The role of digitalisation in firms' international value creation: an integrative conceptual framework and a research agenda

Carlos Halpern* and
Laura Fernández-Méndez

Universidad Pontificia Comillas,
Madrid, Spain
Email: chalpern@comillas.edu
Email: lfmendez@icade.comillas.edu
*Corresponding author

Abstract: The new digital revolution promises to impact the way firms operate internationally even more profoundly than previous technology innovations have. This article reviews the most relevant literature on the intersection between digital technologies and international business to identify possible avenues of value creation in both the international and digital dimensions. Firms can achieve Digital International Value Creation by developing digital resources and using them in international value-creation opportunities. We identify three different value-creation paths that we label: International Going Digital, Digital Going International and Going international with Digital. Environmental factors and the attributes of firms moderate this value-creation model. We believe that our framework will help academics and practitioners to analyse the complex implications, of digital technologies in a global context, both their opportunities and their risks.

Keywords: international business; digital; information technology; multinational; MNE; global company; resources; value creation; literature review; framework; research agenda.

Reference to this paper should be made as follows: Halpern, C. and Fernández-Méndez, L. (2025) 'The role of digitalisation in firms' international value creation: an integrative conceptual framework and a research agenda', *European J. International Management*, Vol. 27, No. 5, pp.1–42.

Biographical notes: Carlos Halpern is a PhD candidate in the Management Department at Universidad Pontificia Comillas (Spain). He received his MBA degree from IESE (Barcelona). Currently, he is a Speaker at IESE (Spain). As a Practitioner, he has more than 20 years of experience as Executive and Board Member in Insurance, Banking and Management Consulting. His research interests include digitalisation, international business, corporate governance and behavioural sciences applied to management.

Laura Fernández-Méndez is an Associate Professor in the Management Department at Universidad Pontificia Comillas (Spain). She received her MBA and PhD degrees from University of Oviedo (Spain). Her research interests include international business, political connections, board of directors dynamics, non-market strategies and regulated industries. She has published in several peer-reviewed journals such as *Journal of World Business*, *Global Strategy Journal* and *Journal of International Management*.

1 Introduction

Information and Communication Technologies (ICT) have always played a crucial role in all areas of International Business (IB). They have the potential to increase the efficiency of Multinational Enterprises (MNEs) and exporting companies, and even to allow them to redesign their strategy. Recent trends in the international environment and new digital technologies will further emphasise this role.

This study focuses on how digitalisation can help firms create value in an international context. To this end, we develop a conceptual framework based on the concept of Digital International Value Creation (DIVC), which draws on accepted definitions of value creation and digitalisation in the literature. We consider value created by the firm as *'the sum of the values appropriated by all the participants in a business model, over all transactions that the business model enables'* (Amit and Zott, 2001, p.515). This definition focuses on the firm but includes all participants (e.g. clients, suppliers, among others). We extend this definition to the international field: value is created when the firm delivers higher customer value or greater transaction efficiencies (including better risk management) at the international level. We use the term digitalisation to refer to '*the process of transforming the essence of an organisation's products, services, and processes into Internet-compatible data packages'* (Banalieva and Dhanaraj, 2019, p.1373).

Studying digitalisation in the international context has become especially relevant in the business environment generated by the COVID-19 pandemic. Firms that were digitally advanced before the pandemic are flexible enough to deal with the lockdown and its consequences (Guillén, 2020; Narayandas et al., 2020; Yohn, 2020). For instance, disruption in firms' global value chains has been a central problem during this crisis (Strange, 2020). Digital technology has helped with the reconfiguration and management of these chains. However, those firms that retained their traditional business models suffered significant disruption.

Scholars have studied this application of technology in IB from myriad perspectives, from strategy to operations or marketing, and from new ventures to MNEs. In recent years, rapid changes in international and digital environments have been followed by rapid growth in the number of studies in this field. It is reasonable, therefore, to review the current state of the literature, grouping all possible perspectives and taking into account the latest research.

We found seven reviews that have analysed the literature at the digital – IB intersection. Most of these reviews considered specific relationships between aspects of digitalisation and certain IB topics. Van Geffen et al. (2013) analysed the literature on electronic human resource management systems (e-HRM) in MNEs. Likewise, Pittaway et al. (2004) examined the role of innovation in general, and in multinational companies in particular. Other studies have taken a more strategic approach: Tallon et al. (2019) focused on the impact of technology on organisational agility and Watson et al. (2018) studied the role of digital technologies in market entry. From a different perspective, Vadana et al. (2019) and Reuber and Fischer (2011) explored how technology impacts new-venture internationalisation. From a more general perspective, Hazlehurst and Brouthers (2018) quantify and classify the current research on the use of technology in the IB and strategy fields, identifying possible research gaps. There is room to develop an

additional literature review from a general perspective but specialised only in the international dimension. A literature review updated to reflect all possibilities of today's digital technologies and focused more on possible business applications and value creation opportunities rather than the status of the research. Such a review will allow us to establish a conceptual framework that can help not only scholars identify research opportunities but also practitioners design new value-creating strategies, being this main contribution of our work.

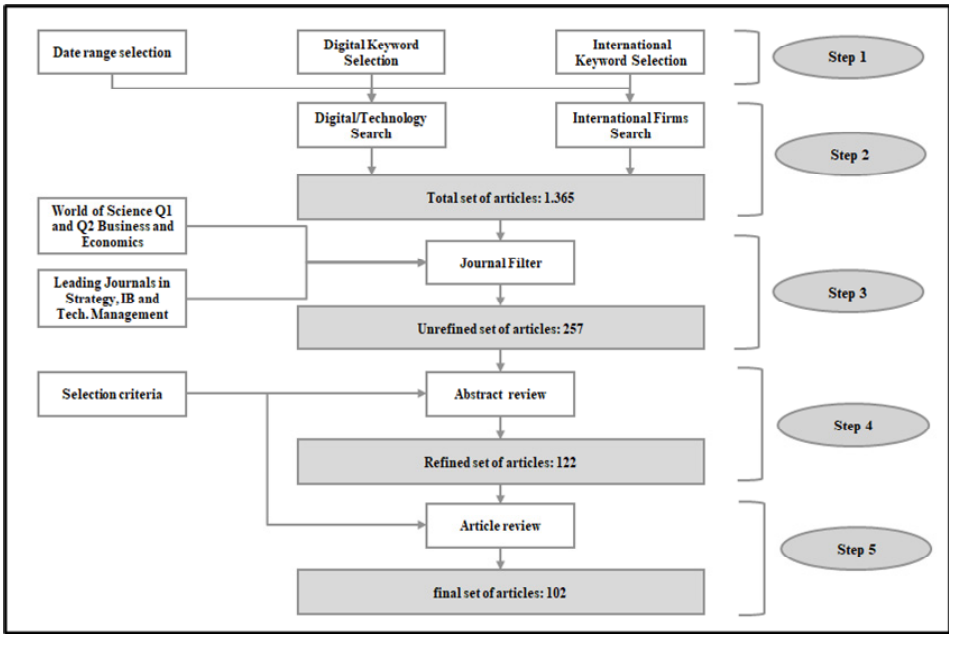
We structure the paper as follows. In Section 2, we explain the methodology used to develop our search and present a quantitative overview of the selected articles. Section 3 offers our review of the literature, which we discuss in Section 4, presenting the conceptual framework that emerges from it. Finally, in Section 5, we use that framework to set a research agenda and note the limitations of our study.

2 Methodology and overview of results

2.1 Methodology

We built a five-step methodology (see Figure 1) inspired by Paul and Criado (2020) and Cuervo-Cazurra et al. (2018) and in line with similar literature reviews (Mostafiz et al., 2020; Watson et al., 2018).

Figure 1 Overview of the literature search methodology



Source: Elaborated by the authors.

In the first step, we developed two separate lists of keywords. From the international firm perspective, we selected 'MNE', 'MNC', 'multinational' and 'international*'. From the digital/technology perspective, we faced the difficulty that digitalisation is a recent concept, with few relevant articles available mentioning it explicitly. However, the literature has approached similar topics using other key terms. During the 1980s and the 1990s, the rise of technologies like Enterprise Resource Management (ERP) and Electronic Data Interexchange (EDI) transformed MNEs' value chains. For these years, we could not find equivalent concepts for digitalisation; however, the literature used the term *new technologies* to address similar issues. At the end of the 1990s, the advent of the Internet and lower storage and communication costs transformed IB. Small companies were able to create web pages and start selling abroad immediately. The concepts commonly used at that time were *e-business* and *virtual*. Now, in the era of smartphones and big digital platforms such as Google and Facebook, the most frequently used word is *digital.* Our final list for the digital perspective included, therefore, all these keywords: 'new technology*', 'e-business', 'virtual' and 'digital*'. As we sought a general perspective, we excluded concepts specific to areas of the firm, such as e-commerce, e-HRM or Industry 4.0. In this first step, we also set the date range for our search as 1989 onwards. This was the year when the World-Wide-Web was invented, and EDI started to become standard for cross-country transactions.

In the second step, we focused our search using the Web of Science (WOS) in preference to other databases, as it has guaranteed scientific content, strict filtering and anti-manipulation policies, and offers many resources for searching and collecting metadata (De Souza et al., 2020; De Winter et al., 2013; Martín-Martín et al., 2018). WOS covers all major journals relevant to our topic, and other studies in this field have made use of it (Cuervo-Cazurra et al., 2018; De Souza et al., 2020; Øyna and Alon, 2018; Watson et al., 2018). Within this database, we developed a separate search for each keyword list using the '*SUBJECT'* field (including Title, Abstract, Author keywords and Keywords detected by WOS). We joined searches with the Boolean operator '*AND'*, and limited our results to the '*BUSINESS ECONOMICS'* WOS research area. To focus on research-oriented content, we limited the results to the '*ARTICLES'* and '*REVIEWS'* document types. The result was a total of 1365 articles

In the third step, we filtered this search by publication. As our primary goal was to develop a conceptual framework, we focused on journals classified in WOS in the '*BUSINESS'*, '*BUSINESS FINANCE'* and '*MANAGEMENT'* categories and included in the Q1 and Q2 JCR quartiles. To complement our set, we added 29 other relevant journals not included in these quartiles. We selected well-known journals from the fields of IB, Strategy, and, to enable cross-fertilisation, Management of Technology. (See Appendix 1 for a complete list of journals included in our search). After applying this filter, we obtained an unrefined set of 257 articles.

In the fourth step, we manually reviewed all the articles' abstracts, excluding those unrelated to our research. We excluded all articles discussing the following topics:

- country comparisons (e.g., international comparisons of venture capital impact in new technology ventures)
- technologies specific to a particular industry but not ICT-related (e.g., oil pumping technologies)

- global industries using technology but not for an IB problem (e.g., air travel reservation systems)
- government policies (e.g., analysis of government programmes to promote technology usage for exporting)
- firms in the ICT industry but where the technology was not relevant to the issue studied
- virtual teams' studies where technology was not a priority (e.g., analysing language barriers)
- technology as a tool for the study but not its object (e.g., virtual surveys)
- development of technologies in certain countries (e.g., analysis of the drivers behind technology development in South Korea).

All identified literature reviews were included. Where there was doubt about the content of an article, we retained it. This manual selection resulted in a set of 122 articles.

In the final step, we read all articles in detail and discarded those that did not meet our criteria and had not been detected as such during the abstract review. The final sample included 102 articles (see Appendix 2).

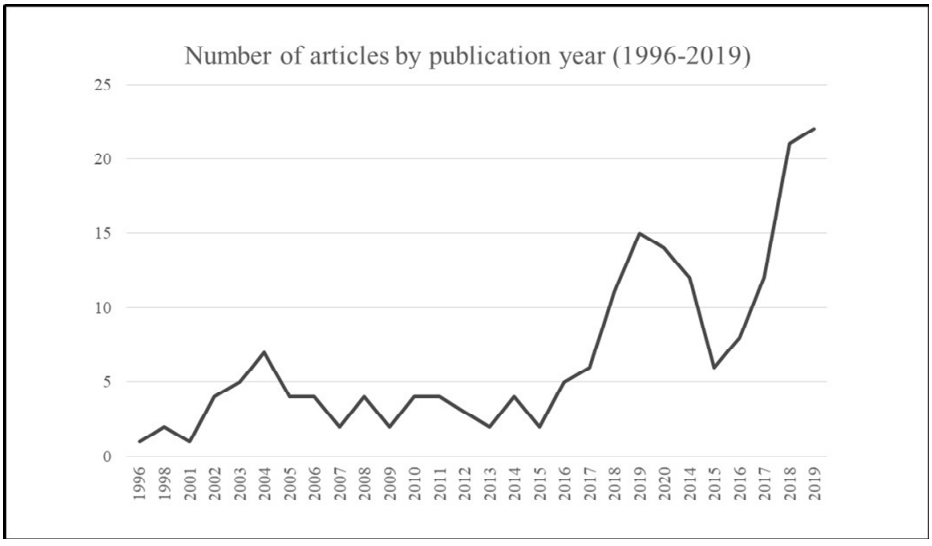
2.2 Overview of results

We made a preliminary quantitative analysis of the articles to help us understand the current development of academic research at the intersection between digital and IB and guide our literature review.

