3. Method

3.1. Research context and sample

The empirical context of the present study incorporates contemporary INVs in China. IE research called for more insights on emerging market realities. China is the largest and fastest growing emerging market worldwide. A previous work revealed that Chinese new ventures have expanded rapidly and early in foreign markets in recent years (Zhou, Wu, & Luo, 2007). Conventionally, Chinese entrepreneurial firms rely much on relational ties, such as the guanxi network, to acquire foreign market information and knowledge (Zhou et al., 2007). The recent emergence of Internet and information and computer technologies (ICT) offers Chinese start-ups a new and low-cost platform, facilitating their internationalization early and rapidly (Chen, Seong, & Woetzel, 2015). China is the world's largest and fastest growing E-commerce market (Wang, Lau, & Gong, 2016). It is projected to become the world's largest cross-border E-commerce market by 2020. Most Chinese exporters view participating in digital platform markets as a major strategic choice to venture international markets. Accordingly, Chinese INVs are an excellent empirical setting to examine the effect of digital platform risk on INVs' internationalization.

Various criteria have been used to define INVs in the literature (Fan & Phan, 2007). Cavusgil and Knight (2015) clarified the conceptualization of INVs and specified three criteria: (i) new start-ups; (ii) the firm as the unit of analysis; (iii) pursuing internationalization

mainly through exporting. We operationalized INVs as young exporters that began exporting within 3 years of their founding and generated at least 25% of their total revenues from export customers. This operationalization is consistent with that of the IE literature (Weerawardena, Mort, Salunke, Knight, & Liesch, 2014).

3.2. Survey development and samples

The study employed a survey approach to collect data from the sampled firms. We first conducted in-depth interviews with the senior managers of 15 exporters in Beijing and Guangdong to explore their platform service practices. In addition, we conducted interviews with three leading digital market platform providers. These provided a deeper understanding of the industry practices in digital market platform. Second, based on this understanding, we developed an English version of the survey instrument, translated it into Chinese, and finally back-translated it to ensure the conceptual equivalence and reduce bias. We followed the procedures recommended by Churchill (1979) and Gerbing and Anderson (1988). Finally, we conducted a pretest of the instrument with 30 exporters in Beijing and Guangdong. The pretest provided valuable feedback regarding the survey questions. We made refinements to the questionnaire and finalized the instrument based on the pretest and interviews.

A random sample of 1000 firms was drawn from a list of exporting firms in representative provinces and cities across China. We considered the following regions suitable for undertaking the study: Zhejiang, Jiangsu, Guangdong, Shandong, and Beijing. These are among the most affluent and well-developed regions in China. We also included some developing regions, such as Anhui, Hebei, and Liaoning, to enhance the generalizability of the study results. We used a key informant approach to conduct our survey and to reduce survey costs. A senior manager (e.g., CEO or export manager) in charge of exporting was selected in each firm as the key informant. We collaborated with a local research company to have trained interviewers carry out the survey in 2015 through on-site and telephone interviews. This is the recommended protocol for obtaining reliable and high quality survey information in emerging economies (Zheng Zhou, Yim, & Tse, 2005).

In total, we received 350 usable responses. After eliminating those firms that did not meet our definition of INVs, we were left with 273 usable responses, for a response rate of 27.3%. The nonresponse bias was assessed by classifying the responses into two groups, namely early responses and late responses (Armstrong & Overton, 1977). Independent t-tests on the demographic variables, such as the revenue and employee number, were performed. No significant difference was identified. Therefore, the nonresponse bias does not pose a major problem to the study (Armstrong & Overton, 1977).

All of the firms in the sample were privately owned. In addition, the average age of the firms was 5.8 years, making them relatively new start-ups. The mean number of full-time employees was 105. The mean number of online B2B markets they participated in was 2.4, exhibiting a high engagement potential of digital B2B platforms. These firms were export-oriented as indicated by their high average export percentage of 62.87%; the mean number of foreign markets was 9.3. In terms of industry background, most were in the hardware and electronics industries. The rest came from diverse industries including apparel, textiles and accessories, bags, shoes, gifts, sports and toys, health, beauty, and packaging, and advertising and office industries.

