

Organizational Influences and Performance Impact of Cross-Border E-Commerce Barriers

The Moderating Role of Home Country Digital Infrastructure and Foreign Market Internet Penetration

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Organizational influences and performance impact of cross-border e-commerce barriers: The moderating role of home country digital infrastructure and foreign market Internet penetration

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Abstract

Despite voluminous research on barriers to exporting, knowledge on the inhibiting role of specific obstacles confronted by firms when exporting via cross-border e-commerce (CBEC) is virtually absent. Using data from a cross-industry sample of 1,256 firms located in 25 different European countries, we shed light on this issue by examining the organizational determinants and performance outcomes of CBEC barriers. The results revealed these barriers are more evident in the case of firms with smaller size, lacking experience, and having no affiliation with other companies. It was also found that all different types of CBEC barriers, namely financial complexities, coping with foreign markets, supplier restrictions, technical difficulties, and product limitations, are negatively affecting online export performance. Finally, both the home country's level of digital infrastructure and the foreign market's Internet penetration rate exhibited a strong moderating effect on the association between CBEC barriers and export performance.

Keywords: Cross-border e-commerce; Exporting; Export barriers; Export performance; E-commerce

Organizational influences and performance impact of cross-border e-commerce barriers: The moderating role of home country digital infrastructure and foreign market Internet penetration

Introduction

Advancements in information and communication technologies (ICTs) have changed the way firms conduct their business in foreign markets, and e-commerce now represents an important channel for many companies seeking to expand into international markets. For example, companies can now sell their goods abroad directly via their own online presence. However, this may require companies to invest in some localization of their online presence to match the local culture, language, and preferences (Yamin & Sinkovics, 2006). Alternatively, companies can utilize digital platforms with global presence, which act as electronic intermediaries (e-intermediaries) that provide matching, information, promotion, and market research functions (Qi et al., 2020). These digital platforms can facilitate international sales by increasing firms' visibility in the global market and reducing both transaction and search costs for the firm via effective mechanisms for matching buyers and sellers (Cho & Tansuhaj, 2013; Shaheer et al., 2020).

The above developments have given an impetus to many firms to use these technologies to sell their goods and services in export markets (Javalgi et al., 2012). It has also helped firms to circumvent the inhibiting role of traditional export obstacles, such as those pertaining to the location and analysis of foreign markets, the identification of overseas opportunities, and the communication and interaction with customers abroad (Katsikeas et al., 2019). As a result, scholars have highlighted the

importance of e-commerce as a powerful entry mode to help firms overcome both physical and managerial barriers to internationalization (Jean & Kim, 2020).

Although in the last few decades, the CBEC phenomenon has attracted voluminous research investigating various aspects of it, such as the internationalization process of e-commerce firms (Hånell et al., 2019), the effect of e-commerce adoption on firm internationalization (Tolstoy et al., 2016), and the motivations for using e-commerce as a new method to entering foreign markets (Qi et al., 2020), there is limited research focusing on CBEC barriers (Gomez-Herrera et al., 2014; Hazarika & Mousavi, 2022; Morgan-Thomas & Bridgewater, 2004). More importantly, there is still little understanding about the role of organizational factors in determining the magnitude of these CBEC barriers and their implications on the firm's online export performance.

Shedding light on CBEC barriers is necessitated by the fact that there appears to be a disagreement within the literature about their relevance and importance, with some scholars (e.g., Cahen & Borini, 2020; Hånell et al., 2019) arguing that CBEC provides a cost-effective foreign market entry mode that helps to remove most barriers, while others (e.g., Elia et al., 2021) suggest that CBEC introduces several complexities that combine the barriers of e-commerce with those of international business. Hence, while some barriers may be less important in CBEC, other barriers may remain equally important or become even more severe compared to traditional exporting. As a result, our knowledge about the challenges related to CBEC is still sparse, which warrants attention due to the serious effects that may have on export performance (Cassia & Magno, 2022; Jean & Kim, 2021).

Our study aims to address this void in the literature by examining the organizational determinants and performance implications of barriers to CBEC.

Specifically, we have three major objectives to accomplish: (a) to explore the role of firm size, business experience, and business group affiliation on the perceived severity of barriers experienced by firms when conducting CBEC; (b) to investigate the effect of different CBEC barriers on the firm's online export performance; (c) to examine the moderating role of the exporting country's level of digital infrastructure and host country's Internet penetration on the effect of CBEC barriers on export performance.

This study contributes to the international business literature in four ways. First, we identify and highlight the important role of a new set of barriers confronted by firms engaged in CBEC, since this provides a distinct foreign entry mode with its own unique opportunities and challenges (Yamin & Sinkovics, 2006). These barriers may differ in many aspects from those already known in traditional exporting, due to the inexistence of temporal and spatial limitations in CBEC, and therefore requiring a different handling approach (Leonidou, 2004). In fact, some of the barriers connected with traditional exporting may not be applicable at all in the case of CBEC, while others may have a negligible impact.

Second, we provide insights into the role of specific organizational factors associated with problems encountered in CBEC, which are virtually absent to date (Gabrielsson & Gabrielsson, 2011). Adopting a Resource-based view perspective, we specifically examine three antecedent factors – firm size, business experience, and business group affiliation – that influence the extent to which resources are constrained for exporters and are likely to exacerbate the influence of CBEC barriers in their export operations (Xie & Suh, 2014). This will provide useful input to the current ongoing debate about the importance and severity of online export barriers in especially resource-constrained firms (Jean et al., 2020; Ma et al., 2022; Yan et al., 2022).

Third, although some studies (e.g., Jean & Kim, 2020; Moen et al., 2008;

Sinkovics et al., 2013) have explored the impact of e-commerce on firm internationalization and export performance, there is still limited knowledge about why firms engage in CBEC with varying degrees of success (Morgan-Thomas, 2009; Paul et al., 2017). In response to this, we provide evidence regarding the detrimental role played by specific barriers associated with CBEC in the firm's export activities and consequently on its online export performance. A clear understanding of the harmful effect of different types of CBEC on performance, would help exporting firms to prioritize measures to alleviate them.

Fourth, we emphasize the contingent effect of factors external to the firm in moderating the impact of CBEC barriers on the exporting firm's success (Krishnamurthy & Singh, 2005; Rothaermel et al., 2006; Schu & Morschett, 2017). Specifically, we throw light on how two key contextual factors - the home country's digital infrastructure (e.g., availability and affordability of ICT infrastructure and networking, online payment systems, technical skills) and the foreign market's Internet penetration rate - can strengthen or weaken the negative effect of CBEC barriers on the firm's online export performance, stressing in this way the importance of both the home and host country's institutional environment in international business activities.

The remainder of this article is organized as follows: We first review the literature on the opportunities and challenges associated with CBEC, as well as on the nature and types of CBEC barriers. This is followed by an explanation of the theoretical background of our study. We then present our conceptual model and develop the research hypotheses. The next section explains methodological issues regarding the study conducted. We then proceed with an analysis of the data collected and provide the results of testing the hypotheses. This is followed by a

discussion of the research findings and a presentation of the theoretical, managerial, and public policy implications. In the final section, we explain the limitations of our study and provide suggestions for future research.

Literature review

Cross-border e-commerce: opportunities and challenges

E-commerce is broadly defined as “an environment for presenting, trading, distributing, servicing customers, collaborating with business partners, and conducting transactions using electronic technologies” (Gregory et al., 2007, pp. 31-32). This definition, however, captures many activities that do not fall under the definition of e-commerce used in this study, where e-commerce refers to the process of selling and buying via the company’s own website, a site within a third-party marketplace platform, or through electronic data interchange (EDI) (Tiessen et al., 2001). Thus, we focus on the transaction as the defining characteristic and not on the product characteristics or the mode of delivery. This implies that e-commerce can include digitally enabled transactions of both goods and services that can be digitally or physically delivered.

CBEC refers to “a cross-border trade completed between different countries via e-commerce” and represents an alternative model integrating both e-commerce and international trade (Qi et al., 2020, p. 50). Previous studies recognize CBEC as a new mode of entry into international markets, “where the ‘crossing’ of national boundaries takes place in the virtual rather than the real or spatial domain” (Yamin & Sinkovics, 2006, p. 359). CBEC presents several opportunities for firms seeking to expand their business abroad. According to previous studies (e.g., Luo et al., 2005), CBEC is subject to fewer physical barriers in transcending national borders and is less costly compared to having a physical presence in foreign markets. Thus, e-

commerce has lowered the costs of internationalization and, consequently, the barriers to internationalization. For example, today firms can use online e-commerce platforms to facilitate the cross-border exchange of goods and services over the Internet. These online platforms provide several mechanisms that can facilitate CBEC, such as order fulfilment, customer services, and Software-as-Service offerings. Thus, online platforms reduce frictions, including both transaction and search costs for both buyers and sellers by providing matching mechanisms that enable them to find each other.