Figure 2 depicts the evolution of the selected articles over time (reflecting publication year, which includes a certain lag from the beginning of the studies). Before 2001 the number of articles was limited, and they mainly discussed traditional ICT technologies (often labelled 'new technologies'). In 2001, probably because of the dot-com frenzy, technology-related articles increased, with most citing e-commerce or e-business. There was a slight decline in subsequent years as interest in Internet-based technologies faded. This period was followed by a steep rise after 2015, mainly related to the advent of smartphones and new digital technologies.

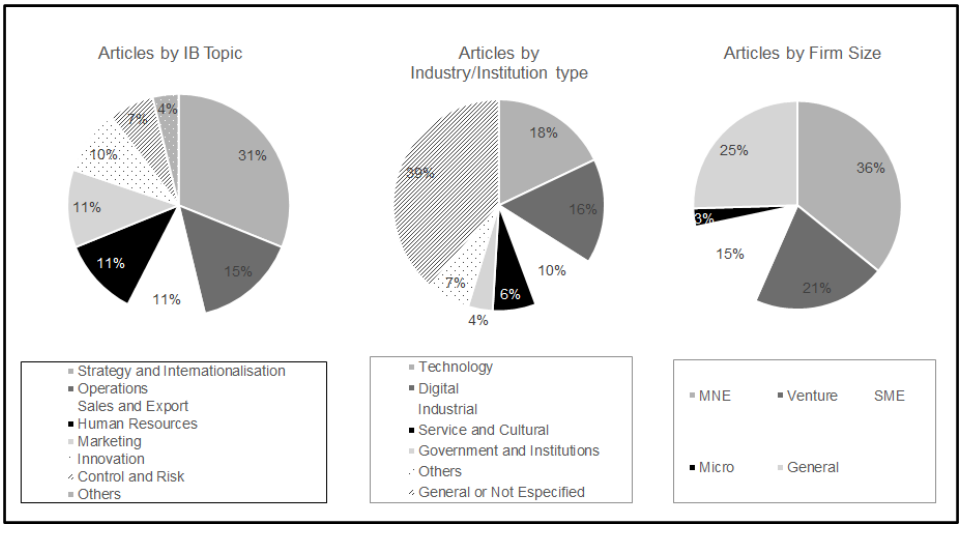
We also classified our final set of articles according to three criteria: IB topic, institution type, and size (see Figure 3). Our first classification was according to the type of IB topic addressed by the article. In line with the aims of our search, most articles (31% of the total) used a general perspective and analysed firms' strategy and internationalisation. More specific studies focused mainly on operational issues (15%), marketing (11%), commercialisation (11%), human resources applications (11%) and innovation (10%). Control and risk played a secondary role (7%).

Figure 2 Evolution of the number of articles by publication year (final set)



Source: Elaborated by the authors based on a web of science search.

Figure 3 Distribution of articles according to IB topic, industry and firm typology (final set)



Source: Elaborated by the authors based on a web of science search.

We also classified articles according to industry or institution type. As many as 39% studied the application of technology to IB without specifying a particular industry. Unsurprisingly, in the remaining articles, the firms that brought more interest belonged to the technology industry and specifically the digital one (referring to non-hardware connected applications) with 18% and 16% of the articles, respectively. Industrial and

manufacturing industries accounted for 10% of the studies. Services also had a significant presence, at 6%. Finally, 4% of the articles studied government and public institutions, such as universities.

For the international firm size, most attention was devoted to MNEs, at 36% of the articles; however, it is worth noting a focus on new businesses (21%). Many articles examined the rapid internationalisation from the outset of certain businesses ('Born Globals'). Small and Medium Enterprises (SMEs) also had significant representation, with 15% of the total sample. The rest of the articles, including those that did not specify the firm type, formed the remaining 28%.

Regarding theoretical lenses, in our sample, we found three theories commonly used to explain the application of technologies to IB. First, articles based on internalisation/transaction cost theories in IB (Buckley and Casson, 1985; Caves, 2007; Williamson, 1979) argue that technologies bring transaction and search cost reductions that lead to different internalisation decisions for MNEs (Zeng et al., 2019). Second, studies using the Resource-Based View (Barney, 1991; Barney, 1996; Peteraf, 1993) see technology as a resource that allows firms to gain competitive advantage internationally. For instance, Granstrand (1998) developed a framework to explain how technology firms engage in technology diversification, and how resources created in the process allow firms to increase their economies of scale and scope and to diversify in new business and geographies. The third theoretical lens is Dunning's (1980) eclectic paradigm, which brings together disparate theories defining three types of advantages that firms can use internationally: Ownership, Location and Internalisation. Some articles have argued that this paradigm, complemented with the network theory, can reveal how technology impacts firms' international development (Singh and Kundu, 2002). However, this has generated controversy, with some authors claiming that the network advantage (Banalieva and Dhanaraj, 2019) is not a specific advantage type (Hennart, 2019).

The previously mentioned network theory (Granovetter, 1992; Johanson and Mattsson, 2015) has also been used to analyse how corporations relate to each other in the digitalised international arena (Brouthers et al., 2016). Other studies have revisited the internationalisation process theory, or 'Uppsala' model (Johanson and Vahlne, 1977), in the light of new digital technologies and how they impact transaction governance (Coviello et al., 2017). Finally, it is worth mentioning the use of the TOE (Technology, Organisation and Environment) framework (Tornatzky and Fleischer, 1990) to study, from an IT perspective, the adoption of new technologies by firm employees (Zhu et al., 2004).

3 Literature review

We can view digital technologies as resources that firms can use in addressing particular international issues, and their application will be different depending on several variables at the level of the firm, environment, and/or context. According to this logic, we use three different perspectives to classify the articles in our review. The first perspective, *international business areas for digital application*, considers articles that have analysed the different IB areas where technology can have a significant impact. Studies can take a more general view that focuses on strategy applications (Coviello et al., 2017) or a more specific one that examines particular topics such as outsourcing (Lehdonvirta et al., 2019) or distribution channels (Andersen, 2005).

The second perspective, *technology applications in an international setting*, groups studies according to the type of technology resource or capability they consider, from e-commerce (Singh and Kundu, 2002) to additive manufacturing (Hannibal and Knight, 2018).

Finally, *firm typology and environmental factors* can be used as criteria to group the articles. Firm typology can be characterised by size, offering, or product; i.e., we find studies specific to SME problems (Hagsten et al., 2017) and others focusing on firms with business-to-business (B2B) offerings (Eid et al., 2006). Articles have also assessed the impact of the environment on digital strategies, from regulatory (Coeurderoy and Murray, 2008) to cultural approaches (Berthon et al., 2008).

3.1 International business areas for digital application

As technology improves speed and lowers search and transaction costs, it has created opportunities for firms in their global operations, from market entry decisions to day-to-day supply chain operations. We can classify articles that address these opportunities into two main categories: strategic and managerial.

Building on Porter's (1996) vision of strategy, a new technology can be applied to improve the firm's *strategic* position if it can change the competitive position. In other words, when it can affect the industry structure or the firm's value chain. Within this perspective, articles have studied the impact of digitalisation in market presence, asset creation and protection, and value-chain redefinition.

We found many examples of technologies helping companies to address new markets. In some cases they influenced the entry decision, allowing the use of alternative entry modes (Andersen, 2005; Katsikeas et al., 2020; Morgan-Thomas and Bridgewater, 2004; Watson et al., 2018). Other studies have reviewed factors related to location choice (Benmamoun et al., 2019; Coeurderoy et al., 2012). There has also been interest in technology's effects on the firm's internationalisation process itself. For instance, digital platforms can make some resources more portable, enabling faster internationalisation with easier transferability across countries (Coviello et al., 2017).

A primary advantage of MNEs is their knowledge assets. Some scholars have analysed how firms innovate, create and protect this knowledge (Del Giudice et al., 2019; Forsans and Balasubramanyam, 2010; Pittaway et al., 2004; Zhu and Kraemer, 2005). However, the new digital international context brings not only opportunities but also new appropriation risks that the firm has to manage, including foreign country piracy (Gopal and Sanders, 1998; Pezderka and Sinkovics, 2011; Raymond et al., 2015; Yamin and Sinkovics, 2006).

Redefinition of the firm's boundaries in its value chain is a central avenue of value creation mentioned in the literature. With the higher speed and lower costs that technology brings, companies can make new decisions on which activities should be developed internally and externally, at home or abroad, that completely change the configuration of their value chain (Cano-Kollmann et al., 2018; Hannibal and Knight, 2018; Kim et al., 2018; Strange and Zucchella, 2017; Tran et al., 2016; Zeng et al., 2019).

Besides the strategic impact, scholars have also considered how technologies create *managerial* improvements in functional areas of the company dealing with international expansion. We can classify these areas as marketing, operations and control.

In the marketing area, since the introduction of e-commerce, technology has transformed the MNE relationship with its customers. Studies have revealed that companies can now easily reconfigure their distribution or prescription channels in host countries (Andersen, 2005) or improve their sales and commercial capabilities (Morgan-Thomas and Bridgewater, 2004; Symeonidou et al., 2017). Advanced website personalisation also improves the adaptation of a firm's offering to the host country's characteristics (Benmamoun et al., 2019; Benmamoun et al., 2020; Vendrell-Herrero et al., 2018). However, commercialising through virtual channels and platforms brings new types of risks and challenges that firms have to manage. Some examples are information exposure when operating on open platforms or intellectual property appropriation (Jean et al., 2020; Pezderka and Sinkovics, 2011). As relationships become virtual, customers' options grow and switching costs fall. Several studies have shown how this change turns a firm's brand and reputation into a critical asset for maintaining its competitive position (Andersson and Xiao, 2016; Foltean, 2019; Murphy and Scharl, 2007; Reuber and Fischer, 2011; Sheth, 2020).

Many scholars have focused on how firms' operations change as they use digital technologies to improve their efficiency. They find new ways of acquiring resources (Carayannis and Popescu, 2005) by outsourcing and off-shoring (Ashton et al., 2010; Ho et al., 2003; Leek et al., 2003; Lehdonvirta et al., 2019), or even through co-creation with customers (Mariussen and Ndlovu, 2012). Companies also use digital technologies in their production and supply chain management (Banker and Mitra, 2007; Jean, 2014) and in developing and managing their Research and Development (R&D) networks (Colombo et al., 2009; Gassmann and Zedtwitz, 2003; Khanagha et al., 2018). We also found examples of digital technology use in talent and team management (Ashton et al., 2010; Egan et al., 2002; Garavan and O'Brien, 2013; Gassmann and Zedtwitz, 2003; Gong et al., 2018; Morgan et al., 2004; Pauleen and Yoong, 2001; Zakaria and Mohd Yusof, 2018). It is worth mentioning the importance given in the literature to the management of virtual teams. Even as global interactions become virtual, or perhaps because of this, people still matter for the enterprise's success.

Finally, a primary issue when operating abroad is controlling the company's activities in diverse environments. Some articles have addressed how new technologies change the methods that firms use to control their operations overseas (Khanagha et al., 2018; Lal, 2002; Zeng et al., 2019). Companies use the new tools for gathering information, controlling day to day operations (Andersen, 2005), and even auditing (Barrett et al., 2005). Other articles have considered how companies prevent and deal with internal corruption and ethical problems in foreign operations (Jean and Tan, 2019; Tan and Tan, 2012).

3.2 Technology applications in an international setting

A second perspective to classify the literature relates to which technology applications can improve a firm's international performance. Here, we look at the different technology-business-based applications considered in the articles rather than at the technologies themselves. One example is e-commerce, which pertains more to the application (direct-selling) than the technology (Internet and secure payment). Thus, we classify articles into three different categories: generic, strategic and specific.

Several scholars have developed *generic* studies of digital technology's impacts in specific international contexts. They have used aggregated concepts such as 'e-business'

when referring to Internet technologies (Lal, 2002; Piscitello and Sgobbi, 2004; Zhu et al., 2006) or 'digitalisation' when referring to all of today's possibilities (Banalieva and Dhanaraj, 2019; Cassetta et al., 2019; Coviello et al., 2017; Ojala et al., 2018).

Other scholars have focused on the *strategic* implications and advantages that digital technology brings to international companies. One advantage is disintermediation. We found several examples of technology allowing multinationals to interact directly with customers or suppliers without the need for local intermediaries (Andersen, 2005; Zeng et al., 2019). Another advantage is agility, as digitally enabled firms can make and implement decisions rapidly in response to sudden changes (Banalieva and Dhanaraj, 2019; Khanagha et al., 2018; Nambisan et al., 2019; Tallon et al., 2019). Finally, some studies have explored how companies innovate to stay ahead of competitors (Hannibal and Knight, 2018; Hughes et al., 2010; Nambisan et al., 2019; Pittaway et al., 2004; Ray and Ray, 2011).