3.2.1. Measurement

Multi-item scales in a seven-point response format were used to measure all variables. The measurement approach for each theoretical construct in the model is described briefly thereafter and reported in Table 1.

The digital platform risk scale is based on Pavlou and Gefen (2004) and developed for this study through interviews with INVs. We developed the scale based on face-to-face interviews with 15 INV managers

Table 1
Measurement and confirmatory factor analysis results.

Constructs and Measures (Loading)
Product Specificity (1 = strongly disagree; 7 = strongly agree) (C.R. = .79)
Please indicate the extent to which your asset specificity of Products:
1. The products need to be customized (or tailored) specifically to our buyers' needs before they buy (.61)
2. The products are of value to only a small number of buyers (.92)
3. Special knowledge is required to sell our product effectively (.68)
Foreign Market Competition (1 = strongly disagree; 7 = strongly agree) (C.R. = .85)
Please indicate your degree of agreement with the following statements on foreign market competition intensity:
1. Our export markets are noted for competition between companies. (.90)
2. There is substantial competition among companies in our export markets (.75)
3. In our export market, there are many “promotion wars” (.76)
Domestic Institutional Void (1 = strongly disagree; 7 = strongly agree) (C.R. = .89)
For each of the following items concerned with institutional voids, please indicate the degree of institutional voids for your home country in terms of following:
1.We experience substantive costs or delays due to procedures for obtaining access to utilities such as electricity and water in the home market. (.81)
2.We experience substantive costs or delays due to customs procedures in the home market. (.80)
3. We experience substantive costs or delays due to tax assessment and payment procedures in the home market. (.82)
Foreign Market Uncertainty (1 = strongly disagree; 7 = strongly agree) (C.R. = .88)
Please indicate your degree of agreement with the following statements on foreign market uncertainty.
1. Our foreign buyer/customers' product demands and preference change quite a bit over time. (.86)
2. Our foreign buyer/customers tend to look for new products all the time. (.84)
3. It is difficult to predict changes of the foreign market. (.83)
Digital Platform Risk (1 = strongly disagree; 7 = strongly agree) (C.R. = .93)
Please indicate your level of agreement with these statements on your perception of threat and risk in subscribing to the platform:
1. There is considerable risk involved in participating in this digital platform (.84)
2. There is high potential for loss involved in participating in this digital platform (.85)
3. My decision to participate in digital platform is risky (.81)
5. Participating in this digital platform may disrupt our export marketing operations (.87)
6. Participating in this digital platform may strain my relationships with our current foreign customers (.87)
7. Participating in this digital platform may strain my relationships with our current foreign distributors (.86)
8. Participating in this digital platform may allow competitors to exploit our private information (such as price) (.53)
Internationalization Scope (1 = strongly disagree; 7 = strongly agree) (C.R. = .89)
Please indicate your degree of agreement with the following statements on your internationalization scope:
1. We exported to different foreign markets (.85)
2. Our majority of revenues come from diverse foreign export markets (.87)
3. Our export markets are very diverse (.84)
Entrepreneurial Orientation (1 = strongly disagree; 7 = strongly agree) (C.R. = .90)
Please indicate your degree of agreement with the following statements concerning your entrepreneurial orientation (in the export market) with the following statements:
1.We seek to exploit anticipated changes in our export market ahead of our rivals (.77)
2. Our company rewards risk taking. (.82)
3. My company shows a great deal of tolerance for high-risk projects. (.86)
4. We are constantly seeking new opportunities to shape the export environment to our own advantage. (.85)
Past Export Performance (1 = strongly disagree; 7 = strongly agree) (C.R. = .88)
This section deals with issues on your company's short term international/export performance. Your firm's performance in main export markets relative to major competitor over the past three year on:
1. Export sales volume (.83)
2. Export market share (.89)
3. Export margins (.82)

and online B2B market providers. The interviews were instrumental in understanding the major functions of online B2B markets and potential measures for the digital platform risks. Digital platform risk refers to the extent of a firm's risk and uncertainty when participating in digital B2B platforms. In accordance with Mithas et al. (2008), we used three items to measure product specificity. The product specificity construct assesses the amount of information required to fully specify a product's attribute. Subsequently, we develop three items to measure foreign market competition. The scale measures the extent of market competition in foreign markets.

