

Digital Technologies and the Internationalization of Small and Medium-Sized Enterprises

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1. Introduction

Small and medium-sized enterprises (SMEs) make important contributions to sustainable economic growth, employment, poverty alleviation, local development, and human wellbeing in developed and developing countries [1]. SMEs are also increasingly active international players due to the technological advances that have lowered the risks and costs of foreign market entry [2,3]. The key among these technological advances is the advent of digital technologies. Indeed, as early as 2010, Etemad, Wilkinson, and Dana [4] noted that “internetization” is a pre-requisite for internationalization in the new economy.

Previous research has revealed complex links between internationalization, digitalization, and sustainability in the context of SMEs [5,6], and [7] observed that this field is rapidly evolving; however, there are still many gaps in our knowledge about the relationship between digitalization and SME internationalization. Hence, this Special Issue focused on unraveling various ways in which digital technologies affect the internationalization of SMEs. In this Editorial, we present a brief overview of the topic of SME internationalization, followed by the role of digital technology in the internationalization process, and finally offer a summary of the articles in this Special Issue.

2. Internationalization of SMEs

Internationalization refers to ‘the process of increasing involvement in international operations’ [8] (p. 36). Research was initially focused on large firms, especially multinational enterprises [9]. More recently, an increasing body of literature has started to investigate the internationalization of SMEs [10]. The internationalization of SMEs has also attracted significant policy attention because of the “disproportionate direct contribution to wealth creation” of internationalized SMEs [11] (p. xiv). However, despite the growing research interest and relevant research results, the available literature on SME internationalization is still fragmented and inconclusive [3]. Unlike large multinational enterprises, SMEs exhibit specific characteristics that influence their internationalization [12]; this includes limited financial and human resources, a high level of sensitivity to external influences [13], lack of managerial know-how, inadequate social capital resources [14], structural, management and property constraints, and lack of capabilities to implement some strategies available to large organizations [15]. These characteristics may diminish their ability to take advantage of new opportunities and respond to threats from internationalization [16]. On the other hand, some distinctive behavioral strengths of SMEs that may affect their internationalization include entrepreneurial dynamism, stronger motivation, and higher flexibility than larger enterprises [14].



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Existing research on SME internationalization has explored multiple aspects of international business engagement, such as international opportunity recognition, strategy, the internationalization process, resources and capabilities, international and domestic environment, entry modes, international activities and operations, networks, international orientation, or international commitment [10,15,17] to describe, explain, and predict the internationalization of SMEs. Over time, multiple theoretical perspectives and models have been used to investigate SME internationalization. Stage models of internationalization, most notably the Uppsala Model (U-model) [18] and the Innovation-related Model (I-model), posit that internationalization is a gradual and incremental process [17]. The models of rapid internationalization focus on firms that are considered international new ventures [19] or born-global firms [20] because they do not follow linear and sequential processes of internationalization. These new and small players internationalize their operations to multiple countries from or soon after inception. Other dominant theories used in the research on SME internationalization include the resource-based view (RBV), network theory, transaction cost economics, product life cycle theory, the eclectic paradigm, and institutional theory (for recent reviews, see [3,10,13,14,17]).

3. Digital Technologies and Internationalization of SMEs

Digital technologies can be broadly defined as electronic tools, systems, devices, and resources that generate, store, or process data. They are manifested in the form of three distinct, but related elements—digital artifacts, digital platforms, and digital infrastructures [21]. Digital artifacts are digital components, applications, or media content that are part of a new product (or service) and offer functionality or value to the end-user. Digital platforms are shared, common sets of services and architecture that serve to host complementary offerings, including digital artifacts. Digital infrastructures, in turn, are defined as digital technology tools and systems that offer communication, collaboration, and/or computing capabilities to support innovation and entrepreneurship [21] (pp. 1031–1032). Innovative digital technologies, such as artificial intelligence, virtual reality, cloud computing, digital platforms, blockchain, etc., enable firms to redefine their strategies and governance mechanisms and to transform their processes, structures, roles, and boundaries, offering novel sources of competitive advantage [22,23]. New digital technologies have altered the interdependencies among firms and consumers and reshaped firms' value chains and thus have led to the emergence of digital ecosystems [22,24]. Digital markets emerging around digital platforms are profoundly changing the ways of value creation, delivery, and competition among companies [22].

Digital technologies are “transforming the very paradigm of international business” [25] (p. 5). While the development of digital artifacts allows entrepreneurs to provide value-adding complements to new and existing products and services in a relatively cost-efficient manner, digital platforms and digital infrastructures can substantially reduce transaction and coordination costs, making it easier for SMEs to connect with different stakeholders across borders [26–29]. Collectively, all three types of digital technologies lower barriers to market entry and allow a greater number of and a diverse set of entrepreneurs to engage in international activities [21]. The efficiencies afforded by digital technologies are especially significant for SMEs, which are often resource-constrained. One notable example of digital technologies' democratization effects is the case of women entrepreneurs [30], who can access international market knowledge and partners while conserving resources [31]. Digital technologies have also been suggested as important tools for social entrepreneurs looking for sustainable solutions to global problems while reaching customers and suppliers across borders [32].

The increasing adoption and deployment of digital technologies can serve as the backbone of internationalization for SMEs [4]. A growing body of research has started to examine the viability of digital technologies as an internationalization path for SMEs [33–36]. Digital technologies can enable new ways of reaching to international markets, of generating and delivering value to international customers, and of building knowledge and relationships in

international markets [37]. Digital technologies may also help SMEs to pursue and exploit new international opportunities [38], to maintain and develop relationships with international customers and partners [39,40], to overcome geographical and cultural distances and other barriers in international markets [25,41], to use relevant market data [38], and to offer consistent customer experiences in foreign markets [42]. Ref. [43] identified diverse digital effects on the internationalization activities of SMEs and various opportunities for defining new value propositions through digital use by SMEs in the fields of costs, accessibility, resources, and competences; market knowledge; distance and location; and relational competences and partner networks. Such research suggests that digital technologies can have powerful enabling effects for SME internationalization. However, the specific mechanisms through which digital technologies enable SME internationalization across different industry, competitive, and institutional contexts are still relatively unexplored. With this backdrop, this Special Issue focuses on how digital technologies affect the internationalization of SMEs.