Most studies have focused on more *specific* technology concepts. We can classify these into three groups: those related to the interface with third parties (front-end), those that concern with internal operations (back-end), and those that increase the knowledge that allows the firm to make better decisions (intelligence).

For front-end activities, the most cited application of technology is e-commerce, defined as *'use of the digital mediated networks to conduct commercial transactions'* (Benmamoun et al., 2019, p.319). We found several examples of how e-commerce is used by different types of firms and in different contexts (Benmamoun et al., 2019; Eid et al., 2006; Hagsten et al., 2017; Macchion et al., 2017; Singh and Kundu, 2002). Smaller companies use digital platforms to engage in international trade (Banker and Mitra, 2007; Ojala et al., 2018; Zeng et al., 2019), while MNEs integrate digital initiatives with other distribution channels abroad (multichannel) (Andersen, 2005; Eid et al., 2006; Vadana et al., 2019; Watson et al., 2018). Companies also use online possibilities to enhance their reputation and brand awareness, including e-visibility (Levina and Vilnai-Yavetz, 2015; Reuber and Fischer, 2011) and online marketing and social media (Eid et al., 2006; Foltean, 2019; Leek et al., 2003; Murphy and Scharl, 2007; Ramírez and Tejada, 2019; Sheth, 2020; Sigfusson and Chetty, 2013; Vendrell-Herrero et al., 2018).

Corporations can also improve their back-end international operations by applying digital technologies. Many articles have shown how firms use platforms to manage employees and other resources remotely (Ashton et al., 2010; Cano-Kollmann et al., 2018; Garavan and O'Brien, 2013; Lehdonvirta et al., 2019) or to enhance collaboration with suppliers or partners in host countries (Berthon et al., 2008; Jean et al., 2014). In the manufacturing industry, earlier technologies facilitated today's globally distributed production facilities (Morgan et al., 2004). More recent technologies, such as additive manufacturing or the Internet of Things (IoT), have the potential to reconfigure the global value chain (Bouncken and Barwinski, 2020; Hannibal and Knight, 2018). The evolution of this trend is currently known as Industry 4.0 and has been studied in some recent articles (Chen, 2020; Sinkovics and Sinkovics, 2020; Strange and Zucchella, 2017). However, none of these new opportunities is feasible without a proper implementation (Eid et al., 2006; Khanagha et al., 2018) and integration with current IT systems (Jean, 2014; Zhu et al., 2004).

Finally, we found articles on how companies use the possibilities of digitalisation to build their intelligence. Tools such as big data and machine learning are used to gather data and develop algorithms that aid managers' decision-making in distant environments (Strange and Zucchella, 2017; Yamin and Sinkovics, 2006). More importantly, they are

used to build the firm's knowledge and improve its innovation process (Cano-Kollmann et al., 2018; Hannibal and Knight, 2018; Øyna et al., 2018; Raymond et al., 2015).

3.3 Firm typologies and environmental factors

All the opportunities and risks in our review have different implications for firms, depending on their characteristics and the environments in which they operate. Scholars have focused on three principal *firm attributes* that affect the impact of the new digital technologies: size, nature of the offering and customer type.

The firm's size affects the quantity and quality of its resources but can also make it less agile (Wang, 2020; Zhu et al., 2004). Thus, scholars have examined how technologies affect international operations in different size categories. Micro-companies can leverage new platforms to access customers globally (Lehdonvirta et al., 2019), and new ventures or 'born global' companies use digital technologies to begin internationalisation early in their lives (Ammirato et al., 2019; Autio, 2017; Coeurderoy et al., 2012; Efrat and Shoham, 2011; Hughes et al., 2010; Jean et al., 2020; McDougall and Oviatt, 1996; Monaghan et al., 2020; Øyna et al., 2018; Park and Bae, 2004; Shaheer and Li, 2020; Sigfusson and Chetty, 2013; Symeonidou et al., 2017). Lack of financial and technical capabilities can mean that SMEs face a disadvantage when going international. However, the literature has shown that the Internet can help them interact internationally by using e-commerce and other approaches (Cassetta et al., 2019; Chen, 2020; Del Giudice et al., 2019; Hagsten et al., 2017; Kromidha, 2020; Lal, 2002; Morgan-Thomas, 2009; Piscitello and Sgobbi, 2004; Raymond et al., 2015). Conversely, studies have considered current complex MNEs operating around the world and their use of new technologies to improve the efficiency of their existing operations (Adamovic, 2018; Andersson and Xiao, 2016; Kanter, 2008; Loane et al., 2006; Morgan et al., 2004).

The literature has also established that the nature of a firm's offering profoundly influences the impact of technology in its global supply chain (Cassetta et al., 2019; Leek et al., 2003; Reuber and Fischer, 2011; Yamin and Sinkovics, 2006). Having a physical product that must be manufactured and delivered (Andersen, 2005; Macchion et al., 2017; Piscitello and Sgobbi, 2004) is different from having an intangible offering such as financial services or entertainment products (Cahen and Borini, 2020; Grönroos, 2016; Vendrell-Herrero et al., 2018; Zhu et al., 2004). There is extensive research on a new breed of companies known as digital services multinational corporations or platforms. These companies face their own internationalisation risks and opportunities (Brouthers et al., 2016; Coviello et al., 2017; Hennart, 2019; Li, J. et al., 2019; Ojala et al., 2018; Shaheer and Li, 2020; Singh and Kundu, 2002; Tan and Tan, 2012; Zeng et al., 2019). One example could be their tendency to approach new markets using their home-country business model (Zeng et al., 2019).

The final relevant firm attribute is the type of customers it serves. Articles on Business to Consumer (B2C) companies have shown that they can obtain significant advantages from automating interactions with global customers, focusing on e-commerce and online marketing activities (Vendrell-Herrero et al., 2018). However, studies on Business to Business (B2B) firms have shown that they tend to develop relationships with clients through more traditional means, using technology to improve their back-end operations (Berthon et al., 2008; Eid et al., 2006; Leek et al., 2003).

When a company operates in a global context, the *environment* in the different countries where it is present influences its digital strategy. Studies have considered environment-related factors including institutions, infrastructure, culture and technology adoption (by both companies and consumers). Although some articles have looked at the impact of these factors in the home market (Benmamoun et al., 2019; Jean and Tan, 2019), most have discussed this in the host country context.

One important subject of study is how institutional and legal environments influence technology application. For example, home-country institutions can encourage the internationalisation of small companies indirectly through e-commerce promotion or other policies and programmes (Bruton et al., 2014; Lal, 2002; Löfsten and Lindelöf, 2003), while host-country institutions can either promote or discourage the digital presence of multinationals (Eid et al., 2006; Jean and Tan, 2019; Watson et al., 2018). The host country's legal environment also has a significant impact regarding the protection of the firm's proprietary knowledge (Berthon et al., 2008; Coeurderoy and Murray, 2008; Gopal and Sanders, 1998; Tan and Tan, 2012). Studies have also shown the crucial role of the host country's infrastructure. For example, physical logistics infrastructure can affect e-commerce deliveries (Watson et al., 2018), digitally enabled partners can help redefine the company value chain (Dunn and Yamashita, 2003; Jean, 2014) and telecommunications infrastructure can limit internet connectivity and adoption, thereby affecting firms' digital strategies (Hannibal and Knight, 2018; Lal, 2002; Prahalad and Hammond, 2002).

Many scholars have addressed how the cultural environment affects international digital initiatives. Some countries, such as China, appreciate face-to-face interactions more than others (Li, 2010; Walker and Harland, 2008). Specific cultural settings can favour corruption or fraud (Berthon et al., 2008; Gopal and Sanders, 1998). Several articles have studied these effects through the concept of psychic distance (Johanson and Wiedersheim-Paul, 1975). For instance, technology changes the way companies perceive this distance, raising the risk of falling into the 'virtuality trap' (i.e., when companies perception that they know enough about foreign markets through their virtual presence causes them to assume greater risks than necessary) (Pezderka and Sinkovics, 2011; Yamin and Sinkovics, 2006).

Finally, some scholars have examined how consumers' and companies' adoption of new forms of doing business, such as e-commerce, can affect a firm's choice of target country when deploying new digital strategies (Prahalad and Hammond, 2002; Watson et al., 2018).

4 Digital international value creation: an integrative framework

The majority of articles in our review have analysed how digital technology helps firms to improve their performance from a certain international perspective; that is, firms use Digital Resources to improve their international performance. We can define digital resources as a coherent set of digital technologies and capabilities that allow the firm to transform parts of its business model into new data-based and connected ones, thereby improving the firm's efficiency and effectiveness (i.e., increasing its value). These digital resources are applied by firms to create value in an international context.

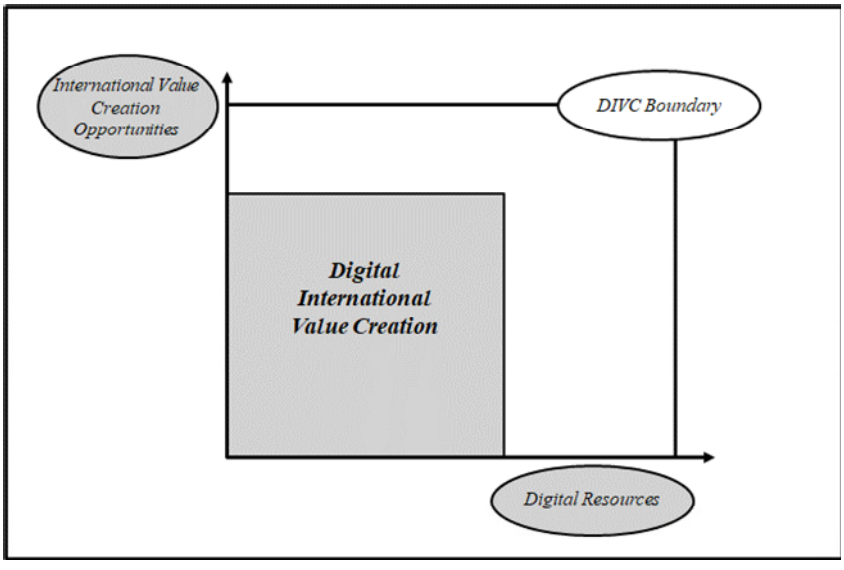
As mentioned in the introduction, we use the concept of value created by the firm as 'the sum of the values appropriated by all the participants in a business model, over all

transactions that the business model enables' (Amit and Zott, 2001, p.515). The firm can achieve this value creation through higher value for customers or greater transaction efficiencies. One possible avenue of value creation will be risk management as it improves transaction efficiencies. Previous studies (e.g., Click, 2007), have adopted other perspectives of international value creation when analysing, for instance, international strategic management related topics. However, Amit and Zott (2001) value-creation perspective takes a more holistic vision that, by including all participants, allows the uncovering of more potential research opportunities in the intersection of digitalisation and IB.

Bringing both ideas together, we can define the new term Digital International Value Creation (DIVC) as the creation of value brought about by the application of digital resources to international value-creation opportunities. This concept will help us to understand the options, enabled by technology, that allow firms to create value across national borders.

With this concept and levering in our literature review, we can construct the basis of our framework. In Figure 4, we represent DIVC graphically, building on its two main dimensions (digital resources and international value-creation opportunities). We plot the value that a firm creates through its digitalisation and internationalisation efforts. The more 'digitalised' the firm is, the more digital resources it has, and the wider the area representing DIVC. Conversely, as the firm becomes more global, it has more opportunities to apply these resources and the area representing DIVC becomes taller. The boundaries in this figure represent the limitations of this value creation model. In the digital dimension, the current status of the technology and the firm's capabilities might limit the application of new digital resources. In the international dimension, the current international presence and business model of the firm can limit its options for international value creation opportunities.

Figure 4 Two dimensions for digital international value creation analysis



Source: Elaborated by the authors.

Our review of the literature identifies three different paths in this international value-creation model that we refer to as 'International Going Digital', 'Digital Going International' and 'Going International with Digital' (see Figure 5).

The first path for value creation (international going digital) is for an already global company (e.g., an MNE), to embrace a digital way of doing things (e.g., a knowledge platform) and apply it to help the company with its international operations (e.g., coordinating the global R&D efforts). In our framework, such a firm grows in its digital resources and apply it in already available international value creation opportunities. Many of the reviewed articles study these transitions by analysing a wide range of problems from partner collaboration to human resource management (Ashton et al., 2010; Eid et al., 2006; Jean, 2014; Vendrell-Herrero et al., 2018). An example of a company following this path is DuPont. In its operations in India, DuPont uses Internet kiosks to provide agricultural information and tools that give improved access to customers (Prahalad and Hammond, 2002).