The three-item scale for institutional voids is based on a previous work by Santangelo and Meyer (2011). The scale captures the absence or underdevelopment of institutions that enable and support market activity. Based on Boso, Story, and Cadogan (2013), we developed a foreign market uncertainty scale, capturing the extent to which export markets are changing and unpredictable. The measures for internationalization scope are from Jaworski and Kohli (1993). The three-item scale for the internationalization scope measures the extent to which the INVs enter multiple foreign markets.

We derived and adapted the measure of EO from Zhou (2007). The four-item scale assesses the extent of INVs' predisposition to engage in entrepreneurial processes, practices, and decision making, characterized by their organizational culture for innovativeness, risk taking, and proactiveness. We considered control variables such as the firm size, experience, and past export performance of the firm. Firm size was operationalized as the number of employees in the study. We measured firm export experience as the number of years of exporting. We measured past export performance based on Boso et al. (2013), which captures a firm's past 3 years' export performance.

3.3. Analysis and results

3.3.1. Common method bias

For a survey-based study, common method bias is always a potential threat. Thus, we evaluated the presence of common method bias in our study using the marker variable approach (Lindell & Whitney, 2001; Malhotra, Kim, & Patil, 2006). In this approach, a theoretically unrelated variable must be placed in the survey to assess the presence of common method variance (Lindell & Whitney, 2001). The study used the firm's initial export year as the marker variable; its correlations with the study constructs are reported in Table 3. Using the correlations, the smallest correlation, RM, is estimated according to the technique suggested in the literature (Lindell & Whitney, 2001). However, the literature indicates that the second smallest correlation, RM2, is a highly conservative measure of common method variance (Lindell & Whitney, 2001). Thus, we used the second smallest correlation, instead of the smallest one, RM1, in estimating the presence of common method bias in the study (Lindell & Whitney, 2001; Malhotra et al., 2006).

The second smallest correlation in the correlation matrix, RM2 = −.005, between the marker variable and foreign market uncertainty, one of the study variables, was used to calculate the adjusted correlations among the study variables using the formula offered by Lindell and Whitney (2001). To investigate whether or not any significant correlations before the adjustment became nonsignificant, we calculated the t-value corresponding to each adjusted correlation using the formula presented in Lindell and Whitney (2001). The results indicated that none of the significant correlations among the study variables before the adjustment became nonsignificant. This suggests that a common method bias is unlikely to pose a major threat to the study (Lindell & Whitney, 2001; Malhotra et al., 2006).

Table 3
Model Estimation Results.

Independent variables	Dependent variables	
	Platform Risk	Internationalization Scope
Direct effects		
Product Specificity	.112*	
Foreign Competition	.130*	
Dom. inst. Voids	.126*	
For. Market Uncertainty	.151*	
Platform Risk (PR)		−.185**
Entrepreneurial Orientation (EO)		.209**
Moderating effects		
PR x EO		.105*
Control Variables		
Past Export Performance		.239**
Firm Size		−.037
Export Length		−.064
Model Adjusted R^2	.166	.141

* p < .05.
** p < .01.

3.3.2. Measurement model and construct validity

The measurement model was evaluated using the outer model of SmartPLS results. For the analysis, we used SmartPLS v. 3.1.9 for OSX. Although both the partial least squares (PLS) and covariance-based structural equation modeling (CBSEM) offer the ability to estimate a model with multiple variables that are structurally related, PLS has a few advantages over the CBSEM method. Contrary to the CBSEM method that typically requires a multigroup analysis to test a moderating effect by median splitting the sample, resulting in information loss, PLS makes moderation tests readily possible by having continuous variables directly specified (Chin, Marcolin, & Newsted, 2003). Given that one of our study moderators is a continuous variable, this study adopted PLS as its analytical tool. We used PSL-SEM to analyze our proposed integrated analytical model, applying SmartPLS 3 software (Ringle, Wende, & Becker, 2015). We consider PLS-SEM the most appropriate choice as it is widely accepted since the early stages of theory

Table 2
Intercorrelations and Shared Variances of Measures (n = 350).