CBEC also poses several challenges and risks for firms seeking to grow internationally, which need to be overcome before reaping any benefits. Prior to engaging in CBEC, companies are required to make substantial initial investments (Tolstoy et al., 2021). Several studies agree that CBEC requires specialized knowledge and capabilities, which firms must develop before selling to export markets via e-commerce. For example, CBEC arguably requires specialized marketing capabilities to identify, develop, and assimilate e-commerce activities into the firm's value offerings (Gregory et al., 2007). Others studies (e.g., Cahen & Borini, 2020) have emphasized the need to develop a distinct set of international digital competences, which include cross-cultural programming skills, global virtual networks, cross-border digital monetization adaptability, and international business model reconfiguration.

CBEC may require a certain level of adaptation to align with the local cultures. For example, companies may be required to adapt the design, language, and content of their websites or electronic platforms to fit culturally to the target country (Daryanto et al., 2013; Singh et al., 2009). If the company fails to develop country-specific websites, it may have difficulties in communicating and engaging effectively

with desired target customers in foreign markets (Sinkovics et al., 2007). In addition, logistics and setting up a logistical system is likely to be a challenge to many companies engaged in CBEC (Giuffrida et al., 2021; Tolstoy et al., 2021), despite the fact that recently new and improved logistics services have been introduced and online platforms have begun to establish their own logistics service solutions (Giuffrida et al., 2021). For example, due to the lack of harmonized rules and procedures, it can be difficult for companies to calculate shipping costs and comply with packaging, documentation, and labeling requirements (Giuffrida et al., 2021). Reverse logistics (i.e., customers returning the product) can also be a challenge to handle, as the amount of returns is typically larger in e-commerce businesses (Xu et al., 2002).¹ Hence, to succeed with CBEC requires establishing appropriate return policies and developing and implementing cost-effective processes for handling returns (Gessner & Snodgrass, 2015).

Nature and types of CBEC barriers

Although there is virtually no prior research on CBEC barriers *per se*, there are some studies focusing on barriers constraining the adoption and use of e-commerce by firms. For example, MacGregor and Vrazalic (2005) distinguish between two sets of barriers hindering firms' engagement in online trade: those pertaining to implementation issues (e.g., complexity of use, lack of interoperability, lack of technical skills) and those referring to suitability dimensions (e.g., product unsuitability, customers' different ways of doing business, lack of perceived advantages). Moreover, Gibbs and Kraemer (2004) argue that the scope of e-commerce is likely to be determined by the existence or absence of certain internal (e.g., financial resources, technological resources, perceived strategic benefits) and external (e.g., legislation barriers, external pressures, government promotion) factors. Furthermore, Guo et al. (2018) stress the role of

information asymmetry between sellers and buyers, poor legal enforcement, language and cultural differences, and the increased shipping costs for small package shipping (for physical products) as potential obstacles to engaging in CBEC activities.

Hence, we define CBEC barriers as those internal and external company constraints that hinder its ability to initiate, develop, and sustain business operations in foreign markets using e-commerce. They include both endogenous constraints within the control of the firm (e.g., technical expertise), and exogenous constraints that are partially or entirely beyond the firm's control (e.g., socio-cultural forces) (Gomez-Herrera et al., 2014). These are barriers, which impose an extra burden on the firm, over and above the traditional export barriers (e.g., difficulties in identifying foreign markets, getting representation abroad, cultural differences), such as informational, financial, physical delivery costs, language, and marketing barriers, online payment systems, and legitimation and environmental barriers related to inadequate digital infrastructure, which are specific to the firm and dependent on its organizational, industry and institutional embeddedness (Xu et al., 2002). We can categorize these barriers into those related to financial complexities, coping with foreign markets, supplier restrictions, technical difficulties, and product limitations, which are analyzed in more detail in the following.

Financial complexities

Financial barriers relate to the perceived cost of operating abroad (Baum et al., 2013), which have been found to be a significant impediment preventing firms from expanding into foreign markets (Hutchinson et al., 2009). However, CBEC has long been highlighted as a cost-effective foreign market entry mode (Bianchi & Mathews, 2016; Jean & Kim, 2020), which substantially reduces the transaction cost of exporting (Deng et al., 2022), the overall costs associated with marketing products and services

internationally (Sinkovics et al., 2013), and the cost of exploiting firm-specific advantages in export markets (Ma et al., 2022). Even though financial barriers are likely to be lower in CBEC compared to traditional exporting, they can still constrain firms' ability to export via e-commerce. For example, CBEC still depends on the availability of capital, as international activities typically require firms to invest in developing new marketing channels, adapting website content to foreign markets, and increasing foreign customers' awareness of the company's brands (Daryanto et al., 2013). Moreover, CBEC requires substantial investment in human capital to develop the necessary digital skills and competencies (Cahen & Borini, 2020; Jean & Kim, 2020; F. Wang, 2020). Furthermore, firms may be required to invest financial resources in IT-assets, including specialized hardware and software (Hong & Zhu, 2006). CBEC also involves multiple parameters that influence costs (e.g., shipping and insurance fees, customs and duties, VAT, and other local taxes) and affect price competitiveness in the targeted foreign markets. Finally, there are several other important financial issues that warrant attention when selling through digital methods internationally, including: (a) the fact that in many countries the use of credit cards or other online payment methods is still neither widely used nor safe to carry out cross-country transactions; (b) when prices are quoted in the firm's local currency, this may create frustration to foreign buyers because of not knowing the exact price of the firm's products (although this problem may be alleviated through the use of currency conversion engines); and (c) the fact that the payment and sales methods announced by the firm through the Internet may differ from those traditionally used in some countries, may cause confusion and even annoyance to customers from these countries (Guillén, 2002).

Coping with foreign markets

Previous studies (Guo et al., 2018) have highlighted increased information asymmetry between international buyers and sellers, poor legal enforcement across countries, language and cultural differences, and high shipping costs in international trading as potential barriers that increase the risk and uncertainty associated with CBEC. For example, language issues are still important, as CBEC requires adaptations of the website content, including translating website content into different foreign languages (Yip & Dempster, 2005). In addition, concerns about cyber-security, such as data breaches, may impede firms' participation in CBEC. There are also differences between countries regarding their communications infrastructure, which has a serious effect on the extent to which firms can use digital technologies, the speed of the Internet facilities employed, and the quality of the services offered (Guillén, 2002). The firm should also consider people's cultural sensitivities when using the Internet, social media, and other digital channels, since what is considered appropriate and ethical in one country may be less so or even not at all acceptable in another, for educational, religious, and other reasons (Baack & Singh, 2007). Another serious issue relating to online selling are the differing VAT rates charged across various foreign countries, which require the firm to register with the respective tax authorities of those foreign countries targeted by the firm's international business strategy to sell its products to each of those markets (Karavdic & Gregory, 2005). In some countries, the firm may not have access to shipping facilities to make the products ordered by foreign buyers via the Internet speedily available to them, while air express carriers (e.g., Fedex, UPS, DHL), which are usually outsourced by online sellers for expedient delivery of their products abroad, may not have proper connections and/or face customs clearance problems in certain foreign markets.

Supplier restrictions

The firm's ability to export and its subsequent export performance depends not only on the firm itself, but also on its relationships with other members of the supply chain (Styles et al., 2008). In fact, supplier relationships are crucial in effective marketing strategies and an important means to achieve a stronger competitive position, with many firms focusing on establishing a long-term, cooperative relationship with their key suppliers to reap these benefits (Kim et al., 2015). However, supplier relationships may also lead to challenges, difficulties, and drawbacks, especially when supplier restrictions appear (Fang et al., 2011). Such restrictions are more likely to appear in situations where the bargaining power resides with the supplier, as in the case of smaller firms highly dependent on larger suppliers (Abosag et al., 2016). Such power imbalance and dependence of the buyer have been highlighted as one of the primary causes of exploitative behaviors by the supplier (Glavee-Geo et al., 2022). For example, suppliers are likely to exert their bargaining power to set favorable terms for their self-gain and force buyers to comply with these exchange terms (Cox, 2001; Kim et al., 2015).² It has also been emphasized that supplier restrictions may impose a constraint on the possible courses of action of firms using online export activities, such as not allowing the sale of their products abroad (Ojala & Tyrväinen, 2007). This may be the case where the firm has only been given the right to sell the suppliers' products in a certain geographic territory, or when the supplier is already selling these products to foreign markets using another reselling network and/or using its own online services. For example, the supplier may have given territorial exclusivity to another distributor, thus preventing other firms from selling their products within the same territory (Andersson & Mattsson, 2006). Because of this, suppliers may restrict their buyers from using e-commerce, including third-party platforms, as this would enable them to reach customers in a foreign territory where exclusive rights have already been granted

to others (Bucciarrossi, 2015). Previous studies have also acknowledged that online selling might cause channel conflict because of the threat it creates to traditional marketing channels (Du et al., 2018). The addition of an online channel may slow the growth of other channels, create greater competition to and conflict with traditional channels and sometimes may even cannibalize existing channels (Webb, 2002).