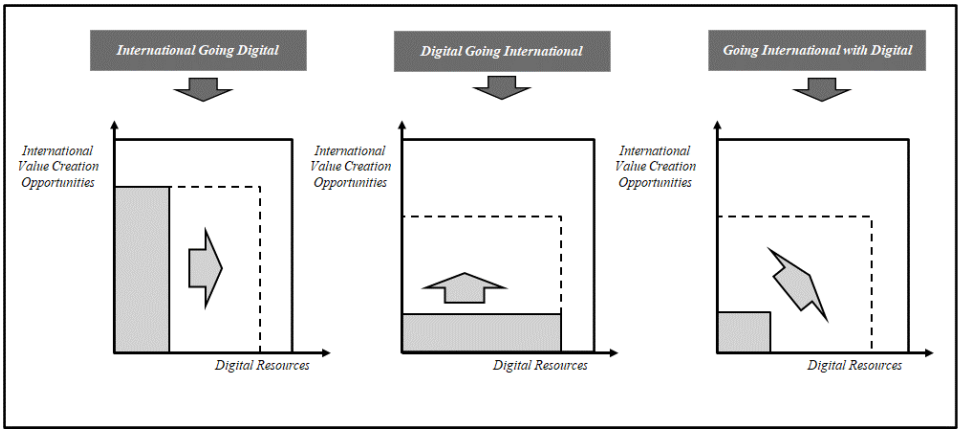
In the second path in our framework (digital going international), the firm has many digital resources and tries to apply them to new international value-creation opportunities as it increases its internationalisation (e.g., when establishing a local presence). When crossing borders, digital services companies have specific opportunities (such as the fast access of new digital firms to foreign markets (Shaheer and Li, 2020)) and face specific challenges (such as the lack of adaptation to host countries (Zeng et al., 2019)). Therefore, their internationalisation process differs from the more conventional ones due to variations in the network, ownership, location and internalisation advantages (Singh and Kundu, 2002). Scholars have studied two main firm types that fit this typology: big digital platforms (Li et al., 2019; Zeng and Glaister, 2016; Zeng et al., 2019) and new digital ventures (Shaheer and Li, 2020). One example of this path is Facebook's crowd sourcing of its translation activities to accelerate its internationalisation. The company used learning tools and incentive systems to integrate a dispersed network of translators that helped it to establish operations in new countries (Tran et al., 2016).

The third path for value creation (going international with digital) represents a relatively domestic firm that is not very advanced in digital technology and adopts digital approaches to pursue its internationalisation. In our framework, firms acquire new digital resources that provide new international value-creation opportunities. This possibility is especially relevant for smaller companies within traditional industries (Lehdonvirta et al., 2019; Pezderka and Sinkovics, 2011; Reuber and Fischer, 2011; Watson et al., 2018). For instance, small textile firms in the Italian district of Prato used e-business to address new markets, develop relationships with their international clients and increase their global visibility (Piscitello and Sgobbi, 2004).

This three of paths to growth are not absolute. We can imagine intermediate scenarios, such as an MNE having already adopted certain digital approaches but using a new one to improve the efficiency of some of its operations abroad.

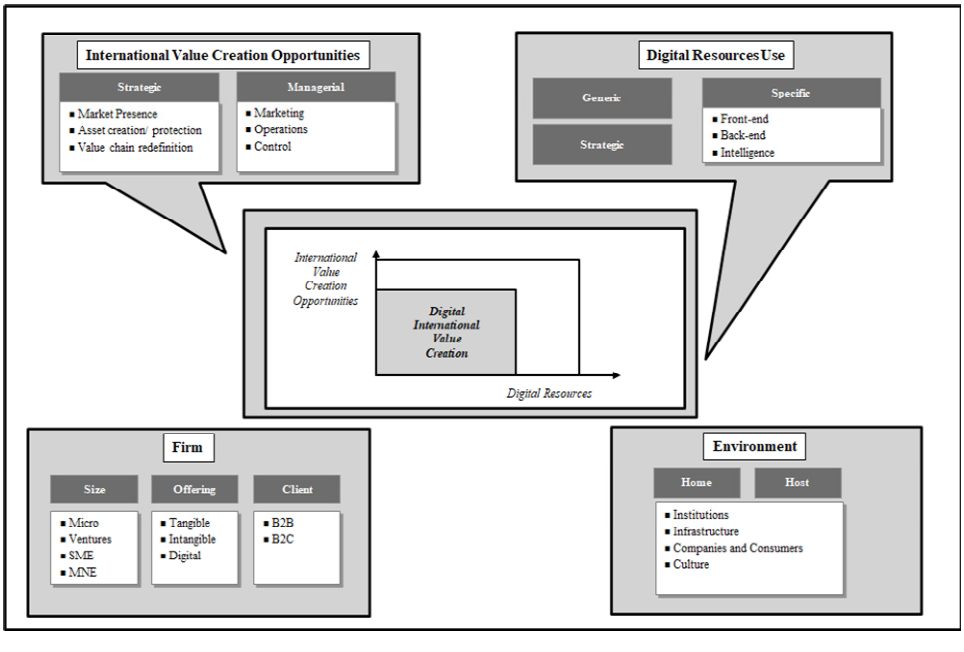
Our study aims to help identify possible research opportunities and design new business strategies. For this purpose, a more detailed framework is useful. We, therefore, use the literature review presented in Section 3 to elaborate on the two dimensions of the initial framework and its possible moderators. The full conceptual framework is shown in Figure 6.

Figure 5 Avenues for digital international value creation



Source: Elaborated by the authors.

Figure 6 Complete framework for digital international value creation



Source: Elaborated by the authors.

In summary, and in line with our review, international value-creation opportunities can be classified as strategic (market presence, asset creation and protection and value-chain redefinition opportunities) or managerial (marketing, operations and control opportunities). Digital resources can be generic, strategic, or specific (including front-end, back-end and intelligence resources). As we also showed in the literature review section, the relationship between dimensions is moderated by firm type (size, offering

and type of client) and environment where it operates (institutions, infrastructure, culture and adoption by customers and companies) in both the home and the host countries.

5 Conclusions, research agenda and limitations

In recent decades, technology has changed the way firms approach international expansion. Unsurprisingly, new digital technologies are profoundly impacting firms, offering many strategic and tactical options.

Our review brings together two separate fields, digital technologies and IB, that are becoming closer every day. Although there have been other reviews and conceptual proposals about this intersection (Hazlehurst and Brouthers, 2018; Pittaway et al., 2004; Reuber and Fischer, 2011; Tallon et al., 2019; Vadana et al., 2019; Van Geffen et al., 2013), most of them have limited their scope to specific functional areas, such as marketing (Watson et al., 2018), or to a particular firm type, such as new ventures (Vadana et al., 2019). Our conceptual framework is novel in that it integrates the different aspects of value creation in different contexts and includes an updated set of possible digital approaches.

We believe this framework can help both practitioners and academics. It will be useful for practitioners as a strategic map for determining new opportunities for value creation and their associated challenges and risks. It will help academics to identify new avenues for research and to design and select appropriate constructs and variables (including the different moderating factors identified here).

By adopting our conceptual framework, future research can advance along three different lines to explain how companies can use digital resources in new international value-creation opportunities.

Studies can examine how MNEs can increase their digital resources and capabilities and apply them across their international operations (international going digital), on how digital firms can profit globally from their vast digital resources (digital going international) and on how small domestic firms can go international by applying their newly acquired digital resources (going international with digital). Future work can study each of these three lines from the perspective of opportunities or of risk mitigation. In our review, we found that existing research has focused on opportunities, both on the growth side (such as improved access to consumers) and the operational side (e.g., reconfiguring the supply chain). Talent-management opportunities are also well covered, with many articles studying the application of technology to team management and talent creation.

However, technology brings not only opportunities but also many challenges and risks. Digital technologies impact traditional IB risk and also create new types of risks (Pezderka and Sinkovics, 2011). Despite their importance, in the literature there is limited coverage of the implications of technology on risk and risk management. Few studies have focused on how firms can apply digital technologies to manage traditional IB risks, and studying this application in detail in areas such as credit risk management could be worthwhile. Moreover, the new types of risk that technology brings to IB open up a rich area of future research. As mentioned above, an interesting example is the so-called virtuality trap (Yamin and Sinkovics, 2006), which is related to the familiar concept of psychic distance in IB (Johanson and Wiedersheim-Paul, 1975).

This example shows us the importance of the environment in the study of risk. Other examples include how institutions and the legal environment can help firms to protect

their knowledge assets against appropriation and to promote the infrastructure needed to reduce the risks of digital initiatives and their adoption. However, this environment is becoming more and more hostile to international activities. Accordingly, future research should focus on how firms can navigate and reduce international risks such as political, regulatory or legal risks, as well as cultural distance effects. For example, institutional variables can moderate the effect of digital resources in different firms' strategic international decisions such as location choice, entry mode selection and divestiture. In this connection, it would be useful to compare the strategies used by different types of firms to deal with, or influence, the institutional environment. In this sense, a recent study by Curchod et al. (2020), based on the institution-based view of IB, analyses the firm's subsidiaries' strategies in the institutional environment in the case of an online platform (a digital company going international considering our framework).

From a different perspective within environment management, there are also opportunities to study the role of digital technology in MNE's non-market strategies. For example, a recent study developed a conceptual framework linking big data and non-market literatures (Liedong et al., 2020), presenting different ways in which big data contributes to the development of specific political capabilities used by firms to deal with the domestic non-market environment. Future research could expand and test that framework in an international value-creation context. Other opportunities to study the application of digital to non-market strategies present themselves in the areas of Corporate Social Responsibility (CSR) and sustainability. One such study has already shown how a large technology MNE uses digital technologies for the economic development of impoverished communities in India (Dunn and Yamashita, 2003).

As we have shown in our framework, DIVC also changes depending on the type of firm. Therefore, it makes sense to analyse the internationalisation paths of different companies, as it also moderates the digital value created by them. Although there have been a number of articles exploring this path in the relationship with technological-based born-globals, we believe that remain research opportunities in more traditional types of companies, especially SMEs.

Future research could also examine how digital can improve security and flexibility to help MNEs create value in a post-pandemic world. Studies can focus on certain digital resources (such as distribute manufacturing or videoconferencing) and their potential use in this environment (e.g., transforming their value chains to minimise face-to-face contact).

Our study is subject to certain limitations that can also lead to new research opportunities. For example, by design, we conducted our study from the perspective of the firm. It would be interesting to develop alternative frameworks from different angles, adopting, i.e., a country-level perspective to analyse political and economic dimensions and the opportunities that digital technologies offer for limiting the impact of new barriers to trade and investment. At a micro-level, a behavioural approach could be applied to understand the micro-foundations of the behaviour of decision-makers in the face of complex global-digital transitions.

As explained above, we limited our review to a general technology perspective, since more specific concepts (including e-commerce) had already been explored. However, as more recent digital technologies mature, new and more specific concepts require attention, such as the Internet of Things (IoT), smart companies, and the sharing economy. Likewise, although we made the decision not to explore specific technologies (as doing so would have limited the applicability of our framework), we note the absence

of and need for studies of one of the most promising technology trends for IB, the distributed ledger or block-chain. This can be an interesting opportunity for further research.

In the coming years, firms will need to adapt to a changing global and technological landscape, and it will be more important than ever to align their strategy and operations in order to achieve DIVC. Following the arrival of the COVID-19 pandemic and the lockdown of almost all countries and economies in the world, digital technologies have proved vital to the continuation of economic activities and to the attempts to control the pandemic. In this new environment, characterised by high uncertainty and continuous changes, firms will need to innovate and dynamically adapt their international operations (reconfiguration of the value chain, coordination among subsidiaries, managerial styles, among others) in order to create value for their stakeholders. Digital technologies will play a key role in achieving this goal.

Acknowledgement

The authors would like to thank the editor Associate Professor Maria Elo, the EJIM team and the three anonymous reviewers for their help in improving this article.

References

Adamovic, M. (2018) 'An employee-focused human resource management perspective for the management of global virtual teams', *The International Journal of Human Resource Management*, Vol. 29, No. 14, pp.2159–2187.

Amit, R. and Zott, C. (2001) 'Value creation in E-business', *Strategic Management Journal*, Vol. 22, Nos. 6/7, pp.493–520.

Ammirato, S., Sofo, F., Felicetti, A.M., Helander, N. and Aramo-Immonen, H. (2019) 'A new typology to characterize Italian digital entrepreneurs', *International Journal of Entrepreneurial Behavior and Research*, Vol. 26, No. 2, pp.224–245.

Andersen, P.H. (2005) 'Export intermediation and the internet: an activity-unbundling approach', *International Marketing Review*, Vol. 22, No. 2, pp.147–164.

Andersson, M. and Xiao, J. (2016) 'Acquisitions of start-ups by incumbent businesses', *Research Policy*, Vol. 45, No. 1, pp.272–290.

Ashton, D., Brown, P. and Lauder, H. (2010) 'Skill webs and international human resource management: lessons from a study of the global skill strategies of transnational companies', *The International Journal of Human Resource Management*, Vol. 21, No. 6, pp.836–850.

Autio, E. (2017) 'Strategic entrepreneurial internationalization: a normative framework', *Strategic Entrepreneurship Journal*, Vol. 11, No. 3, pp.211–227.