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
Product Specificity (F1)	**.75**	.13	.11	.14	.07	.01	.06	.05	.00	.02	.02
Foreign Competition (F2)	.36	**.81**	.16	.31	.10	.04	.13	.04	.00	.00	.00
Dom. inst. Voids (F3)	.33	.40	**.78**	.17	.08	.02	.07	.09	.00	.00	.00
For. Mar. Uncertainty (F4)	.38	.56	.41	**.84**	.10	.05	.10	.04	.00	.00	.00
Platform Risk (F5)	.26	.31	.28	.32	**.81**	.01	.02	.00	.00	.00	.00
Internationalization Scope (F6)	.11	.21	.14	.22	−.12	**.85**	.08	.11	.00	.00	.00
Ent. Orientation (F7)	.24	.36	.27	.32	.13	.28	**.83**	.16	.00	.00	.00
Past Export Performance (F8)	.23	.21	.30	.20	.01	.33	.40	**.85**	.00	.00	.01
Firm Size (F9)	−.02	.06	−.03	−.02	.05	−.04	.07	−.01	**n/a**	.04	.01
Export Length (F10)	−.13	−.04	−.05	−.02	-.02	−.07	.01	−.03	.20	**n/a**	.43
First Export Yr-MV (F11)	.00	.03	.03	−.00	.02	−.03	−.06	−.11	−.13	−.66	**n/a**

Note: The correlations are in the lower triangle of the matrix. Shared variances are in the upper triangle of the matrix. The average variance extracted (AVEs) are in bold along the diagonal.

development (Hair, Sarstedt, Ringle, & Mena, 2012; Henseler, Ringle, & Sinkovics, 2009). As aforementioned, to the best of our knowledge, the link between the antecedents and outcomes of digital platform risk has not yet been studied. In line with Wold (1980) and the best practices outlined at the early stages of theoretical development, we used a ‘soft-modeling’ approach to first establish an analytical framework and subsequently explore previously untested relationships. In addition, given the complexity of the model, we used PLS as the analysis tool as it is known to handle complex models effectively (Henseler et al., 2009).

The model estimation included platform risk, its four antecedents, internationalization scope, the moderator, and three control variables. Using SmartPLS v. 3.1.9, we specified 500 resampling in the bootstrapping option to obtain the statistical significance of each parameter estimate (Peng & Lai, 2012). To purify the reflective measures, items with a low loading were eliminated thus increasing the convergent validity. Item scales significantly linked to more than one construct were also removed to improve the discriminant validity. The purification process yielded at least three items for each construct.

Subsequently, the validity of the reflective constructs was evaluated by assessing the convergent validity, discriminant validity, and construct reliability. After these checks, all items were significantly loaded on their corresponding factor ($p < .01$), and their loadings were greater than .5 as illustrated in Table 1. All of the average variance extracted (AVE) values were much greater than .5, the cutoff value often discussed in the literature (Nunnally & Bernstein, 1994), suggesting that all study constructs had an adequate level of convergent validity.

For discriminant validity, the AVE value from each construct should be greater than its shared variances (Fornell & Larcker, 1981). As reported in Table 2, the AVEs for the study constructs ranged from .75 to .85, whereas the shared variances among the constructs were between .00 to .31, as reported in the upper triangle of Table 2. With no shared variances greater than the AVE of the respective construct, these results demonstrate a high level of discriminant validity between the reflective study constructs (Fornell & Larcker, 1981). Finally, the composite reliability of each construct and the standardized parameters of measurement items are reported in Table 1. All composite reliabilities are greater than .79, which is above the generally accepted level of .7 suggested in the literature (Nunnally & Bernstein, 1994). Therefore, we conclude that all of the study constructs have adequate levels of construct validity and reliability.

3.3.3. Structural model

Based on this suitable measurement model, we proceed to test our hypotheses using the results of SmartPLS v. 3.1.9 for OSX. Although PLS does not offer model fit statistics (Henseler et al., 2009), the literature recommends the R2 of the endogenous constructs as an alternative measure of model fit statistics (Peng & Lai, 2012). According to the results, the adjusted R2 for platform risk and market diversification are .166 and .141, respectively, which are close to a weak fit (Peng & Lai, 2012). Even though the study model explores a new phenomenon on platform risk with selected foreign market specific firm levels and environmental variables only as antecedents without strategy variables included in the model, such low R2 values are not impressive yet within the acceptable range. Thus, we test our hypotheses using the results of the model estimation reported in Table 3.