Technical difficulties

Technical difficulties can also be a constraining factor in the firm's CBEC activity, with many studies (e.g., Bharadwaj & Soni, 2007; Fillis et al., 2003; MacGregor & Vrazalic, 2005) stressing their negative role in increasing the complexity, workload, and technical challenges of dealing electronically with foreign markets. Developing and maintaining export marketing activities using online tools requires continuous technical support (Morgan-Thomas & Bridgewater, 2004; Mozas-Moral et al., 2016). For instance, outdated company websites, neglected corporate blogs, and unanswered questions raised in social media by individuals create a poor impression of the company and, in fact, signify that it does not really care about its customers and their requirements (Lee & Lin, 2005). It may also damage the firm's reputation as a reliable and trustworthy supplier of goods to foreign customers, who, as a result, may develop disapproving attitudes toward the firm's offerings and engage in negative word-of-mouth. Technical difficulties may also relate to issues of interoperability, that is, the ability of multiple systems to work together and exchange information, which is vital for firms using online activities to make their products available in foreign markets. For example, companies may need to integrate different front-end systems (e.g., website) with back-end information systems (e.g., Enterprise Resources Planning) in order to use a common language.

Product limitations

Product-related factors may also hinder the firm's use of digitalized technologies to serve customers abroad. In particular, the size of the demand for online sales of a particular product or service can determine whether a firm may choose to use online channels in exporting (Kumar & Ruan, 2006; Schoenbachler & Gordon, 2002).

Hence, the adoption of online marketing channels may vary across different markets and product types. For example, Moon and Jain (2007) found that the suitability of a firm's product to CBEC activities, such as information gathering, transaction, and after-sales support, was a major determinant of the degree to which firms exploited foreign opportunities using online approaches. In a similar vein, Gabrielsson and Gabrielsson (2011) demonstrate how the suitability of products for Internet sales was important in explaining whether born-global firms used the opportunities afforded by the Internet or not. There are also indications that, as opposed to more complex products, standardized products are more suited to Internet-based sales in foreign markets, while more complex products are less suitable for Internet sales due to less requirement for personal interaction and support. Furthermore, the trade costs associated with CBEC partly depend on the size of the product, with the larger the product the more costly and complicated its delivery to foreign markets. In addition, CBEC is more difficult in the case of goods of low value and/or low margins, as the costs of production and shipping may possibly exceed the selling price.

Theoretical background

Our study is theoretically anchored on two complementary theories, namely the Resource-based view of the firm and the Institutional theory, which have also been used in the past in studies focusing on export barriers (Kahiya, 2013) and export performance (Chen et al., 2016). While the Resource-based View focuses on internal

company factors, the Institutional theory stresses external environmental factors (Peng et al., 2008), thus allowing a better understanding of the organizational drivers of CBEC barriers and their impact on online export performance, while at the same time taking into consideration the contingent role of home country digital infrastructure and foreign market Internet penetration. Thus, according to these theories, the variation in online export barrier severity and export performance can be explained by looking more closely into the resource pool of the individual exporting firm, as well as the specific institutional attributes in both the home and host countries.

The Resource-based view argues that firms are heterogeneous in terms of the resources they control, while variations in their performance can be explained by this heterogeneity in resources across firms (Barney, 2001; Nason & Wiklund, 2018). Hence, the resources of the exporting firm can determine its positional advantage in foreign markets and its export performance (Morgan et al., 2004). This suggests that exporters who can acquire and exploit important and valuable resources are likely to demonstrate superior export performance. This theory also implies that barriers to exporting tend to be more influential and severe when firms are resource constrained, than when endowed with resources.

On the other hand, the Institutional theory states that not all countries are alike and that differences in institutional conditions can have an important impact on both firm behavior and performance (North, 1990). There is an increasing realization in the literature that export activities are subject to different institutional forces in home and foreign markets and that these forces shape firms' strategic decisions and determine their performance (He et al., 2013). For example, firms exporting to certain institutional environments are likely to be affected more by barriers related to

institutional voids, institutional quality, and institutional uncertainties, which can negatively affect their export performance (Li & Liu, 2018). However, while institutional factors can constrain export activities, they can also provide firms with institutional advantages that allow them to operate more effectively and efficiently than others because of the support they receive from institutions (Hall & Soskice, 2001; Martin, 2014). This will help the firm overcome potential export barriers, improve its competitive positioning in foreign markets, and increase its export performance.

Model and hypotheses

Figure 1 presents our conceptual model, which comprises four sets of constructs, namely export organizational characteristics, CBEC barriers, online export performance, and moderating factors. We hypothesize that three export organizational characteristics – firm size, business experience, and business group affiliation – have an indirect impact on online export performance by reducing the severity of CBEC barriers. This aligns with the Resource-based view of the firm, which suggests that larger and more experienced firms are likely to possess a larger resource base, which lowers the influence of barriers to exporting, while business group affiliation provides the firm with network resources that can be utilized to overcome internal resource constraints when exporting (Eduardsen et al., 2022). We also hypothesize that home country digital infrastructure and foreign market Internet penetration moderate the negative effect of CBEC barriers and online export performance.

Main hypothesized paths

From a Resource-based view, the severity of export barriers is influenced by the resource base of the firm (Kahiya, 2013). Firm size is an important indicator of the

level of resources available within the organization, with larger firms possessing more financial, human, technological, and other resources (Dhanaraj & Beamish, 2003; Elia et al., 2021). For example, larger firms are in a better position: (a) to deploy adequate financial means to make dedicated investments in cross-border online selling (Zhu et al., 2003); (b) to understand foreign market characteristics, compete in international markets, and respond to the requirements of foreign customers (Katsikeas et al., 1996; Moen, 1999); and (c) to reap the benefits of scale economies, which are particularly evident in international markets because of the potential of selling higher volumes of products (Sousa et al., 2008). In contrast, smaller firms are known to suffer from resource constraints in many aspects that are important for CBEC, such as the lack of sufficient human resources, capital, and knowledge to exploit the opportunities afforded by digital channels (Taiminen & Karjaluoto, 2015).

As opposed to their smaller counterparts, larger companies are characterized by a higher bargaining power, which helps them in guaranteeing better terms in their dealings with foreign customers, and in coping with constraints imposed by other members of the supply chain, such as their suppliers and distributors (Erramilli & Rao, 1993). In addition, larger firms are typically more resource-endowed, allowing them to allocate more resources for international market intelligence and adapting their products to foreign market differences (Singh et al., 2009). Larger firms are therefore more likely to possess the resources necessary for CBEC and firms are less likely to be constrained by the difficulties associated with dealing with foreign markets using e-commerce (Gibbs et al., 2003). For these reasons, large firms are likely to consider CBEC barriers as less significant and less difficult to cope with, compared with smaller firms that are more likely to suffer from resource constraints. Thus, we can hypothesize that:

Hypothesis 1 *The larger the size of the firm, the lower the perceived severity of CBEC barriers related to: (a) financial complexities; (b) dealing with foreign markets; (c) supplier restrictions; (d) technical difficulties; and (e) product limitations.*

We also expect business experience to mollify CBEC barriers, as older and more experienced firms are less likely to have liabilities of newness, such as the constraints that firms encounter when they are new and lack experience (Jiang, 2022; Stinchcombe, 1965). The primary reasons why new and inexperienced firms are exposed to the liabilities of newness are that they have yet to develop and acquire the resources and capabilities that more established firms have accrued over time (Schweizer, 2013). Morse et al. (2007) argues that newly established firms are likely to be more constrained by the lack of internal organizational systems and roles, the lack of resource endowments and network ties, as well as the lack of financial capital. Business experience is also the primary source of experiential knowledge, which is a major determinant of future decisions related to the international expansion of the company (Johanson & Vahlne, 1977). This is because experience is a critical contributor of learning, which exporting firms can use to reduce uncertainties in foreign markets and increase their commitment to international business (Figueira-de-Lemos et al., 2011).