Banalieva, E.R. and Dhanaraj, C. (2019) 'Internalization theory for the digital economy', *Journal of International Business Studies*, Vol. 50, No. 8, pp.1372–1387.

Banker, R.D. and Mitra, S. (2007) 'Procurement models in the agricultural supply chain: a case study of online coffee auctions in India', *Electronic Commerce Research and Applications*, Vol. 6, No. 3, pp.309–321.

Barney, J. (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, Vol. 17, No. 1, pp.99–120.

Barney, J. (1996) 'The resource-based theory of the firm', *Organization Science (Providence, R.I.)*, Vol. 7, No. 5, pp.469.

Barrett, M., Cooper, D.J. and Jamal, K. (2005) 'Globalisation and the coordinating of work in multi-national audits', *Accounting Organizations and Society*, Vol. 30, No. 1, pp.1–24.

Benmamoun, M., Alhor, H., Ascencio, C. and Sim, W. (2020) 'Social enterprises in electronic markets: web localization or standardization', *Electronic Markets*. Available online at: https://link.springer.com/article/10.1007/s12525-020-00430-7 (accessed on 1 November 2020).

Benmamoun, M., Singh, N., Lehnert, K. and Lee, S.B. (2019) 'Internationalization of e-commerce corporations (ECCs)', *Multinational Business Review*, Vol. 27, No. 4, pp.317–338.

Berthon, J., Berthon, P., Pitt, L., Campbell, C. and Thwaites, D. (2008) 'e-relationships for e-readiness: culture and corruption in international e-B2B', *Industrial Marketing Management*, Vol. 37, No. 1, pp.83–91.

Bouncken, R. and Barwinski, R. (2020) 'Shared digital identity and rich knowledge ties in global 3D printing – a drizzle in the clouds?', *Global Strategy Journal*.

Brouthers, K.D., Geisser, K.D. and Rothlauf, F. (2016) 'Explaining the internationalization of ibusiness firms', *Journal of International Business Studies*, Vol. 47, No. 5, pp.513–534.

Bruton, G.D., Lau, C. and Obloj, K. (2014) 'Institutions, resources and firm strategies: a comparative analysis of entrepreneurial firms in three transitional economies', *European Journal of International Management*, Vol. 8, No. 6, pp.697–720.

Buckley, P.J. and Casson, M. (1985) *The Economic Theory of the Multinational Enterprise,* Springer, New York.

Cahen, F. and Borini, F.M. (2020) 'International digital competence', *Journal of International Management*, Vol. 26, No. 1. Doi: 10.1016/j.intman.2019.100691.

Cano-Kollmann, M., Hannigan, T.J. and Mudambi, R. (2018) 'Global innovation networks – organizations and people', *Journal of International Management*, Vol. 24, No. 2, pp.87–92.

Carayannis, E.G. and Popescu, D. (2005) 'Profiling a methodology for economic growth and convergence: learning from the EU e-procurement experience for central and eastern European countries', *Technovation*, Vol. 25, No. 1, pp.1–14.

Cassetta, E., Monarca, U., Dileo, I., Di Berardino, C. and Pini, M. (2019) 'The relationship between digital technologies and internationalisation: evidence from Italian SMEs', *Industry and Innovation*, pp.1–29.

Caves, R.E. (2007) *Multinational Enterprise and Economic Analysis,* Cambridge University Press, Cambridge.

Chen, C. (2020) 'Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of industry 4.0', *Journal of Manufacturing Technology Management*. Available online at: https://www.emerald.com/insight/content/doi/10.1108/JMTM-08-2019-0301/full/html (accessed on 1 November 2020).

Click, R.W. (2007) 'The value creation perspective of international strategic management', *Value Creation in Multinational Enterprise (International Finance Review*, Bingley, pp.99–123.

Coeurderoy, R. and Murray, G. (2008) 'Regulatory environments and the location decision: evidence from the early foreign market entries of new-technology-based firms', *Journal of International Business Studies*, Vol. 39, No. 4, pp.670–687.

Coeurderoy, R., Cowling, M., Licht, G. and Murray, G. (2012) 'Young firm internationalization and survival: empirical tests on a panel of 'adolescent' new technology-based firms in Germany and the UK', *International Small Business Journal*, Vol. 30, No. 5, pp.472–492.

Colombo, M.G., Grilli, L., Murtinu, S., Piscitello, L. and Piva, E. (2009) 'Effects of international R&D alliances on performance of high-tech start-ups: a longitudinal analysis', *Strategic Entrepreneurship Journal*, Vol. 3, No. 4, pp.346–368.

Coviello, N., Kano, L. and Liesch, P.W. (2017) 'Adapting the Uppsala model to a modern world: macro-context and microfoundations', *Journal of International Business Studies*, Vol. 48, No. 9, pp.1151–1164.

Cuervo-Cazurra, A., Gaur, A.S. and Singh, D. (2018) 'Pro-market institutions and global strategy: the pendulum of pro-market reforms and reversals', *Academy of Management Proceedings*, No. 1, pp.1–40.

Curchod, C., Patriotta, G. and Wright, M. (2020) 'Self-categorization as a nonmarket strategy for MNE subsidiaries: tracking the international expansion of an online platform', *Journal of World Business*, Vol. 55, No. 3. Doi: 10.1016/j.jwb.2019.101070.

De Souza, P.H., Moreira, M.F. and De Souza, W.V.B. (2020) 'The structure of an innovation ecosystem: foundations for future research', *Management Decision*. Available online at: https://www.emerald.com/insight/content/doi/10.1108/MD-03-2019-0383/full/html (Accessed 1 November 2020).

De Winter, J.C., Zadpoor, A.A. and Dodou, D. (2013) 'The expansion of google scholar versus web of science: a longitudinal study', *Scientometrics*, Vol. 98, No. 2, pp.1547–1565.

Del Giudice, M., Scuotto, V., Garcia-Perez, A. and Messeni Petruzzelli, A. (2019) 'Shifting Wealth II in Chinese economy: the effect of the horizontal technology spillover for SMEs for international growth', *Technological Forecasting and Social Change*, Vol. 145, pp.307–316.

Dunn, D. and Yamashita, K. (2003) 'Microcapitalism and the megacorporation', *Harvard Business Review*, Vol. 81, No. 8, pp.46–54.

Dunning, J.H. (1980) 'Toward an eclectic theory of international production: some empirical tests', *Journal of International Business Studies*, Vol. 11, No. 1, pp.9–31.

Efrat, K. and Shoham, A. (2011) 'Environmental characteristics and technological capabilities' interaction in high-technology born global firms', *European Journal of International Management*, Vol. 5, No. 3, pp.271–284.

Egan, M.L., Bendick, M. and Miller, J.J. (2002) 'US firms' evaluation of employee credentials in international business', *The International Journal of Human Resource Management*, Vol. 13, No. 1, pp.76–88.

Eid, R., Elbeltagi, I. and Zairi, M. (2006) 'Making business-to-business international internet marketing effective: a study of critical factors using a case-study approach', *Journal of International Marketing*, Vol. 14, No. 4, pp.87–109.

Foltean, F.S. (2019) 'Bridging marketing theory – practice gap to enhance firm performance: introduction to the special issue', *Journal of Business Research*, Vol. 104, pp.520–528.

Forsans, N. and Balasubramanyam, V.N. (2010) 'Acquisitions versus licensing agreements as vehicles for technology transfer', *European Journal of International Management*, Vol. 4, No. 1/2, pp.48–55.

Garavan, T.N. and O'Brien, F. (2013) 'The use of manager self-service (MSS) HR portals in MNCs: the influence of attitudinal, normative, behavioural and national cultural factors', *European Journal of International Management*, Vol. 7, No. 4, pp.393–412.

Gassmann, O. and Zedtwitz, M. (2003) 'Trends and determinants of managing virtual R&D teams', *R&D Management*, Vol. 33, No. 3, pp.243–262.

Gong, J., Hong, Y. and Zentner, A. (2018) 'Role of monetary incentives in the digital and physical inter-border labor flows', *Journal of Management Information Systems*, Vol. 35, No. 3, pp.866–899.

Gopal, R.D. and Sanders, G.L. (1998) 'International software piracy: analysis of key issues and impacts', *Information Systems Research*, Vol. 9, No. 4, pp.380–397.

Granovetter, M. (1992) 'Economic institutions as social constructions: a framework for analysis', *Acta Sociologica*, Vol. 35, No. 1, pp.3–11.

Granstrand, O. (1998) 'Towards a theory of the technology-based firm', *Research Policy*, Vol. 27, No. 5, pp.465–489.

Grönroos, C. (2016) 'Internationalization strategies for services: a retrospective', *Journal of Services Marketing*, Vol. 30, No. 2, pp.129–132.

Guillén, M.F. (2020) 'How businesses have successfully pivoted during the pandemic', *Harvard Business Review*. Available online at: https://hbr.org/2020/07/how-businesses-have-successfully-pivoted-during-the-pandemic (accessed on 1 November 2020).

Hagsten, E., Hagsten, E., Kotnik, P. and Kotnik, P. (2017) 'ICT as facilitator of internationalisation in small- and medium-sized firms', *Small Business Economics*, Vol. 48, No. 2, pp.431–446.

Hannibal, M. and Knight, G. (2018) 'Additive manufacturing and the global factory: disruptive technologies and the location of international business', *International Business Review*, Vol. 27, No. 6, pp.1116–1127.

Hazlehurst, C. and Brouthers, K.D. (2018) 'IB and strategy research on "new" information and communication technologies: guidance for future research', *International Business in the Information and Digital Age* Emerald Publishing Limited, Bingley, pp.65–89.

Hennart, J. (2019) 'Digitalized service multinationals and international business theory', *Journal of International Business Studies (JIBS)*, Vol. 50, No. 8, pp.1388–1400.

Ho, D.C.K., Au, K.F. and Newton, E. (2003) 'The process and consequences of supply chain virtualization', *Industrial Management and Data Systems*, Vol. 103, No. 6, pp.423–433.

Hughes, M., Martin, S.L., Morgan, R.E. and Robson, M.J. (2010) 'Realizing product-market advantage in high-technology international new ventures: the mediating role of ambidextrous innovation', *Journal of International Marketing*, Vol. 18, No. 4, pp.1–21.

Jean, R.B. (2014) 'What makes export manufacturers pursue functional upgrading in an emerging market? A study of Chinese technology new ventures', *International Business Review*, Vol. 23, No. 4, pp.741–749.

Jean, R.B. and Tan, D. (2019) 'The effect of institutional capabilities on e-business firms' international performance', *Management International Review*, Vol. 59, No. 4, pp.593–616.

Jean, R.B., Kim, D. and Cavusgil, E. (2020) 'Antecedents and outcomes of digital platform risk for international new ventures' internationalization', *Journal of World Business*, Vol. 55, No. 1, pp.101021.

Jean, R.B., Sinkovics, R.R. and Kim, D. (2014) 'The impact of technological, organizational and environmental characteristics on electronic collaboration and relationship performance in international customer-supplier relationships', *Information & Management*, Vol. 51, No. 7, pp.854–864.

Johanson, J. and Mattsson, L. (2015) 'Internationalisation in industrial systems – a network approach', *Knowledge, Networks and Power* Palgrave Macmillan, pp.111–132.

Johanson, J. and Vahlne, J. (1977) 'The internationalization process of the firm – a model of knowledge development and increasing foreign market commitments', *Journal of International Business Studies*, Vol. 8, No. 1, pp.23–32.

Johanson, J. and Wiedersheim-Paul, F. (1975) 'The internationalization of the firm – four Swedish cases', *Journal of Management Studies*, Vol. 12, No. 3, pp.305–323.

Kanter, R.M. (2008) 'Transforming giants', *Harvard Business Review*, Vol. 115, No. 5, pp.50.

Katsikeas, C., Leonidou, L. and Zeriti, A. (2020) 'Revisiting international marketing strategy in a digital era', *International Marketing Review*, Vol. 37, No. 3, pp.405–424.

Khanagha, S., Ramezan Zadeh, M.T., Mihalache, O.R. and Volberda, H.W. (2018) 'Embracing bewilderment: responding to technological disruption in heterogeneous market environments', *Journal of Management Studies*, Vol. 55, No. 7, pp.1079–1121.

Kim, D., Jean, R. and Sinkovics, R. (2018) 'Drivers of virtual interfirm integration and its impact on performance in international customer – supplier relationships', *Management International Review*, Vol. 58, No. 3, pp.495–522.

Kromidha, E. (2020) 'The role of digital presence and investment network signals on the internationalisation of small firms', *International Small Business Journal*. Available online at: https://journals.sagepub.com/doi/full/10.1177/0266242620958898 (accessed on 1 November 2020).

Lal, K. (2002) 'E-business and manufacturing sector: a study of small and medium-sized enterprises in India', *Research Policy*, Vol. 31, No. 7, pp.1199–1211.