4. The Articles in this Special Issue

The articles in this Special Issue offer a multifaceted view of the challenges and opportunities for SME internationalization and the role of digital technology in this process. They cover a comprehensive mix of methodologies (both qualitative and quantitative), geographical and cultural settings (including both advanced economies and emerging markets), and types of SMEs and industries (from traditional SMEs slowly incorporating digital technologies to reach global markets to born-digital companies). The articles in this Special Issue also expand the theoretical and conceptual repertoire researchers in this field can draw from by offering insights into how bricolage theory, the extended model of internet commerce adoption, frugal innovation and disruptive innovation can help illuminate the interplay of digitalization and internationalization for SMEs.

The quantitative research paper entitled “The Maturity of Corporate Websites as a Digital Communication Channel in Portuguese SMEs’ Process of Adopting E-Commerce”, co-authored by Maria García-García, María Victoria Carrillo-Durán, and Jose Maia, examines the maturity level of Portuguese SME websites as a digital tool in the process of e-commerce adoption (which is a critical aspect of reaching international customers). Their paper aims to show how e-commerce is related to the level of maturity reached in SMEs’ websites. The extended model of internet commerce adoption (E-MICA) was used to measure the maturity of websites based on its sequential phases. Their study relied on a stratified random sampling technique to generate a representative sample of 381 Portuguese SMEs. The quantitative analyses show that the websites of Portuguese SMEs have limited functionalities and a low level of maturity. The incorporation of e-commerce is significantly affected by technological, financial, cultural, and organizational factors.

The qualitative research paper entitled “The Role of Digitalization on the Internationalization Strategy of Born-Digital Companies”, co-authored by Ioan-Iustin Vadana, Olli Kuivalainen, Lasse Torkkeli, and Sami Saarenketo, explores how bricolage affects the relationship between value chain activities and the internationalization strategy of born-digital companies. Their study uses a comparative case study research method to provide insights into contextual factors and their behavioral implications for the internationalization of born-digital companies. Their key findings pinpoint that, in line with bricolage theory in the context of resource constraints and industry or market uncertainty, born-digital companies mix and re-use resources at hand. Digitalization and bricolage help born-digital companies to develop and optimize their internationalization strategies and to improve their services and products. Their paper offers many valuable practical implications for entrepreneurs, industry experts, government institutions and other types of support organizations.

The quantitative research paper entitled “Investigating the Impact of International Markets and New Digital Technologies on Business Innovation in Emerging Markets”, co-authored by Léo-Paul Dana, Aidin Salamzadeh, Samira Mortazavi, and Morteza Hadizadeh, addresses the knowledge gap in the influence of international markets and new digital technologies on business innovation in the context of emerging markets. Drawing upon a

review of the literature on business innovation in emerging markets, the authors propose a conceptual framework which indicates that international markets and digital technologies have both direct positive effects on business innovation and indirect effects on business innovation through entrepreneurial orientation. A descriptive survey was used for data collection from 300 senior managers from companies providing business services in Teheran. Empirical findings from the structural equation modeling analysis revealed that international markets and new digital technologies can enhance the entrepreneurial orientation and business innovation in emerging markets.

The qualitative research paper “Disruptive Innovation in the Context of Retailing: Digital Trends and the Internationalization of the Yiwu Commodity Market”, co-authored by Wan Liu and Steven Si, contributes to the convergence of research in the fields of internationalization and disruptive innovation. Their study explores the uniqueness of the internationalization paths of SMEs in the Yiwu Commodity Market located in Zhejiang Province, China, known as the world’s largest wholesale market for small commodity goods, and the role of disruptive innovation, enabled by digital technologies, through a thorough case analysis and semi-structured interviews. The results reveal the phases of Yiwu’s internationalization path and disruptive innovation path and the link between digital disruptive innovation-related activities and new market exploration activities. In their study, SMEs relied on strategy positioning and capability construction in the context of market dynamism to achieve international expansion. Their paper highlights the importance of digital technologies for retail SMEs and policy makers.

5. Conclusions

The four articles included in this Special Issue reveal that digital technologies have a significant impact on SMEs’ abilities to pursue international opportunities, to create and deliver value, to develop and optimize their internationalization strategies, to improve their services and products, to reconfigure resources, and to enhance their entrepreneurial orientation and business innovation in international markets. They clearly demonstrate the importance of digital technologies for the successful international expansion of SMEs and further promote the discussion about the role of digital technologies in the internationalization of SMEs. They also outline a number of promising research avenues at the intersection between digitalization and internationalization of SMEs. The increasing importance of digital technologies as an internationalization path for SMEs highlights the pressing need for entrepreneurs, owners, and managers to understand the benefits of digital technologies and how to implement and use them to achieve international growth. There is a clear need to enhance awareness of new digital trends and to explore growing digital opportunities to integrate emerging digital technologies across internationalization strategies and processes.

The editors of this Special Issue of *Sustainability* would like to express their gratitude to the authors of the selected papers for their contributions developed with dedication and scientific rigor. We are also extremely grateful to our highly qualified reviewers for their constructive comments and numerous thoughtful suggestions on ways to improve the quality of the contributions. We hope that this Special Issue will inspire future researchers to address existing knowledge gaps in the field of digital technologies and the internationalization of SMEs.

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