Previous studies revealed that older firms with more business experience consider various export barriers to be less constraining compared to younger, less experienced firms. For example, Eriksson et al. (1997) demonstrated that the lack of business experience shapes the higher perceived costs of internationalization, which is responsible for less experienced firms to consider exporting a cumbersome activity (Xie & Suh, 2014). Similarly, Acedo and Casillas (2007) found that business experience facilitates the firm's international commitment by reducing the perceived

risk and uncertainty associated with foreign business operations. This is because prior experience helps firms to acquire the necessary knowledge, skills, and capabilities, enabling them to better understand foreign markets and implement effective export strategies (Clarke et al., 2013). Such experiential knowledge also contributes to building human capital, technological, and other expertise, which is vital in coping with the multifarious and complex nature of the international business environment (Li & Meyer, 2009). In fact, firms with prior experience are likely to perceive less uncertainty, complexity, and difficulties in dealing with foreign markets, as opposed to those with limited experience, because of the possession of greater knowledge resources, and therefore they will be in a better position to overcome possible CBEC barriers (Katsikeas et al., 1996; Paul et al., 2017). Hence, we suggest the following hypothesis:

Hypothesis 2 *The higher the firm's business experience, the lower the perceived severity of CBEC barriers related to: (a) financial complexities; (b) dealing with foreign markets; (c) supplier restrictions; (d) technical difficulties; and (e) product limitations.*

A business group is a specific type of inter-firm networks where firms are bound together by longer-term common strategic interests, yet not fully legally consolidated into a single entity (Eduardsen et al., 2022). Being affiliated to a business group can facilitate exporting, as the business group can be critical in overcoming the problem of lacking resources necessary to export (Tajeddin & Carney, 2019). Business group affiliation can serve as a source of network resources and facilitate the acquisition of resources for their independent affiliates, providing knowledge on foreign market opportunities and easing problems associated with exploiting these opportunities (Lamin, 2013). Khanna and Palepu (1997) argue that

business group affiliations provide member firms with efficient mechanisms for coping with resource deficiencies, by creating an internal capital market and managerial talent pool. They also help to have access to expertise in dealing with regulatory bodies, which collectively enables affiliated firms to better exploit market opportunities.

Business group affiliation can provide exporting firms with important financial, informational, human, and other resources, which are crucial in smoothly performing their foreign operations. In investigating exporting firms from emerging economies, Singh (2009) found that network-based relationships, in the form of being affiliated to a business group, are also an important source of relational resources which can help to improve their competitiveness in foreign markets. Being affiliated to a business group can therefore facilitate the creation of capabilities (Mahmood et al., 2011) and improve the firm's capacity to compete successfully abroad (Kim & Choi, 2015). Hence, one would expect that the support provided to the firm by members of the business group in terms of technical, networking, and other issues is crucial in reducing the impact of CBEC barriers. Accordingly, we propose the following hypothesis:

Hypothesis 3 *The firm's affiliation with a business group will reduce the perceived severity of CBEC barriers related to: (a) financial complexities; (b) dealing with foreign markets; (c) supplier restrictions; (d) technical difficulties; and (e) product limitations.*

According to the Resource-based view, online export performance is determined by the firm's ability to compete in foreign markets. CBEC barriers provide a particular set of obstacles that negatively influence the firm's export strategies, competitiveness, and efforts to expand to foreign markets using electronic

means (Kahiya, 2018). Such barriers have a negative impact on the decision-maker's evaluation of CBEC opportunities by increasing the perceived cost and difficulty of exporting and/or reducing perceived export market attractiveness (Doern, 2009).

Thus, we expect CBEC barriers, just like traditional export barriers, to prevent the firm from committing adequate resources to exporting, which will damage its export performance (Julian & Ahmed, 2005; Sinkovics et al., 2018; Stoian et al., 2011).

CBEC barriers are also expected to negatively affect the competitiveness of the exporting firm, by increasing the trade costs associated with delivering the goods or services to foreign customers and inhibiting the efficiency of business transactions (Kneller & Pisu, 2011). Hence, we posit that:

Hypothesis 4 *The higher the perceived severity of CBEC barriers (resulting from smaller firm size, less business experience, and lack of affiliation to a business group) relating to: (a) financial complexities; (b) dealing with foreign markets; (c) supplier restrictions; (d) technical difficulties; and (e) product limitations, the lower the firm's online export performance.*

Moderation hypotheses

Export success not only depends on the exporting firm's resources and capabilities, but also on the quality of the domestic institutional environment (Ngo et al., 2016). The domestic institutional environment may create both incentives and constraints on the firm's ability to export and can influence its export performance (Li et al., 2013). In fact, the institutional environment cannot only constrain firms in their export efforts, but also provides them with a comparative advantage (Martin, 2014). Digital infrastructure is one important dimension of the domestic institutional environment, capturing the availability, use, absorption, and government prioritization of ICT (Portugal-Perez & Wilson, 2012). We expect that the negative

impact of perceived CBEC barriers on online export performance will be diminished as the quality of the digital infrastructure in the home country improves. This is because the home country's digital infrastructure is an important facilitator or inhibitor of the firm's efficient use of online methods to sell its goods or services abroad (Hsu et al., 2006). Developed digital infrastructure in the exporters' country reduces the transaction costs associated with their CBEC activities and therefore helps them to overcome potential barriers by providing reliable and affordable access to the technological infrastructure needed for implementing their e-commerce strategies (Gregory et al., 2017; Oxley & Yeung, 2001). Based on this argumentation, we propose that:

Hypothesis 5 *The better the quality of the home country's digital infrastructure, the weaker the negative impact of CBEC barriers related to (a) financial complexities, (b) dealing with foreign markets, (c) supplier restrictions, (d) technical difficulties, and (e) product limitations on online export performance.*

Internet penetration refers to the proportion of a country's population that has access to the Internet. In the context of CBEC, this is considered an important host country factor that determines the strategic fit of using e-commerce as a foreign operation mode. This is because the host country Internet penetration is a key proxy for a country's e-commerce market potential, because it captures foreign customer readiness to buy goods/services from abroad and determines the extent to which CBEC can be translated into profits (Schu & Morschett, 2017; Zhu et al., 2003). We can therefore argue that CBEC can be considered the best strategic fit when Internet penetration is high, while CBEC is a suboptimal export channel when Internet penetration is low. Hence, as the Internet penetration in a host country increases, we expect the negative impact of CBEC barriers on online export

performance to diminish. Countries with low levels of Internet penetration are less likely to have the critical mass needed to sustain e-commerce operations, thus limiting the potential for a successful CBEC (Krishnamurthy & Singh, 2005). In contrast, as the level of Internet access increases, so do the opportunities for implementing successful CBEC strategies. Hence, we suggest that:

Hypothesis 6 *The higher the host country's Internet penetration, the weaker the negative impact of CBEC barriers related to (a) financial complexities, (b) dealing with foreign markets, (c) supplier restrictions, (d) technical difficulties, and (e) product limitations on online export performance.*

Research method

Data collection and sampling procedures

To test our hypotheses, we utilized a dataset from the Flash Eurobarometer survey on companies engaged in online export activities, which is a cross-national ad-hoc survey conducted on behalf of the European Commission in all European Union member countries within a short time-span. This dataset provides detailed data about European firms' online selling, including the proportion of cross-border online sales, and the major obstacles encountered when selling to foreign markets. The survey contained data on 8,705 companies from 26 European countries. However, after excluding companies that were not selling online or having missing data, our final sample comprised 1,256 companies representing industries with NACE codes C, G, I, and J.³

The survey used a two-step procedure to draw the sample to match more accurately the population and reduce potential sampling errors. In the first step, a proportional stratified sampling procedure was used to divide the population into

strata based on company size (1-9, 10-49, 50-249 and 250 or more employees). In the second step, a random sample was drawn within each of these strata. The sampling frame used for all countries was the Bureau van Dijk directory (Orbis), which contains information on more than 300 million companies across the globe, except for the UK and Ireland where Dun & Bradstreet and Bill Moss was used.

Data quality is an important issue when relying on secondary data collected by other organizations, since this can jeopardize the validity of the findings (Chen et al., 2016). In the Flash Eurobarometer survey used for the purposes of our study, data was collected by a reputable and experienced marketing research agency appointed by the European Commission that specializes in the implementation of survey designs. Data were collected using Computer Assisted Telephone Interviewing (CATI), where a random selection of firms was contacted and asked to participate in the survey. This helped to ensure a fast and accurate data collection process, which allowed respondents to ask for clarifications in the case of questions that were not clearly understood (Samuel Craig & Douglas, 2001). Key informants were decision-makers directly involved in the firms' online export operations, such as the managing director, CEO, marketing manager, and sales manager, who had the willingness, knowledge, and familiarity to answer the survey questions.