Leek, S., Turnbull, P.W. and Naudé, P. (2003) 'How is information technology affecting business relationships? Results from a UK survey', *Industrial Marketing Management*, Vol. 32, No. 2, pp.119–126.

Lehdonvirta, V., Kässi, O., Hjorth, I., Barnard, H. and Graham, M. (2019) 'The global platform economy: a new offshoring institution enabling emerging-economy microproviders', *Journal of Management*, Vol. 45, No. 2, pp.567–599.

Levina, O. and Vilnai-Yavetz, I. (2015) 'E-visibility maturity model: a tool for assessment and comparison of individual firms and sets of firms in e-business', *Electronic Commerce Research and Applications*, Vol. 14, No. 6, pp.480–498.

Li, J., Chen, L., Yi, J., Mao, J. and Liao, J. (2019) 'Ecosystem-specific advantages in international digital commerce', *Journal of International Business Studies*, Vol. 50, No. 9, pp.1448–1463.

Li, W. (2010) 'Virtual knowledge sharing in a cross-cultural context', *Journal of Knowledge Management*, Vol. 14, No. 1, pp.38–50.

Liedong, T.A., Rajwani, T. and Lawton, T.C. (2020) 'Information and nonmarket strategy: conceptualizing the interrelationship between big data and corporate political activity', *Technological Forecasting and Social Change*, Vol. 157, pp.120039.

Loane, S., Bell, J. and McNaughton, R. (2006) 'Employing information communication technologies to enhance qualitative international marketing enquiry', *International Marketing Review*, Vol. 23, No. 4, pp.438–455.

Löfsten, H. and Lindelöf, P. (2003) 'Determinants for an entrepreneurial milieu: science parks and business policy in growing firms', *Technovation*, Vol. 23, No. 1, pp.51–64.

Macchion, L., Moretto, A.M., Caniato, F., Caridi, M., Danese, P. and Vinelli, A. (2017) 'International e-commerce for fashion products: what is the relationship with performance?', *International Journal of Retail and Distribution Management*, Vol. 45, No. 9, pp.1011–1031.

Mariussen, A. and Ndlovu, T. (2012) 'Internet-enabled value co-creation in SME internationalisation: current practices from the UK food and drink industry', *European Journal of International Management*, Vol. 6, No. 5, pp.503–524.

Martín-Martín, A., Orduna-Malea, E., Thelwall, M. and Delgado López-Cózar, E. (2018) 'Google scholar, web of science, and scopus: a systematic comparison of citations in 252 subject categories', *Journal of Informetrics*, Vol. 12, No. 4, pp.1160–1177.

McDougall, P.P. and Oviatt, B.M. (1996) 'New venture internationalization, strategic change, and performance: a follow-up study', *Journal of Business Venturing*, Vol. 11, No. 1, pp.23–40.

Monaghan, S., Tippmann, E. and Coviello, N. (2020) 'Born digitals: thoughts on their internationalization and a research agenda', *Journal of International Business Studies*, Vol. 51, No. 1, pp.11–22.

Morgan, L.O., Nie, W. and Young, S.T. (2004) 'Operational factors as determinants of expatriate and repatriate success', *International Journal of Operations and Production Management*, Vol. 24, No. 12, pp.1247–1268.

Morgan-Thomas, A. (2009) 'Online activities and export performance of the smaller firm: a capability perspective', *European Journal of International Management*, Vol. 3, No. 3, pp.266–285.

Morgan-Thomas, A. and Bridgewater, S. (2004) 'Internet and exporting: determinants of success in virtual export channels', *International Marketing Review*, Vol. 21, Nos. 4/5, pp.393–408.

Mostafiz, M.I., Sambasivan, M. and See-Kwong, G. (2020) 'Born global phenomenon: a critical review and avenues for future research', *European Journal of International Management*, Vol. 1, No. 1, pp.1.

Murphy, J. and Scharl, A. (2007) 'An investigation of global versus local online branding', *International Marketing Review*, Vol. 24, No. 3, pp.297–312.

Nambisan, S., Zahra, S.A. and Luo, Y. (2019) 'Global platforms and ecosystems: implications for international business theories', *Journal of International Business Studies*, Vol. 50, No. 9, pp.1464–1486.

Narayandas, D., Hebbar, V. and Li, V. (2020) 'Lessons from Chinese companies' response to covid-19', *Harvard Business Review*. Available online at: https://hbr.org/2020/06/lessons-from-chinese-companies-response-to-covid-19 (accessed on 1 November 2020).

Ojala, A., Evers, N. and Rialp, A. (2018) 'Extending the international new venture phenomenon to digital platform providers: a longitudinal case study', *Journal of World Business*, Vol. 53, No. 5, pp.725–739.

Øyna, S. and Alon, I. (2018) 'A review of born globals', *International studies of management and organization*, Vol. 48, No. 2, pp.157–180.

Øyna, S., Almor, T., Elango, B. and Tarba, S.Y. (2018) 'Maturing born globals and their acquisitive behaviour', *International Business Review*, Vol. 27, No. 3, pp.714–725.

Park, S. and Bae, Z. (2004) 'New venture strategies in a developing country: Identifying a typology and examining growth patterns through case studies', *Journal of Business Venturing*, Vol. 19, No. 1, pp.81–105.

Paul, J. and Criado, A.R. (2020) 'The art of writing literature review: What do we know and what do we need to know?', *International Business Review*, Vol. 29, No. 4. Doi: 10.1016/j.ibusrev.2020.101717.

Pauleen, D.J. and Yoong, P. (2001) 'Relationship building and the use of ICT in boundary-crossing virtual teams: a facilitator's perspective', *Journal of Information Technology*, Vol. 16, No. 4, pp.205–220.

Peteraf, M.A. (1993) 'The cornerstones of competitive advantage: a resource-based view', *Strategic Management Journal*, Vol. 14, No. 3, pp.179.

Pezderka, N. and Sinkovics, R.R. (2011) 'A conceptualization of e-risk perceptions and implications for small firm active online internationalization', *International Business Review*, Vol. 20, No. 4, pp.409–422.

Piscitello, L. and Sgobbi, F. (2004) 'Globalisation, E-Business and SMEs: evidence from the Italian District of Prato', *Small Business Economics*, Vol. 22, No. 5, pp.333–347.

Pittaway, L., Robertson, M., Munir, K., Denyer, D. and Neely, A. (2004) 'Networking and innovation: a systematic review of the evidence', *International Journal of Management Reviews*, Vols. 5/6, Nos. 3/4, pp.137–168.

Porter, M.E. (1996) 'What is strategy', *Harvard Business Review*, Vol. 74, No. 6, pp.61–78.

Prahalad, C.K. and Hammond, A. (2002) 'Serving the world's poor, profitably', *Harvard Business Review*, Vol. 80, No. 9, pp.48.

Ramírez, Y. and Tejada, Á (2019) 'Digital transparency and public accountability in Spanish universities in online media', *Journal of Intellectual Capital*, Vol. 20, No. 5, pp.701–732.

Ray, S. and Ray, P.K. (2011) 'Product innovation for the people's car in an emerging economy', *Technovation*, Vol. 31, Nos. 5/6, pp.216–227.

Raymond, L., Bergeron, F., Croteau, A. and St-Pierre, J. (2015) 'Developing Absorptive Capacity through e-Business: The Case of International SMEs', *Journal of Small Business Management*, Vol. 53, No. S1, pp.75–94.

Reuber, A.R. and Fischer, E. (2011) 'International entrepreneurship in internet-enabled markets', *Journal of Business Venturing*, Vol. 26, No. 6, pp.660–679.

Shaheer, N.A. and Li, S. (2020) 'The CAGE around cyberspace? How digital innovations internationalize in a virtual world', *Journal of Business Venturing*, Vol. 35, No. 1.

Sheth, J.N. (2020) 'Borderless media: rethinking international marketing', *Journal of International Marketing*, Vol. 28, No. 1, pp.3–12.

Sigfusson, T. and Chetty, S. (2013) 'Building international entrepreneurial virtual networks in cyberspace', *Journal of World Business*, Vol. 48, No. 2, pp.260–270.

Singh, N. and Kundu, S. (2002) 'Explaining the growth of e-commerce corporations (ECCs): an extension and application of the eclectic paradigm', *Journal of International Business Studies*, Vol. 33, No. 4, pp.679–697.

Sinkovics, R.R. and Sinkovics, N. (2020) 'The Internet and international marketing – from trigger technology to platforms and new markets', *International Marketing Review*, Vol. 37, No. 3, pp.437–446.

Strange, R. (2020) 'The 2020 covid-19 pandemic and global value chains', *Journal of Industrial and Business Economics*, Vol. 47, No. 3, pp.455–465.

Strange, R. and Zucchella, A. (2017) 'Industry 4.0, global value chains and international business', *Multinational Business Review*, Vol. 25, No. 3, pp.174–184.

Symeonidou, N., Bruneel, J. and Autio, E. (2017) 'Commercialization strategy and internationalization outcomes in technology-based new ventures', *Journal of Business Venturing*, Vol. 32, No. 3, pp.302–317.

Tallon, P.P., Queiroz, M., Coltman, T. and Sharma, R. (2019) 'Information technology and the search for organizational agility: a systematic review with future research possibilities', *Journal of Strategic Information Systems*, Vol. 28, No. 2, pp.218–237.

Tan, J. and Tan, A.E. (2012) 'Business under threat, technology under attack, ethics under fire', *Journal of Business Ethics*, Vol. 110, No. 4, pp.469–479.

Tornatzky, L.G. and Fleischer, M. (1990) *The processes of technological innovation*, 1st ed., Lexington Books, Lexington.

Tran, Y., Yonatany, M. and Mahnke, V. (2016) 'Crowdsourced translation for rapid internationalization in cyberspace: a learning perspective', *International Business Review*, Vol. 25, No. 2, pp.484–494.

Vadana, I., Torkkeli, L., Kuivalainen, O. and Saarenketo, S. (2019) 'Digitalization of companies in international entrepreneurship and marketing', *International Marketing Review*, Vol. 37, No. 3, pp.471–492.

Van Geffen, C., Ruël, H.J.M. and Bondarouk, T. (2013) 'E-HRM in MNCs', *European Journal of International Management*, Vol. 7, No. 4, pp.373–392.

Vendrell-Herrero, F., Gomes, E., Collinson, S., Parry, G. and Bustinza, O.F. (2018) 'Selling digital services abroad: how do extrinsic attributes influence foreign consumers' purchase intentions?', *International Business Review*, Vol. 27, No. 1, pp.173–185.

Walker, H. and Harland, C. (2008) 'E-procurement in the United Nations: influences, issues and impact', *International Journal of Operations and Production Management*, Vol. 28, No. 9, pp.831–857.

Wang, F. (2020) 'Digital marketing capabilities in international firms: a relational perspective', *International Marketing Review*, Vol. 37, No. 3, pp.559–577.

Watson, G.F., Weaven, S., Perkins, H., Sardana, D. and Palmatier, R.W. (2018) 'International market entry strategies: relational, digital, and hybrid approaches', *Journal of International Marketing*, Vol. 26, No. 1, pp.30–60.

Williamson, O.E. (1979) 'Transaction-cost economics: the governance of contractual relations', *The Journal of Law and Economics*, Vol. 22, No. 2, pp.233–261.

Yamin, M. and Sinkovics, R.R. (2006) 'Online internationalisation, psychic distance reduction and the virtuality trap', *International Business Review*, Vol. 15, No. 4, pp.339–360.

Yohn, D.L. (2020) 'The pandemic is rewriting the rules of retail', *Harvard Business Review*. Available online at: https://hbr.org/2020/07/the-pandemic-is-rewriting-the-rules-of-retail (accessed on 1 November 2020).

Zakaria, N. and Mohd Yusof, S.A. (2018) 'Crossing cultural boundaries using the internet: toward building a model of swift trust formation in global virtual teams', *Journal of International Management*, Vol. 26, No. 1, pp.1–19.

Zeng, J. and Glaister, K.W. (2016) 'Competitive dynamics between multinational enterprises and local internet platform companies in the virtual market in China', *British Journal of Management*, Vol. 27, No. 3, pp.479–496.

Zeng, J., Khan, Z. and De Silva, M. (2019) 'The emergence of multi-sided platform MNEs: Internalization theory and networks', *International Business Review*, Vol. 28, No. 6. Doi: 10.1016/j.ibusrev.2019.101598.

Zhu, K. and Kraemer, K.L. (2005) 'Post-adoption variations in usage and value of e-business by organizations: cross-country evidence from the retail industry', *Information Systems Research*, Vol. 16, No. 1, pp.61–84.

Zhu, K., Kraemer, K.L. and Dedrick, J. (2004) 'Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial services industry', *Journal of Management Information Systems*, Vol. 21, No. 1, pp.17–54.

Zhu, K., Kraemer, K.L. and Xu, S. (2006) 'The process of innovation assimilation by firms in different countries: a technology diffusion perspective on e-business', *Management Science*, Vol. 52, No. 10, pp.1557–1576.