As illustrated in Table 3, the results reveal that both the firm level antecedents of platform risk influence a firm’s perceived platform risk substantially. Specifically, the level of product specificity affects the platform risk significantly ($b = .112$, $p < .05$). Therefore, H1 is supported. A firm’s competition level in their foreign markets enhances the platform risk substantially ($b = .130$, $p < .05$), supporting H2 in the study. In H3 and H4, we expected that a firm’s two environmental factors, domestic institutional voids and foreign market uncertainty, determine the platform risk a firm perceives. According to the results, domestic institutional voids affect a firm’s perceived platform risk significantly with $b = .126$ ($p < .05$) and thus, H3 is supported. As expected in H4, the level of foreign market uncertainty is significantly associated with the platform risk ($b = 151$, $p < .05$), which supports H4. Finally, in H5, we maintained that platform risk explains a firm’s diversification level of foreign markets. The results indicate that platform risk is indeed negatively associated with the level of market diversification with $b = -.185$ ($p < .01$). Therefore, our H5 is supported.

In terms of moderating effects, we hypothesized in H6 that a firm’s EO moderates the impact of platform risk on a firm’s market diversification positively. That is, based on the level of perceived platform risk, those firms with a higher level of EO tend to have highly diversified foreign markets. The results reveal that EO positively moderates the relationship between platform risk and the market diversification level of the firm ($b = .106$, $p < .05$), thus supporting H6.

3.4. Discussion

With the increasing digitalization and globalization, INVs from emerging markets have multiplied and conducted their business across national borders using the digital platforms trend. However, these firms still face considerable challenges and risks when entering international markets through digital platforms. Yet, few studies have paid attention to this new type of digital platform risk for INVs during their internationalization. Extending prior research and drawing on TCE (Rindfleisch & Heide, 1997; Williamson, 1979) and INV literature (Cavusgil & Knight, 2015; Zhou et al., 2010), we investigate the antecedents and outcomes of digital platform risk for INVs. We also investigate the boundary conditions of the effect of digital platform risk on international performance by looking into the moderating effects of EO. The results indicate that digital platform risk tends to reduce the internationalization scope, but the extent of the negative impact is contingent on EO. This study broadens and deepens our understanding of the antecedents and outcomes of digital platform risk in the context on INVs’ internationalization. We discuss some of theoretical and managerial implications in the following section.

3.5. Effect of the digital platform risk on internationalization outcomes

Prior research on the outcomes of digital platform risks focused much on consumer attitude, such as buyers’ purchase intention (Pavlou & Gefen, 2004; Pavlou et al., 2007). Limited research discussed how digital platform risk may influence a firm’s internationalization level outcomes. Further, while prior IB research has provided some conceptual work on online risk issues (Pezderka & Sinkovics, 2011), empirical work is limited. Based on a large-scale survey in Chinese INVs, our findings reveal that digital platform risk may reduce INVs’ internationalization scope. Therefore, this research extends the platform risk literature to international business context and provides the first empirical evidence on the effect of digital platform on internationalization scope.

The findings also contribute to the INVs literature through examining the dark side of digital platform participation. An emergent research has looked into the opportunities provided by digital platforms for INVs’ internationalization (Ojala, Evers, & Rialp, 2018; Wentrup, 2016). It has been argued that digital platform offer specialized infrastructure which lower the rusk and cost for INVs’ internationalization. Despite abundant opportunities offered by digital platform for INVs, however, the dis-intermediary nature and faience competition in digital platform may incur some tension and uncertainties. However, no systematic research has examined the risk incurred in digital platforms or investigated its effect on the internationalization outcomes of INVs. Therefore, this research makes a unique contribution to this crucial but under-researched area.

In addition, little work has discussed boundary conditions of the effect of digital platform risk on internationalization outcomes.

Extending this stream of research, the findings reveal that the negative effect of digital platforms on internationalization scope tends to be mitigated by EO. The findings indicate that INVs' EO can serve as unique organizational culture and capabilities, which help mitigate digital platform risks in the process of venturing into multiple foreign markets. This finding contributes to the INVs literature by extending the role of EO in the context of digital platform and online internationalization.