Constructs and measures

Dependent variable

The main dependent variable in this study was online export performance, which represents the outcome of a firm's activities in online export markets (Katsikeas et al., 2000). We measured online export performance using three common indicators: online export turnover, online export intensity, and online export revenue growth (Li et al., 2013; Sousa, 2004; Wang & Ma, 2018). Information about these three dimensions

of online export performance was provided by respondents, as this was difficult to extract from archival sources (especially in the case of smaller firms) (Ojala & Tyrväinen, 2007). Online export turnover was calculated as the natural logarithm of the company's reported turnover that stems from CBEC. Online export intensity was measured by asking respondents to report the percentage of their online sales that originated from foreign countries. Finally, online export growth was measured using an ordered categorical variable with three levels indicating whether the company's online export turnover has decreased, remained the same, or increased in the past three years.

Mediating variables

To measure CBEC barriers, we included several items from the Flash Eurobarometer dataset asking respondents to rate the degree of severity of a range of barriers hindering their firm's online export activities. Since our sample only included firms that are engaged in CBEC, the rating of their severity reflected the firm's actual experience with each of these barriers (Leonidou, 1995). Respondents were presented with a list of 17 export barriers and asked to indicate their degree of severity on a 4-point scale, ranging from 1 = not applicable to 4 = a major problem. CBEC were divided into five groups, namely, financial complexities (four items), coping with foreign markets (four items), supplier restrictions (three items), technical difficulties (four items), and product limitations (two items) (see Appendix 1). Respondents were asked to provide their overall assessment of the barriers experienced across all foreign markets that their firms operated.

Independent variables

Following previous studies, we measured firm size as the number of full-time employees. Because the selected dataset does not allow us to discriminate between

international experience and business experience, we rely on firm age as a proxy of business experience (Majocchi et al., 2005). Finally, to measure business group affiliation, that is, whether a firm is part of an inter-firm network of legally-independent firms under common control, we created a dummy variable that took the value of 1 if the firm was affiliated with a business group and 0 otherwise (Gaur et al., 2014).

Moderation variables

We measured the home country's digital infrastructure by using the Network Readiness Index provided by the World Economic Forum, which captures the development of ICT infrastructure (including network coverage, international Internet bandwidth, and secure Internet servers). With regard to foreign market Internet penetration, we derived our data from the World Bank World Development Indicators (Freund & Weinhold, 2004; Lendle et al., 2016) and matched these with the firm-level data obtained from the Flash Eurobarometer database, which provided the names of countries where firms engaged in CBEC sold their products/services. This allowed us to calculate the average Internet penetration rate of all countries where the firm had online export sales. Although it would be more appropriate to calculate the weighted average Internet penetration rate, this was not possible because the dataset used did not contain information about the share of the firm's online sales to each export market.

Control variables

We also included several control variables in our analysis that were expected to be correlated with our dependent variable based on prior empirical research. First, in line with previous research, we controlled whether the firm's emphasis was on the business-to-business or the business-to-consumer market (Westjohn & Magnusson,

2017). We also controlled for country-specific effects by including dummy variables for home country, as countries differ from each other in terms of institutional characteristics (e.g., institutional quality, legal quality, institutional support), which has been found to impact export performance (Chen et al., 2016; Leonidou et al., 2011). In addition, we controlled for the foreign market nature by including dummy variables for export markets, since their characteristics (e.g., political/legal environment, cultural differences, level of competition) were found to be a significant factor influencing export performance (Sousa et al., 2008). Finally, we included several dummy variables to capture whether the companies were selling their products/services online via their own websites, digital platforms, or electronic data interchange (EDI).

Data analysis and findings

For the analysis of our data, we used covariance-based structural equation modelling (CB-SEM) using the EQS software. This allowed us to analyze the associations between constructs of the entire conceptual model and determine the validity of their hypothesized relationships simultaneously. It also allowed us to include latent constructs and account for measurement error in the estimation process.

Measurement model

Table 1 shows the results of the measurement model, while Table 2 provides the results of the correlation analysis. We first checked the convergent validity, which was met, as the t-value for each item was always high and significant, all standard errors of the estimated coefficients were very low, and the average variance extracted for each construct was equal to or greater than the threshold value of .50 (Hair et al., 2018). This suggests that the set of indicators used to represent each underlying construct is indeed representative of this. With regard to discriminant validity, this

was evident because the confidence interval around the correlation estimate for each pair of constructs examined never included 1.00 (Anderson & Gerbing, 1988), while the squared correlation for each pair of constructs never exceeded their average variance extracted (Fornell & Larcker, 1981). Also, to assess construct reliability, we examined the Cronbach's alphas and composite reliability. All constructs in our measurement model exhibited Cronbach's alphas greater than .70 and composite reliability was above .50, which are the recommended minimum threshold levels.

We also assessed the possibility of common method bias. In doing so, we first employed Harman's single-factor test (Podsakoff & Organ, 1986), where the items of all constructs were included in a principal component analysis with varimax rotation. Five separate factors with eigenvalues greater than 1.0 emerged from the unrotated factor solution, while these factors explained 61.2% of the total variance (with the first factor explaining 28.4% of the variance). We also used confirmatory factor analysis in which all items included in the measurement model were restricted to load on a single factor (Venkatraman & Prescott, 1990). The model fit indices revealed poor values (i.e., $\chi^2 = 1207.01$, $p = .000$, d.f. = 119, NFI = .85; CFI = .86; RMSEA = .11), which are well below the commonly accepted cut-off points.

Structural model

The results of the structural model indicate a satisfactory model fit, as demonstrated by the ratio of Chi-square by the degrees of freedom (χ^2/df) = 1.62 and the values of the various fit indices (NFI = .93; NNFI = .93; CFI = .94; RMSEA = .05) (see Table 3).

Main effects

Our results confirm that CBEC barriers are perceived as less severe as the size of the exporting firm increases, thus supporting H1a-e. Indeed, it was revealed that larger

firms are less vulnerable to problems related to financial complexities ($\beta = -.79$, $t = 6.35$, $p = .00$), coping with foreign markets ($\beta = -.66$, $t = 2.74$, $p = .01$), supplier restrictions ($\beta = -.48$, $t = 2.41$, $p = .02$), technical difficulties ($\beta = -.36$, $t = 1.95$, $p = .05$), and product limitations ($\beta = -.75$, $t = 5.82$, $p = .00$). With regard to business experience, our results also fully support H2a-e, because we found that the greater the firm's experience, the lower the perceived severity of financial complexities ($\beta = -.65$, $t = 3.23$, $p = .00$), dealing with foreign markets ($\beta = -.83$, $t = 7.36$, $p = .00$), supplier restrictions ($\beta = -.79$, $t = 6.68$, $p = .00$), technical difficulties ($\beta = -.82$, $t = 7.36$, $p = .00$), and product limitations ($\beta = -.81$, $t = 7.19$, $p = .00$). Our results partially confirm that the exporter's business group affiliation reduces the perceived severity of CBEC barriers, as of the five groups of barriers examined, only those relating to coping with foreign markets ($\beta = -.29$, $t = -2.29$, $p = .02$), product limitations ($\beta = -.25$, $t = -1.98$, $p = .05$), and financial complexities ($\beta = -.17$, $t = -1.75$, $p = .08$) were found to have a statistically significant effect on online export performance, thus accepting H3a, H3b and H3e respectively. The results also confirm H4a-H3e, which state that each of the five groups of CBEC barriers has a negative impact on the firm's online export performance. Indeed, online export performance was found to be harmfully affected by problems referring to dealing with foreign markets ($\beta = -.27$, $t = -1.81$, $p = .07$), technical difficulties ($\beta = -.26$, $t = -1.77$, $p = .07$), supplier restrictions ($\beta = -.27$, $t = -1.90$, $p = .06$), product limitations ($\beta = -.30$, $t = -1.95$, $p = .05$), and financial complexities ($\beta = -.28$, $t = -1.88$, $p = .06$).

Moderation effects

With regard to the moderating role of the home country's digital infrastructure, we found digital infrastructure to have a statistically significant effect on the impact of perceived barriers on online export performance, for financial complexities ($\beta = -.25$, t

= -3.92, $p = .00$), coping with foreign markets ($\beta = -.12$, $t = -1.71$, $p = .09$), supplier restrictions ($\beta = -.42$, $t = -6.70$, $p = .00$), technical difficulties ($\beta = -.24$, $t = -3.28$, $p = .00$), and product limitations ($\beta = -.24$, $t = -3.41$, $p = .00$). Hence, perceived barriers related to CBEC have a weaker negative effect on online export performance of firms in countries with more developed digital infrastructures. Thus, our results confirm H5a-e.