Appendixes

Appendix 1: Journals included in our search

No.	*Journal*	*Type*
1	*Academy of Management Annals*	Reputed Journal
2	*Academy of Management Journal*	Reputed Journal
3	*Academy of Management Learning and Education*	WOS Q1 or Q2
4	*Academy of Management Perspectives*	WOS Q1 or Q2
5	*Academy of Management Review*	Reputed Journal
6	*Accounting Organisations and Society*	WOS Q1 or Q2
7	*Asia Pacific Journal of Management*	WOS Q1 or Q2
8	*British Journal of Management*	WOS Q1 or Q2
9	*Business Ethics – A European Review*	WOS Q1 or Q2
10	*Business Horizons*	WOS Q1 or Q2
11	*Business Strategy and the Environment*	WOS Q1 or Q2
12	*Corporate Governance – an International Review*	WOS Q1 or Q2
13	*Creativity and Innovation Management*	Reputed Journal
14	*Decision Sciences*	Reputed Journal
15	*Electronic Commerce Research and Applications*	WOS Q1 or Q2
16	*Entrepreneurship and Regional Development*	Reputed Journal
17	*Entrepreneurship: Theory and Practice*	Reputed Journal
18	*European Journal of International Management*	Reputed Journal
19	*European Management Journal*	WOS Q1 or Q2
20	*Gender Work and Organisation*	WOS Q1 or Q2
21	*Global Strategy Journal*	WOS Q1 or Q2
22	*Harvard Business Review*	WOS Q1 or Q2
23	*Industrial Management and Data Systems*	Reputed Journal
24	*Industrial Marketing Management*	WOS Q1 or Q2
25	*Industry and Innovation*	WOS Q1 or Q2
26	*Information and Management*	WOS Q1 or Q2
27	*Information and Organisation*	WOS Q1 or Q2
28	*Information Systems Research*	WOS Q1 or Q2
29	*International Business Review*	WOS Q1 or Q2
30	*International Entrepreneurship and Management Journal*	WOS Q1 or Q2
31	*International Journal of Accounting Information Systems*	WOS Q1 or Q2
32	*International Journal of Contemporary Hospitality Management*	WOS Q1 or Q2
33	*International Journal of Electronic Commerce*	WOS Q1 or Q2
34	*International Journal of Entrepreneurial Behaviour and Research*	WOS Q1 or Q2

Appendix 1: Journals included in our search (continued)

No.	*Journal*	*Type*
35	*International Journal of Forecasting*	WOS Q1 or Q2
36	*International Journal of Human Resource Management*	WOS Q1 or Q2
37	*International Journal of Management Reviews*	Reputed Journal
38	*International Journal of Operations and Production Management*	WOS Q1 or Q2
39	*International Journal of Project Management*	Reputed Journal
40	*International Journal of Retail and Distribution Management*	WOS Q1 or Q2
41	*International Marketing Review*	WOS Q1 or Q2
42	*International Small Business Journal-Researching Entrepreneurship*	WOS Q1 or Q2
43	*Internet Research*	WOS Q1 or Q2
44	*Journal of Advertising*	WOS Q1 or Q2
45	*Journal of Business Ethics*	WOS Q1 or Q2
46	*Journal of Business Research*	WOS Q1 or Q2
47	*Journal of Business Venturing*	WOS Q1 or Q2
48	*Journal of Consumer Research*	Reputed Journal
49	*Journal of Destination Marketing & Management*	WOS Q1 or Q2
50	*Journal of Economics And Management Strategy*	Reputed Journal
51	*Journal of Environmental Economics And Management*	WOS Q1 or Q2
52	*Journal of Family Business Strategy*	Reputed Journal
53	*Journal of Financial Economics*	WOS Q1 or Q2
54	*Journal of Hospitality And Tourism Management*	WOS Q1 or Q2
55	*Journal of Human Resources*	Reputed Journal
56	*Journal of Information Technology*	WOS Q1 or Q2
57	*Journal of Intellectual Capital*	WOS Q1 or Q2
58	*Journal of Interactive Marketing*	Reputed Journal
59	*Journal of International Business Studies*	WOS Q1 or Q2
60	*Journal of International Management*	WOS Q1 or Q2
61	*Journal of International Marketing*	WOS Q1 or Q2
62	*Journal of Knowledge Management*	WOS Q1 or Q2
63	*Journal of Management*	WOS Q1 or Q2
64	*Journal of Management Information Systems*	WOS Q1 or Q2
65	*Journal of Management Inquiry*	Reputed Journal
66	*Journal of Management Studies*	WOS Q1 or Q2
67	*Journal of Manufacturing Technology Management*	WOS Q1 or Q2
68	*Journal of Marketing*	Reputed Journal
69	*Journal of Marketing Research*	Reputed Journal
70	*Journal of Nursing Management*	WOS Q1 or Q2

Appendix 1: Journals included in our search (continued)

No.	*Journal*	*Type*
71	*Journal of Operations Management*	WOS Q1 or Q2
72	*Journal of Product Innovation Management*	WOS Q1 or Q2
73	*Journal of Purchasing and Supply Management*	WOS Q1 or Q2
74	*Journal of Quality Technology*	Reputed Journal
75	*Journal of Service Management*	Reputed Journal
76	*Journal of Services Marketing*	WOS Q1 or Q2
77	*Journal of Small Business Management*	WOS Q1 or Q2
78	*Journal of Strategic Information Systems*	WOS Q1 or Q2
79	*Journal of Supply Chain Management*	Reputed Journal
80	*Journal of World Business*	WOS Q1 or Q2
81	*Knowledge-Based Systems*	Reputed Journal
82	*Long Range Planning*	WOS Q1 or Q2
83	*Management International Review*	WOS Q1 or Q2
84	*Management Science*	WOS Q1 or Q2
85	*Marketing Science*	Reputed Journal
86	*MIS Quarterly*	WOS Q1 or Q2
87	*MIT Sloan Management Review*	Reputed Journal
88	*Multinational Business Review*	Reputed Journal
89	*Omega-International Journal of Management Science*	WOS Q1 or Q2
90	*Operations Research*	WOS Q1 or Q2
91	*Organisation*	Reputed Journal
92	*Organisation Science*	Reputed Journal
93	*R & D Management*	WOS Q1 or Q2
94	*Research Policy*	WOS Q1 or Q2
95	*Service Business*	WOS Q1 or Q2
96	*Small Business Economics*	WOS Q1 or Q2
97	*Strategic Entrepreneurship Journal*	WOS Q1 or Q2
98	*Strategic Management Journal*	WOS Q1 or Q2
99	*Strategic Organisation*	Reputed Journal
100	*Technological Forecasting and Social Change*	WOS Q1 or Q2
101	*Technovation*	WOS Q1 or Q2
102	*Tourism Management*	WOS Q1 or Q2

Appendix 2: Articles included in our review

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
1	Adamovic	2018	An employee-focused human resource management perspective for the management of global virtual teams	*International Journal of Human Resource Management*	Problems related on the management of technology-based virtual global teams
2	Ammirato et al.	2020	A new typology to characterise Italian digital entrepreneurs	*International Journal of Entrepreneurial Behaviour and Research*	Classification of digital new ventures and their international growth
3	Andersen	2005	Export intermediation and the internet: an activity-unbundling approach	*International Marketing Review*	Alternatives for internet enabled export intermediation
4	Andersson and Xiao	2016	Acquisitions of start-ups by incumbent businesses a market selection process of 'high-quality' entrants?	*Research Policy*	Technology building through mergers and acquisitions
5	Ashton et al.	2010	Skill webs and international human resource management: lessons from a study of the global skill strategies of transnational companies	*International Journal of Human Resource Management*	Use of webs to manage the global skill resources of an MNE
6	Autio	2017	Strategic entrepreneurial internationalisation: a normative framework	*Strategic Entrepreneurship Journal*	What advantages new ventures can use in their internationalisation
7	Banalieva and Dhanaraj	2019	Internalisation theory for the digital economy	*Journal of International Business Studies*	Theoretical framework to study the internationalisation process off digital platforms based on OLI framework and networks
8	Banker and Mitra	2007	Procurement models in the agricultural supply chain: a case study of online coffee auctions in India	*Electronic Commerce Research and Applications*	A sample study of how internet enables globalisation for micro-providers

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
9	Barrett et al.	2005	Globalisation and the coordinating of work in multinational audits	*Accounting Organizations and Society*	Global auditing helped by technology in MNEs
10	Benmamoun et al.	2020	Social enterprises in electronic markets: web localization or standardisation	*Electronic Markets*	Use of electronic media by non-government organisations. Localisation of content
11	Benmamoun et al.	2019	Internationalisation of e-commerce corporations (ECCs) advanced vs. emerging markets ECCs	*Multinational Business Review*	Factors influencing digital corporations form emerging markets when going international
12	Berthon et al.	2008	E-relationships for e-readiness: culture and corruption in international e-B2B	*Industrial Marketing Management*	Effects of culture and corruption impact in B2B e-business relationships
13	Bouncken and Barwinski	2020	Shared digital identity and rich knowledge ties in global 3D printing-a drizzle in the clouds?	*Global Strategy Journal*	A sample of a technology (3D printing) that bring knowledge leakage risks
14	Brouthers et al.	2016	Explaining the internationalisation of ibusiness firms	*Journal of International Business Studies*	The process of internationalisation of digital platforms (i-business firms)
15	Bruton et al.	2014	Institutions, resources and firm strategies: a comparative analysis of entrepreneurial firms in three transitional economies	*European Journal of International Management*	Impact of institutions in technology based new ventures strategies and internationalisation
16	Cahen and Borini	2020	International digital competence	*Journal of International Management*	Capabilities that enable an internationalisation process in digital firms
17	Cano-Kollmann et al.	2018	Global innovation networks – organisations and people	*Journal of International Management*	The role of digital technologies in innovation through global networks

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
18	Carayannis and Popescu	2005	Profiling a methodology for economic growth and convergence: learning from the EU e-procurement experience for central and eastern European countries	*Technovation*	Institutional efforts to promote SME internationalisation through new technologies
19	Cassetta et al.	2019	The relationship between digital technologies and internationalisation. Evidence from Italian SMEs	*Industry and Innovation*	internationalisation of SME enabled by e-business and impact on the organisation
20	Chen	2020	Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of Industry 4.0	*Journal of Manufacturing Technology Management*	Industry 4.0 impact in innovation in manufacturing SMEs
21	Coeurderoy et al.	2012	Young firm internationalisation and survival: empirical tests on a panel of 'adolescent' new technology-based firms in Germany and the UK	*International Small Business Journal-Researching Entrepreneurship*	internationalisation and survival in technology new ventures
22	Coeurderoy and Murray	2008	Regulatory environments and the location decision: evidence from the early foreign market entries of new-technology-based firms	*Journal of International Business Studies*	Technology firms country choice decisions based on intellectual capital protection
23	Colombo et al.	2009	Effects of international R&D alliances on performance of high-tech start-ups: a longitudinal analysis	*Strategic Entrepreneurship Journal*	Impact of types of R&D alliances in new technology ventures performance
24	Coviello et al.	2017	Adapting the Uppsala model to a modern world: Macro-context and micro-foundations	*Journal of International Business Studies*	Review of the Uppsala internationalisation model in the new digital era

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
25	Del Giudice et al.	2019	Shifting Wealth II in Chinese economy. the effect of the horizontal technology spillover for SMEs for international growth	*Technological Forecasting and Social Change*	Impact of digital technology diffusion in emerging market SME internationalisation performance
26	Dunn and Yamashita	2003	Microcapitalism and the megacorporation	*Harvard Business Review*	Access to untapped customers and partners by an MNE using digital technology
27	Efrat and Shoham	2011	Environmental characteristics and technological capabilities' interaction in high-technology born global firms	*European Journal of International Management*	Role of target market environment in Born-globals
28	Egan et al.	2002	US firms' evaluation of employee credentials in international business	*International Journal of Human Resource Management*	International professionals and the use of technology
29	Eid et al.	2006	Making business-to-business international Internet marketing effective: a study of critical factors using a case-study approach	*Journal of International Marketing*	Success factors in international internet marketing for B2B enterprises
30	Foltean	2019	Bridging marketing theory - practice gap to enhance firm performance: introduction to the special issue	*Journal of Business Research*	Impact of technology in international marketing and firm performance
31	Forsans and Balasubram anyam	2010	Acquisitions versus licensing agreements as vehicles for technology transfer	*European Journal of International Management*	M&A vs. licensing strategies as a knowledge acquiring mechanism
32	Garavan and O'Brien	2013	The use of manager self-service (MSS) HR portals in MNCs: the influence of attitudinal, normative, behavioural and national cultural factors	*European Journal of International Management*	Portals as a HR management tool in MNEs, and he influence of the environment