3.6. Antecedents of digital platform risk

Prior research largely investigated the antecedents of digital platform risks based on information systems factors, such as different information systems institutional factors (Pavlou & Gefen, 2004; Pavlou et al., 2007). However, to the best of our knowledge, research developing the non-information systems-based antecedents of digital platform risk was missing. Our empirical findings demonstrate that product-specific factors and domestic and foreign environmental factors shape the degree of digital platform risk for INVs. Hence, this research extends and contributes to digital platform literature by identifying sets on non-information systems factors.

Among the four drivers included in our model, we discovered that the effects of product specificity drive digital platform risk. This is highly relevant to Williamson (1979) and his notion of opportunistic behavior. Therefore, this research extends the TCE notion to the digital platform context.

In terms of the environmental variables driving digital platform risks, this research integrates both domestic and foreign factors, including domestic institutional voids, foreign market competition, and foreign environmental uncertainty. The research indicates that both the foreign competition and uncertainty and the domestic institutional environment drive digital platform risks. Previous works in TCE have either focused on domestic or foreign environmental factors to investigate the opportunism and governance issues (Cavusgil et al., 2004; Zhang et al., 2003). Therefore, this research extends this stream of work by integrating domestic and foreign environmental factors as antecedents of digital platform risk. For emerging market INVs, the results reveal that both domestic institutional environment and foreign factors shape the degree of digital platform risk.

3.7. Managerial implications

This research has major implications for practitioners. We demonstrated that digital platform risk may reduce the INVs' internationalization performance in terms of internationalization scope. Therefore, managers of INVs from emerging markets should accumulate skills, relationships, and knowledge to deal with this new type of digital platform risk. The risk management on digital platforms becomes a critical issue for INVs' success in international markets. Conventionally, firms penetrating into foreign markets would only consider and experience county, cultural, commercial, and financial risks. The emerging trend of digitalization and digital platforms pose a new type risk through platforms during firms' internationalization. This phenomenon is particularly salient for INVs that usually lack resources and thus rely much on digital platforms as an alternative channel to pursue foreign opportunities. Therefore, managers of INVs should pay particular attention to this additional risk when trying to leverage increasing opportunities from digital platforms.

The results indicate that EO plays a crucial role in mitigating the negative relationship between digital platform risks and internationalization scope. Therefore, managers in INVs should develop a deposition and organizational culture of strong EO to help mitigate digital platform risks when participating in digital platforms for their internationalization. In terms of the antecedents of digital platforms, this study discovered that product specificity, export market competition, domestic institution voids, and foreign market uncertainty drive INVs' digital platform risk. Therefore, managers should be aware of their product attributes and pay attention to the different domestic and foreign market conditions to respond to the different levels of digital platform risk.

4. Limitations and future research directions

The results of this study should be interpreted in light of several inherent limitations. First, we only focused on digital platform risk, future research may examine and integrate different types of international risk, such as political risk and cultural risk, and discuss their joint effect on internationalization outcomes. For example, the emergence of deglobalization events, such as trade wars and the Brexit, pose a considerable political risk for INVs (Zahra, 2019). The manner in which INVs can cope with platform risk interacting with a political risk in the new international business environment may require further research. We focused on only four types of drivers of digital platform risks. Future research may examine other types of antecedents of digital platform risk such as different firms' resources and capabilities. For example, prior international business and INVs literature (Knight & Cavusgil, 2004; Knight & Kim, 2009; Weerawardena et al., 2014) highlighted some critical resources and capabilities, such as international marketing orientation, international orientation, and foreign distributor capabilities, which may shape the degree of digital platform risk. Future research may investigate other contingent factors. Another limitation of this study is its cross-sectional design. Although the results reveal the drivers and performance outcomes of political ties, they only imply their causality. Future studies could overcome this limitation by using longitudinal data, even over relatively short periods. Our international performance scale focuses only on the internationalization scope. Further research can examine other types of internationalization performance, such as internationalization speed and scale. Finally, because our empirical context is China, the results may not be applicable to other emerging markets. Future research may extend and replicate the results of this study to other emerging markets.

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