With regard to host country Internet penetration, we also found a statistically significant effect on the perceived CBEC barriers – online export performance relationship for all five types of barriers examined, namely financial complexities ($\beta = -.34$, $t = -4.55$, $p = .00$), coping with foreign markets ($\beta = -.25$, $t = -3.65$, $p = .00$), supplier restrictions ($\beta = -.38$, $t = -4.47$, $p = .00$), technical difficulties ($\beta = -.24$, $t = -3.49$, $p = .00$), and product limitations ($\beta = -.22$, $t = -3.34$, $p = .00$). Hence, perceptions of barriers related to CBEC have a weaker effect on online export performance of firms, when the export market is characterized by high Internet penetration, thus confirming H6a-e.

Control effects

We have also tested various factors with a potential control role on online export performance, with market type ($\beta = -.19$, $t = -2.80$, $p = .00$) and export country ($\beta = .10$, $t = 1.69$, $p = .09$) found to have a statistically significant effect, as opposed to home country base that did not have such an effect ($\beta = -.08$, $t = -.79$, $p = .45$)⁴. In a similar vein, we have examined the impact of several digital channels on online export performance, revealing a significant effect when using a multichannel ($\beta = .19$, $t = 2.71$, $p = .01$), own website ($\beta = -.12$, $t = 1.78$, $p = .08$), and EDI ($\beta = .24$, $t = 4.24$, $p = .00$), but not effect when employing digital platforms ($\beta = -.07$, $t = -.91$, $p = .36$)⁵.

Discussion

Our study offers one of the first attempts to rigorously examine the organizational determinants and performance implications of barriers encountered by firms selling their goods online to foreign markets. In line with the theory of Resource-based view, we confirmed that resource-deprived firms are less likely to achieve superior performance in foreign markets compared to their more resource-endowed counterparts, because they are more likely to experience CBEC barriers, which increases their trade costs, administrative burdens, and operating problems. Hence, although CBEC creates vast opportunities for firms to sell their products internationally on a large scale, organizational factors play a decisive role in how companies perceive experience the severity of CBEC barriers experienced, which ultimately are critical in negatively influencing online export performance.

Our findings confirm that specific characteristics of the exporting firm influence the experienced severity of the different CBEC barriers. The fact that our results show that larger firms experience CBEC barriers as less severe compared to their smaller counterparts suggests that firm size can be a significant constraint in developing online-based exporting. This is opposite to the prevailing view that firm size is irrelevant when serving international markets electronically and that even micro firms can smoothly operate their CBEC activities (Cavusgil & Knight, 2015; Morgan-Thomas & Bridgewater, 2004; Sinkovics et al., 2013). Although many small firms can engage in CBEC, our findings demonstrate how these firms may face additional barriers that will constrain their ability to effectively exploit opportunities and accommodate challenges in international markets. One plausible explanation for this could be that both offline and online exporting requires a significant commitment of technological, personnel, logistics, and other resources, which firms of smaller size

typically lack (Gibbs & Kraemer, 2004; Zhu et al., 2006). This means that smaller firms should be more careful when choosing to use CBEC as a foreign market entry mode, considering the fact that they may be confronted with more challenges associated with overcoming CBEC-related barriers.

The positive role of the firm's experience in perceiving less severely the various obstacles associated with CBEC also dilutes the myth that inexperienced firms can perform equally well to those with experience when using virtual export methods. It also weakens the position that online selling is an easy gateway to enter foreign markets for new ventures and young SMEs (Moen et al., 2004; Yamin & Sinkovics, 2006). Thus, CBEC appears not only to provide a tremendous potential for expanding internationally, but it also poses challenges to less experienced firms. This is likely because CBEC requires a set of unique organizational capabilities, such as e-commerce marketing capabilities, which typically develop from the firm's learning experience when dealing with foreign markets (Gregory et al., 2017; Majocchi et al., 2005; Saini & Johnson, 2005).

The fact that an exporter's business group affiliation was found to be conducive to the perception of certain CBEC barriers (i.e., problems in dealing with foreign markets, financial complexities, and product limitations) as less severe can be attributed to the specific advantages enjoyed by a firm from being affiliated to a business group. For example, these refer to: (a) sharing and co-developing important financial, human, and technological resources with other firms (Holmes et al., 2018); (b) acquiring and exchanging vital knowledge, information, and data regarding international business issues (Gaur et al., 2014); and (c) gaining access to an intragroup trade market, which permits exchanging inputs, distribution capabilities, and other services that could also be beneficial when serving outgroup customers

(Chang & Hong, 2000). These benefits can help affiliated firms offset many of the challenges associated with online exporting and mitigate CBEC barriers⁶.

While extant literature has often highlighted the importance of CBEC activities as a means for firms to overcome many of the traditional export barriers, our findings indicate that online export performance can be jeopardized by certain barriers pertaining to financial complexities, coping with foreign markets, supplier restrictions, technical difficulties, and product limitations. Our study has shown that the damaging effect of this new breed of barriers is more intense with exporters in countries with inadequate digital infrastructure and selling their goods to countries with an insufficient Internet penetration rate. Hence, having access to cost-efficient and reliable digital infrastructures, coupled with the careful selection of the targeted foreign market in terms of Internet penetration, are of paramount importance in enhancing success in CBEC.

In conclusion, although various scholars (e.g., Cahen & Borini, 2020; Hånell et al., 2019) have suggested that CBEC can enable firms to reduce (or even eliminate) traditional export barriers and provide a fast track to foreign markets, our findings illustrate that not all firms using CBEC can perform well, due to the existence of a new set of barriers specifically related to e-commerce activities. In fact, while some of the traditional export barriers (e.g., lack of knowledge about foreign markets) still remain relevant constraints in some firms, barriers relating to financial complexities, coping with foreign markets, supplier restrictions, technical difficulties, and product limitations provide additional challenges when exporting online. Most importantly, the way the severity of these CBEC barriers is experienced and effectively handled will largely depend on the online exporting firm's size, experience, and network group affiliation.

Implications

Theoretical implications

Our study has brought a more nuanced theory-based understanding of the determinants of online export performance, with a particular focus on CBEC barriers. More specifically, while CBEC may provide compelling benefits and is appealing to resource constrained firms seeking to expand their business abroad, our study has amply demonstrated how resource constrained firms are more likely to experience the severity of these barriers compared to their resource endowed counterparts, with all the negative effects that these may have on their online export performance. In addition, we have theoretically underscored the important role played by the domestic and foreign institutional environment in CBEC activities, by indicating that when firms are embedded in a supportive home country digital infrastructure and/or sell to foreign markets with a high Internet penetration rate, they will be better able to cope with CBEC barriers and achieve a superior online export performance.

Managerial implications

Managers should be careful not to foolishly believe that using CBEC is a frictionless foreign market entry mode for their firms, but instead remain aware of potential barriers that may hinder their performance in export markets. They should also realize the significant impact of organizational factors and CBEC barriers on the firm's online export performance. Specifically, there is a need for firms (particularly those of a smaller size) to acquire certain resources (e.g., human, financial, technological) prior to engaging in CBEC that will help them effectively cope with the specific barriers associated with CBEC. In fact, firms with limited resources should be cautious in expecting exports to lead to competitiveness without the strong support of

certain organizational capabilities, such as market orientation, absorptive capacity, and strategic flexibility. They should also appreciate the importance of experiential knowledge in handling online export activities and this necessitates the appointment of individuals who have an expertise in e-commerce with a particular focus on cross-border sales. In addition, it is crucial for managers to appreciate the advantageous role of networking through business affiliations with other firms to overcome CBEC barriers and enhance their online export performance. They should pay particular attention to building affiliations with firms able to provide support with compatible and complementary resources and capabilities.

Public policy implications

Government policymakers should take measures to reduce the negative effects of the various CBEC barriers identified in our study. The emphasis should be on paving the way for firms, particularly those which are small, inexperienced, and non-affiliated to a business group, to implement CBEC activities. For example, to mitigate barriers related to coping with foreign markets and technical difficulties, public policymakers should focus on implementing appropriate education and training export promotion measures. There is also a need to improve the regulatory framework, simplify exporting procedures, and minimize digital trade costs. Our study shows that providing firms with access to cost-efficient and reliable digital infrastructure can help mitigate the negative consequences of CBEC barriers. Hence, public policymakers should take steps toward improving their country's digital infrastructure in terms of telecommunication services, broadband connectivity, penetration and cost of Internet connection, and adequate quality and speed of the Internet facilities.