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
33	Gassmann and Zedtwitz	2003	Trends and determinants of managing virtual R&D teams	*R & D Management*	Virtual technology based team organisation for R&D projects
34	Gong et al.	2018	Role of monetary incentives in the digital and physical inter-border labour flows	*Journal of Management Information Systems*	Platform use for talent outsourcing and technologies as a tool for micro-providers
35	Gopal and Sanders	1998	International software piracy: analysis of key issues and impacts	*Information Systems Research*	Intellectual-protection problems in an international setting. The role of government protection and local alliances
36	Granstrand	1998	Towards a theory of the technology-based firm	*Research Policy*	Theoretical approach to new technologies diversification and business growth including internationalisation
37	Grönroos	2016	Internationalisation strategies for services: a retrospective	*Journal of Services Marketing*	Impact of digitalization in the different modes internationalisation of service companies
38	Hagsten et al.	2017	ICT as facilitator of internationalisation in small- and medium-sized firms	*Small Business Economics*	Technology enabled internationalisation of SMEs and impact on export intensity
39	Hannibal and Knight	2018	Additive manufacturing and the global factory: disruptive technologies and the location of international business	*International Business Review*	Disruption in the value chain due to 3D printing and localisation of production
40	Hennart	2019	digitalised service multinationals and international business theory	*Journal of International Business Studies*	Theoretical counterpoint to other articles addressing the need to update OLI with the advent of digital service multinationals

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
41	Ho et al.	2003	The process and consequences of supply chain virtualisation	*Industrial Management & Data Systems*	Impact of the virtualisation of the supply chain in the buyer seller relationship and SME internationalisation
42	Hughes et al.	2010	Realising product-market advantage in high-technology international new ventures: the mediating role of ambidextrous innovation	*Journal of International Marketing*	Innovation in new technology ventures. Marketing differentiation and cost advantages
43	Jean	2014	What makes export manufacturers pursue functional upgrading in an emerging market? A study of Chinese technology new ventures	*International Business Review*	Upgrading in new technology ventures exporting
44	Jean et al.	2020	Antecedents and outcomes of digital platform risk for international new ventures' internationalisation	*Journal of World Business*	Risk of internationalisation through platforms for International new ventures. main drivers
45	Jean et al.	2014	The impact of technological, organisational and environmental characteristics on electronic collaboration and relationship performance in international customer-supplier relationships	*Information & Management*	E-collaboration impact in partner and suppliers relationships
46	Jean and Tan	2019	The effect of institutional capabilities on e-business firms' international performance	*Management International Review*	Institutional environment effect in e-business strategies and their performance

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
47	Kanter	2008	Transforming giants	*Harvard Business Review*	Technology impact on MNEs agility and their impact in host countries
48	Katsikeas et al.	2020	Revisiting international marketing strategy in a digital era Opportunities, challenges and research directions	*International Marketing Review*	Impact of digital technology in market selection and entry
49	Khanagha et al.	2018	Embracing bewilderment: responding to technological disruption in heterogeneous market environments	*Journal of Management Studies*	Impact of disruptive technologies in diverse environments and incumbent MNE reaction
50	Kim et al.	2018	Drivers of virtual inter-firm integration and its impact on performance in international customer-supplier relationships	*Management International Review*	Alternative integration and governance of firms relationships leveraging in new technologies. Impact of environmental factors
51	Kromidha	2020	The role of digital presence and investment network signals on the internationalisation of small firms	*International Small Business Journal-Researching Entrepreneurship*	Social media and investments as drivers of SME internationalisation
52	Lal	2002	E-business and manufacturing sector: a study of small and medium-sized enterprises in India	*Research Policy*	Role of e-business in emerging market SME internationalisation. Impact of technology infrastructure
53	Leek et al.	2003	How is information technology affecting business relationships? Results from a UK survey	*Industrial Marketing Management*	Impact of e-commerce in B2B. Difference between buyers and sellers
54	Lehdonvirta et al.	2019	The global platform economy: a new off-shoring institution enabling emerging-economy micro-providers	*Journal of Management*	Micro-providers access to the global economy through platforms. Role of signalling

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
55	Levina and Vilnai-Yavetz	2015	E-visibility maturity model: a tool for assessment and comparison of individual firms and sets of firms in e-business	*Electronic Commerce Research and Applications*	Visibility in the internet in globalised firms. Model for assessment
56	Li et al.	2019	Ecosystem-specific advantages in international digital commerce	*Journal of International Business Studies*	Competitive advantage of networks (ecosystems) centred in digital platforms in international commerce
57	Li, Wei	2010	Virtual knowledge sharing in a cross-cultural context	*Journal of Knowledge Management*	Factors that impact virtual knowledge sharing. Cultural environment impact
58	Loane et al.	2006	Employing information communication technologies to enhance qualitative international marketing enquiry	*International Marketing Review*	The use of ICT in international marketing research.
59	Löfsten and Lindelöf	2003	Determinants for an entrepreneurial milieu: science parks and business policy in growing firms	*Technovation*	Institutional promotion of internationalisation of new technology based firms. characteristics and impact on performance
60	Macchion et al.	2017	International e-commerce for fashion products: what is the relationship with performance?	*International Journal of Retail and Distribution Management*	Impact of e-commerce in international firm performance and importance of brand awareness
61	Mariussen and Ndlovu	2012	Internet-enabled value co-creation in SME internationalisation: current practices from the UK food and drink industry	*European Journal of International Management*	Impact of technology in co-creation with customers in SMEs internationalisation

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
62	McDougall and Oviatt	1996	New venture internationalisation, strategic change, and performance: a follow-up study	*Journal of Business Venturing*	Strategic and performance differences between international new ventures and local ones
63	Monaghan et al.	2020	Born digitals: thoughts on their internationalisation and a research agenda	*Journal of International Business Studies*	Impact of different technologies advantages in the internationalisation process of born-global firms
64	Morgan et al.	2004	Operational factors as determinants of expatriate and repatriate success	*International Journal of Operations & Production Management*	International talent management influenced by technology adoption
65	Morgan-Thomas and Bridgewater	2004	Internet and exporting: determinants of success in virtual export channels	*International Marketing Review*	Drivers that impact success in the commercialisation through virtual channels. Importance of technology management
66	Morgan-Thomas	2009	Online activities and export performance of the smaller firm: a capability perspective	*European Journal of International Management*	Impact of online in SME export activities. Capabilities and importance of offline exporting
67	Murphy and Scharl	2007	An investigation of global versus local online branding	*International Marketing Review*	Importance of online branding. Impact of the cultural environment
68	Nambisan et al.	2019	Global platforms and ecosystems: Implications for international business theories	*Journal of International Business Studies*	Impact on international business theory of the existence of digital platforms. Application in knowledge, relationship and value creation

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
69	Ojala et al.	2018	Extending the international new venture phenomenon to digital platform providers: a longitudinal case study	*Journal of World Business*	Digital platforms internationalisation process
70	Øyna et al.	2018	Maturing born globals and their acquisitive behaviour	*International Business Review*	Technology building of born-globals through mergers and acquisitions
71	Park and Bae	2004	New venture strategies in a developing country: Identifying a typology and examining growth patterns through case studies	*Journal of Business Venturing*	Technology strategy impact in the internationalisation of new businesses. Environment characteristics and competition
72	Pauleen and Yoong	2001	Relationship building and the use of ICT in boundary-crossing virtual teams: a facilitator's perspective	*Journal of Information Technology*	Impact of distance variables (including cultural) in virtual team relations
73	Pezderka and Sinkovics	2011	A conceptualisation of e-risk perceptions and implications for small firm active online internationalisation	*International Business Review*	E-risk framework for International business. Application for SMEs
74	Piscitello and Sgobbi	2004	Globalisation, E-business and SMEs: evidence from the Italian District of Prato	*Small Business Economics*	Manufacturing SMES internationalisation and the impact of e-business in an Industrial Cluster
75	Pittaway et al.	2004	Networking and innovation: a systematic review of the evidence	*International Journal of Management Reviews*	Literature review on Innovation networks allowed by technology
76	Prahalad and Hammond	2002	Serving the world's poor, profitably	*Harvard Business Review*	Use of technology to access poor segments on host countries

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
77	Ray and Ray	2011	Product innovation for the people's car in an emerging economy	*Technovation*	Collaboration for suppliers in innovation and technology. Implications for MNEs
78	Raymond et al.	2015	Developing absorptive capacity through E-business: the case of international SMEs	*Journal of Small Business Management*	Agility and information assimilation of SMEs through e-business adoption. Impact on internationalisation performance
79	Reuber and Fischer	2011	International entrepreneurship in internet-enabled markets	*Journal of Business Venturing*	Literature review on the impact of the internet in new ventures internationalisation. Brand, reputation and capabilities as resources.
80	Shaheer and Li	2020	The CAGE around cyberspace? How digital innovations internationalise in a virtual world	*Journal of Business Venturing*	Impact of CAGE distance in internationalisation speed of new digital innovations
81	Sheth	2020	Borderless media: rethinking international marketing	*Journal of International Marketing*	The use of social media in marketing dimensions
82	Sigfusson and Chetty	2013	Building international entrepreneurial virtual networks in cyberspace	*Journal of World Business*	Usage of social networks by international digital entrepreneurs
83	Singh and Kundu	2002	Explaining the growth of e-commerce corporations (ECCs): An extension and application of the eclectic paradigm	*Journal of International Business Studies*	Theoretical framework for studying digital platforms internationalisation based on the eclectic paradigm
84	Sinkovics and Sinkovics	2020	The Internet and international marketing – from trigger TECHNOLOGY to platforms and new markets	*International Marketing Review*	Internet contribution to marketing. Impact of latest technological trends

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
85	Strange and Zucchella	2017	Industry 4.0, global value chains and international business	*Multinational Business Review*	Impact of new digital technologies (including most recent ones) in manufacturing and global value chains
86	Symeonidou et al.	2017	Commercialisation strategy and internationalisation outcomes in technology-based new ventures	*Journal of Business Venturing*	Impact of tangible vs. intangible offering in new venture internationalisation
87	Tallon et al.	2019	Information technology and the search for organisational agility: A systematic review with future research possibilities	*Journal of Strategic Information Systems*	Literature review on the relationship of It and organizational ability
88	Tan and Tan	2012	Business under threat, technology under attack, ethics under fire: the experience of google in China	*Journal of Business Ethics*	RSC issues in digital platforms internationalisation. Impact of the environment
89	Tran et al.	2016	Crowd sourced translation for rapid internationalisation in cyberspace: a learning perspective	*International Business Review*	Reconfiguration of firm boundaries in an specific activity and impact on the internationalisation of a digital platform
90	Vadana et al.	2019	Digitalisation of companies in international entrepreneurship and marketing	*International Marketing Review*	Literature review and classification of entrepreneurial firms according to their digital and international marketing characteristics
91	Van Geffen et al.	2013	E-HRM in MNCs: what can be learned from a review of the IS literature?	*European Journal of International Management*	Literature review of Electronic Human resources in MNEs from an IT perspective

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
92	Vendrell-Herrero et al.	2018	Selling digital services abroad: how do extrinsic attributes influence foreign consumers' purchase intentions?	*International Business Review*	Cultural digital services internationalisation from a home country perspective
93	Walker and Harland	2008	E-procurement in the United Nations: influences, issues and impact	*International Journal of Operations & Production Management*	Use of technology platforms to facilitate supplier interaction of public institutions
94	Wang	2020	Digital marketing capabilities in international firms: a relational perspective	*International Marketing Review*	Relationship of firm size with the impact of digital in performance
95	Watson et al.	2018	International market entry strategies: relational, digital, and hybrid approaches	*Journal of International Marketing*	Taxonomy an literature review of the impact of digital technologies in International Market Entry
96	Yamin and Sinkovics	2006	Online internationalisation, psychic distance reduction and the virtuality trap	*International Business Review*	Effects of physic distance in online internationalisation. concept of the Virtuality Trap
97	Zakaria and Yusof	2020	Crossing cultural boundaries using the internet: toward building a model of swift trust formation in global virtual teams	*Journal of International Management*	Aspects of the management of global virtual teams through the Internet
98	Zeng and Glaister	2016	competitive dynamics between multinational enterprises and local internet platform companies in the virtual market in China	*British Journal of Management*	Differences between global and local platforms in agility and institutional relationships
99	Zeng et al.	2019	The emergence of multi-sided platform MNEs: Internalisation theory and networks	*International Business Review*	Digital platform internationalisation framework. Including value creation and knowledge networks.

Appendix 2: Articles included in our review (continued)

No.	*Author/s*	*Year*	*Title*	*Journal*	*Contribution to our research*
100	Zhu and Kraemer	2005	Post-adoption variations in usage and value of e-business by organisations: cross-country evidence from the retail industry	*Information Systems Research*	E-business usage and value creation. Back-office and front-office differences
101	Zhu et al.	2004	Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial services industry	*Journal of Management Information Systems*	Factors that influence e-business success in a non-tangible industry
102	Zhu et al.	2006	The process of innovation assimilation by firms in different countries: a technology diffusion perspective on e-business	*Management Science*	E-business adoption by firms in an international setting. Environmental setting and firm size impact