Limitations and future research

Our study should be seen within the context of certain limitations, which provide avenues for future research. First, because our study was based on a secondary dataset, we were limited in the selection of the constructs used in our model and the development of their measurement scales. For instance, some additional organizational constructs (e.g., organizational capabilities) could be included in the analysis, together with other key managerial factors (e.g., management commitment).

Second, although the list of CBEC barriers examined, which was derived from the Flash Eurobarometer database, provides a good coverage of the obstacles encountered by firms engaged in e-commerce when selling abroad, this could be augmented with additional barriers in order to make it more complete. For example, it would be interesting to investigate CBEC barriers relating to informational (e.g., gaining feedback from foreign customers), pricing (e.g., dealing with unstable foreign exchange rates), and promotional (e.g. adjusting digital advertising to foreign markets) issues. These could be identified through a qualitative research among a sample of CBEC firms, which can take the form of focus group discussions, in-depth interviews, and case study analysis.

Third, the measurement of the various CBEC barriers should be based not only on severity, but also on their frequency of appearance and their degree of intensity (Leonidou, 2004). This would allow for a more nuanced understanding of each of these barriers and their impact on CBEC by combining together in a single index the frequency, severity, and intensity of the specific barrier. Moreover, it would be illuminating to examine variations in the impact of CBEC barriers confronted in each of the firm's export markets.

Fourth, to assess firms' online export performance, we had to rely on online export turnover, the ratio of cross-border online sales to the firm's total online sales,

and export revenue growth, which were available to be extracted from the dataset used. However, it would be useful to explore the effect of CBEC barriers on additional export performance dimensions pertaining, for example, to customer (e.g., customer satisfaction), market (e.g., market share), and profitability (e.g., ROI) (Katsikeas et al., 2000).

Fifth, although our investigation of CBEC barriers covered a plethora of countries enhancing the reliability of our findings, these were all within the context of the European Union only. It is therefore advisable to expand the analysis to other important exporting countries, such as the USA, China, and Japan, and to increase the diversity in foreign market destinations. This would allow identifying similarities and differences in CBEC barriers and their impact on online export performance across different institutional, regulatory, economic, and other environments.

Sixth, the dataset employed did not provide detailed information about the role of host country characteristics to explain the effect of CBEC barriers on online export performance. For example, foreign countries with more developed formal and informal institutions are likely to create a more robust environment that can alleviate the impact of some barriers on online export performance (LiPuma et al., 2013). Future research should therefore focus on this complex interaction between host-country factors and firm-level factors in explaining online export performance.

Seventh, exporting phenomena have a very dynamic nature and should be considered as a process that occurs over time, rather than a single set of discrete events or decisions (Welch & Paavilainen-Mäntymäki, 2014). Hence, CBEC barriers are likely to differ across the firm's internationalization process (Uner et al., 2013). It is therefore important to continue studying CBEC barriers using longitudinal, rather than cross-sectional, research to capture changes in the type and significance of these

barriers over different online export development stages of the firm.

Finally, in addition to research on CBEC barriers and their impact on online export performance, future studies are encouraged to continue exploring the factors that determine the choice of CBEC as an entry mode when expanding into foreign markets. Such research will contribute to our understanding the motives of why some firms choose this new type of foreign market entry, as opposed to preferring traditional exporting or other modes of foreign direct investment (Qi et al., 2020).

Footnotes

¹In light of this logistics problem, there is a trend nowadays whereby e-commerce firms are constantly seeking to provide products and services to help solve market imperfections and customer pain points. For example, Kohls now takes returns of Amazon shipments, while local drop off partner units take returns from Alibaba's Taobao platform. Thus, although logistics remains a potential challenge for many e-commerce firms, by employing third-party fulfilment services, one would expect that over time the nature and severity of logistical problems will be gradually reduced.

²The relationship between suppliers and buyers should normally be cooperative and not a zero-sum game. However, in situations where the buyer is far more dependent on the supplier than vice versa, the supplier has a potentially higher bargaining power at the expense of the captive buying firm. In this situation, the powerful supplier will typically reap its economic returns at the expense of the captive buyer (Tangpong et al., 2015). Moreover, many supplier-buyer relationships are governed using a variety of mechanisms, which are used to control and influence buyers to behave in certain ways that support the supplier's objectives. For example, suppliers often use contract-based governance mechanisms, where the parties involved specify the rights and obligations in their transactions in formal written contracts that can vary in terms of their explicitness, hardness, and concreteness (Burkert et al., 2012; Griffith Zhao, 2015). This implies that contract-based governance mechanisms can restrict the autonomy of buyers, including their ability to make their own choices about where to sell their products. A case in point is Coty, a supplier of luxury cosmetic products, that prohibited selected foreign distributors from using online marketplaces, such as Amazon or eBay.

Cross-border e-commerce barriers

³The countries included in the study, together with their respective sample size, are the following: Austria (81), Belgium (61), Bulgaria (17), Czech Republic (47), Germany (70), Denmark (71), Estonia (14), Spain (59), Finland (42), France (74), United Kingdom (56), Greece (61), Croatia (52), Hungary (22), Ireland (93), Italy (48), Lithuania (73), Luxembourg (15), Latvia (26), Netherlands (55), Poland (34), Portugal (70), Romania (38), Sweden (58), and Slovakia (19).

⁴We have also examined the control effect of market type, home country base, and nature of export market on each set of CBEC barriers contained in our conceptual model. The results revealed that market type had a control effect on coping with foreign markets ($\beta = .54$, $t = 2.58$, $p = .01$), supplier restrictions ($\beta = .45$, $t = 2.51$, $p = .01$), and technical difficulties ($\beta = .62$, $t = 3.13$, $p = .00$). Also, country base had a control effect on financial complexities ($\beta = .61$, $t = 2.85$, $p = .00$), coping with foreign markets ($\beta = .52$, $t = 2.84$, $p = .01$), supplier restrictions ($\beta = .67$, $t = 3.25$, $p = .00$), and technical difficulties ($\beta = .54$, $t = 2.58$, $p = .01$). Surprisingly, the export market did not exhibit any control effect on any type of CBEC barriers examined.

⁵We have also conducted an additional control analysis of the various types of digital export channels used (i.e., multichannel, own website, digital platforms, or EDI) on each set of CBEC barriers contained in our conceptual model, revealing no statistically significant effects. The only exceptions were the effect of own website on technical difficulties ($\beta = -.20$, $t = -3.00$, $p = .00$) and digital platforms on technical difficulties ($\beta = -.20$, $t = -1.81$, $p = .07$).

⁶Notably, Belenzon, Berkovitz, and Rios (2013) identified more than 26,000 business groups in Western Europe. When inspecting our data, firms affiliated with business groups were found to spread across a wide variety of countries. In fact, the countries with the highest number of firms with business group affiliation were Sweden, Denmark, France, and Spain. In contrast, less developed European countries, like Bulgaria, Romania, Slovakia, had fewer firms affiliated with business groups.

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Figure 1

Conceptual model

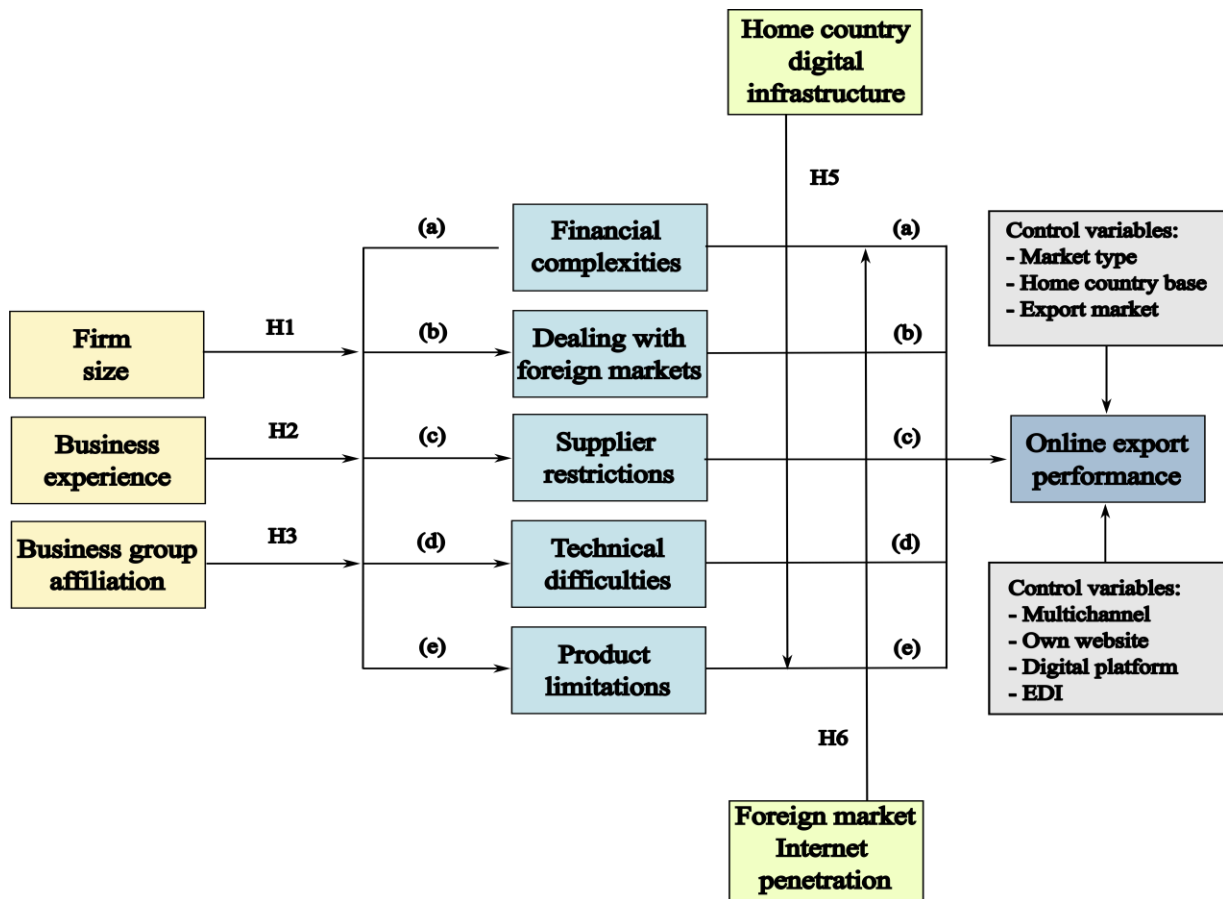


Table 1*Measurement model results*

Constructs	Scale items	Standardized loadings	<i>t</i> -value	α	<i>P</i>	AVE	Mean score	Standard deviation	Item mean	Standard deviation
Financial complexities	FCO1	.67	*	.78	.75	.52	1.63	.59	1.78	.84
	FCO2	.79	16.11						1.61	.78
	FCO3	.65	14.14						1.51	.72
	FCO4	.76	15.77						1.62	.80
Dealing with foreign markets	DFM1	.78	*	.73	.74	.50	1.45	.50	1.52	.73
	DFM2	.71	17.65						1.42	.70
	DFM3	.64	16.09						1.46	.69
	DFM4	.68	17.11						1.40	.67
Supplier restrictions	SRE1	.73	*	.71	.71	.55	1.25	.44	1.25	.57
	SRE2	.81	15.99						1.23	.55
	SRE3	.68	14.33						1.26	.57
Technical difficulties	TDI1	.68	*	.73	.73	.50	1.31	.44	1.25	.58
	TDI2	.74	14.69						1.34	.64
	TDI3	.64	13.26						1.38	.70
	TDI4	.72	14.40						1.29	.59
Product limitations	PLI1	.80	*	.70	.61	.54	1.32	.47	1.36	.62
	PLI2	.66	12.91						1.29	.59
Online export performance	OEP1	.74	*	.71	.69	.52	3.38	1.60	5.28	2.02
	OEP2	.75	8.33						2.43	1.45
	OEP3	.66	7.35						2.96	1.35

Table 2*Correlation matrix*

Construct	1	2	3	4	5	6	7	8	9
1. Firm size	1								
2. Business experience	-.24	1							
3. Business group affiliation	.40	-.08	1						
4. Financial complexities	-.03	.01	-.03	1					
5. Coping with foreign markets	-.04	-.02	-.07	.49	1				
6. Supplier restrictions	.01	-.04	.02	.48	.48	1			
7. Technical difficulties	-.01	-.00	-.04	.47	.49	.48	1		
8. Product limitations	.04	-.03	.03	.44	.38	.31	.39	1	
9. Online export performance	.15	-.05	.14	-.07	-.06	-.06	-.02	-.04	1

Table 3*Structural model results*

Hypothesis	Hypothesized path	Standardized path coefficients	t-value	p-value
Main effects:				
H1a	Firm size → Financial complexities	-.79	6.35	.00
H1b	Firm size → Coping with foreign markets	-.66	2.74	.01
H1c	Firm size → Supplier restrictions	-.48	2.41	.02
H1d	Firm size → Technical difficulties	-.36	1.95	.05
H1e	Firm size → Product limitations	-.75	5.82	.00
H2a	Business experience → Financial complexities	-.65	3.23	.00
H2b	Business experience → Coping with foreign markets	-.83	7.36	.00
H2c	Business experience → Supplier restrictions	-.79	6.68	.00
H2d	Business experience → Technical difficulties	-.82	7.37	.00
H2e	Business experience → Product limitations	-.81	7.19	.00
H3a	Business group affiliation → Financial complexities	-.17	-1.75	.08
H3b	Business group affiliation → Coping with foreign markets	-.29	-2.29	.02
H3c	Business group affiliation → Supplier restrictions	-.09	-0.80	.42
H3d	Business group affiliation → Technical difficulties	-.11	-0.93	.36
H3e	Business group affiliation → Product limitations	-.25	-1.98	.05
H4a	Financial complexities → Online export performance	-.28	-1.88	.06
H4b	Coping with foreign markets → Online export performance	-.27	-1.81	.07
H4c	Supplier restrictions → Online export performance	-.27	-1.90	.06
H4d	Technical difficulties → Online export performance	-.26	-1.77	.07
H4e	Product limitations → Online export performance	-.30	-1.95	.05
Moderation effects:				
	Home country infrastructure → Online export performance	.35	5.70	.00
H5a	Home country infrastructure x Financial complexities → Online export performance	-.25	-3.92	.00
H5b	Home country infrastructure x Coping with foreign markets → Online export performance	-.12	-1.71	.09
H5c	Home country infrastructure x Supplier restrictions → Online export performance	-.42	-6.70	.00
H5d	Home country infrastructure x Technical difficulties → Online export performance	-.24	-3.28	.00
H5e	Home country infrastructure x Product limitations → Online export performance	-.24	-3.41	.00
	Host country penetration → Online export performance	.31	4.02	.00
H6a	Host country penetration x Financial complexities → Online export performance	-.34	-4.55	.00
H5b	Host country penetration x Coping with foreign markets → Online export performance	-.25	-3.65	.00
H5c	Host country penetration x Supplier restrictions → Online export performance	-.38	-4.47	.00
H5d	Host country penetration x Technical difficulties → Online export performance	-.24	-3.49	.00
H5e	Host country penetration x Product limitations → Online export performance	-.22	-3.34	.00
Control effects:				
	Product type → Online export performance	-.19	-2.80	.00
	Country base → Online export performance	-.08	-0.79	.45
	Export country → Online export performance	.10	1.69	.09
	Multichannel → Online export performance	.19	2.73	.01
	Website → Online export performance	-.12	-1.78	.08
	Platform → Online export performance	-.07	-0.91	.36
	EDI → Online export performance	.24	4.24	.00

Cross-border e-commerce barriers

Appendix 1 - Operationalization of CBEC barriers and online export performance

Constructs	Item code	Item description
Financial complexities	FCO1	Delivery costs are too high
	FCO2	Guarantees and returns are too expensive
	FCO3	Dealing with foreign taxation is too complicated and/or too costly
	FCO4	Resolving customer complaints and disputes cross-border is too expensive
Coping with foreign markets	DFM1	We do not know the rules which have to be followed
	DFM2	Payments from other countries are not secured enough
	DFM3	We lack the language skills to deal with foreign countries
	DFM4	We are concerned that our data is not well protected when selling abroad
Supplier restrictions	SRE1	Our suppliers restrict or forbid us to sell abroad
	SRE2	Our suppliers do not allow us to use a third platform to sell our products
	SRE3	Our suppliers ask us to sell abroad at a different price
Technical difficulties	TDI1	Copyright prevents us from selling abroad or makes it too expensive to sell abroad
	TDI2	For reasons of interoperability, we cannot provide our products abroad
	TDI3	Our company's Internet connection is not fast enough
	TDI4	Customers abroad do not have an Internet connection that is fast enough
Product limitations	PLI1	Our product labeling has to be adapted
	PLI2	Our products and/or services are specific to our local market
Online export performance	OEP1	Cross border online sales turnover
	OEP2	Cross border online sales revenue growth
	OEP3	Cross-border online sales to total online sales