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The role of digitalization in early internationalization Research: A systematic literature review and future research directions

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ABSTRACT

The purpose of this research is to systematically collate and synthesize the literature on how digitalization-related antecedents influence the processes and outcomes of early internationalizing firms. To do so, the present study systematically reviews a total of 120 related articles published in a broad range of academic journals from 1994 to 2024. The review enables us to outline the development of major research areas in terms of themes, theoretical approaches, and methodological issues at the intersection of the early internationalization and digitalization research. We contribute by offering a model that delineates a more subsumed, multilevel explanation of the interface of early internationalization and digitalization. Further, we propose a number of future research directions based on the integration of the reviewed articles and inputs purposefully collected from surveyed scholars in the field.

1. Introduction

Over the past several years, internationalization at the interface of digitalization research has become prominent in the academic literature. Digitalization constitutes the use of digital technology that alters the activities of firms in areas such as communication, the development of new business models, marketing and distribution, and business relationship management (Autio, Mudambi & Yoo, 2021). Digital technology is categorized into two main forms: digital communication, for example, Internet-enabled technologies that facilitate cross-border transactions and operations, such as e-commerce platforms, blockchain, and distributed organizations; and digital technologies *in situ*, for example, additive manufacturing, artificial intelligence, robotics, and analytics (Autio et al., 2021; Birkinshaw, 2022). The extant research has long acknowledged Internet-based digitalization as a key element in promoting firm internationalization (Bennett, 1997, 1998; Morgan-Thomas & Bridgewater, 2004; Servais, Madsen & Rasmussen, 2006; Zhang & Tansuhaj, 2007; Bell & Loane, 2010; Zhang, Sarker & McCullough, 2008; Zhang, Sarker & Sarker, 2013; Dethine, Enjolras & Monticolo, 2020).

The fields of International Business (IB) and International Entrepreneurship (IE) predominantly describe Early Internationalizing Firms (EIFs) as young, small firms that make the leap early after their foundation into international markets through export or some other foreign entry mode (Jie, Harms, Groen & Jones, 2021; Knight, Madsen & Servais, 2004; Appiah, Galkina, & Gabrielsson, 2023; Madsen & Servais, 1997), a definition to which we subscribe. This is commonly presented in the context of studies on International New Ventures (INVs) (Oviatt & McDougall, 1994), and Born Global Firms (BGFs) (Knight & Cavusgil, 2004; Cavusgil & Knight, 2015). We recognize that these two sub-types of early internationalizing firm are distinctive by definition. Knight and Cavusgil (2004, p.124) define BGFs as "business organizations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries." According to Cavusgil and Knight (2015), their definition emphasizes that these firms pursue internationalization mainly through export. This is somewhat narrower than Oviatt and McDougall's (1994. p.49) definition of INVs "as a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries." It depicts these firms coordinating multiple value chain activities across borders, which may include not only exporting but also other types of operational mode (Coviello, 2015). When referring to EIFs, we encompass both BGFs and INVs. Unlike late internationalizing firms (LIFs),

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which typically internationalize quite long after their inception, and usually follow a slow and gradual pace of international expansion during the post-internationalization phase, EIFs go international earlier, at their inception or shortly thereafter, following a rapid but somewhat discontinuous process during subsequent internationalization (Hilmersson, Johanson, Lundberg & Papaioannou, 2017; Zhou & Wu, 2014; Hilmersson, Johanson, Lundberg & Papaioannou, 2017; Meschi, Ricard & Tapia-Moore, 2017; Rumyantseva & Welch, 2023).

An important bulk of research has been undertaken on EIFs in the last several decades, which has generated a significant number of literature review studies focused on different aspects of these firms, such as their capabilities, networks, and performance (Rialp, Rialp & Knight, 2005; De Clercq, Sapienza, Yavuz & Zhou, 2012; Bembom & Schwens, 2018; Romanello & Chiarvesio, 2019; Jiang et al., 2020; Breuillot, Bocquet & Favre-Bonté, 2022; Etemad, 2022; Kahiya & Warwood, 2022; Jie et al., 2021). None of these reviews, however, has focused on examining the research connection between digitalization and the EIF phenomenon.

Both EIFs and LIFs are currently exploring and experimenting with new ways of using digital technologies in their prospects for internationalization, and in related activities. For example, digital platforms such as eBay, Amazon, Facebook, and Alibaba have provided great opportunities for smaller firms' earlier and rapid internationalization. Besides, several scholars have recently investigated the emergence and internationalization of businesses (Brouthers, Geisser & Rothlauf, 2016) and (born-)digital firms and platforms (Monaghan, Tippmann & Coviello, 2020; Stallkamp & Schotter, 2021; Stallkamp, Hunt & Schotter, 2022). Thus, while the adoption and deployment of digital technologies in internationalization is feasible for both EIFs and LIFs, the technologies have become extremely appealing to EIFs due to their low cost and easy accessibility (Jean, Kim & Cavusgil, 2020). Despite the challenge of liability of newness and/or smallness in terms of resource paucity, increased Internet connectivity worldwide, the global use of smart mobile devices, and global digital platforms have supported EIFs in internationalizing earlier and faster (Deng, Zhu, Johanson & Hilmersson, 2022; Jean, Kim & Cavusgil, 2020; Pezderka & Sinkovics, 2011; Zahra, 2005). For example, entrepreneurs lacking resources to internationalize or connect to global customers may use the online platforms of service providers such as Alibaba, eBay, or AliExpress to foster the early internationalization of their venture (Li, Su, Zhang & Mao, 2018). On these platforms, firms negotiate and sell directly to foreign clients. Digital platforms also enable costless and instantaneous delivery of digital products and services to global customers (Mahnke & Venzin, 2003). In addition, compared to LIFs, EIFs usually have an international entrepreneurial orientation that has the potential to foster global technological competence (Knight & Cavusgil, 2004). They also have greater flexibility to acquire knowledge in the foreign market/s at an early age, which Autio, Sapienza and Almeida (2000) termed the learning advantage of newness (LAN), resulting from non-existent domestic routines and networks.

Quite recently, many scholarly journals have encouraged further research to broaden our understanding of the impacts of digital technology (Chabowski & Samiee, 2020). Also, scholars in the field of IB have called for research on how digitalization impacts firm internationalization (e.g., Birkinshaw, 2022; Katsikeas, Leonidou & Zeriti, 2020; Coviello, Kano & Liesch, 2017; Ojala, Evers & Sousa, 2022). For example, special issues of well-known IB journals have called for the development of new theories, modification of existing theories, and determination of how firms can benefit from digitalization as they do business around the world (Journal of International Business Studies, 2020). However, in addition to generating new theoretical understandings, it is particularly important to look back and outline the various theoretical perspectives that have been applied over the years in the research domain. They can eventually be revised, or new perspectives proposed to improve our understanding of how EIFs can benefit from digitalization. This sudden interest in examining the effect of digitalization on early internationalization has engendered different kinds of study in a variety of areas. It justifies conducting a thorough and systematic literature review aimed at stimulating reflections on future research and inciting progress (Knight & Liesch, 2016).

There are other recent literature reviews (Feliciano-Cestero, Ameen, Kotabe, Paul & Signoret, 2023; Goldfarb & Tucker, 2019; Piqueras, 2020; Shaheer, Kim & Li, 2022; Vadana, Kuivalainen, Torkkeli & Saarenketo, 2020; Ojala et al., 2022) that already provide insights on the influence of digitalization on international activities, but a significant gap remains. Specifically, Feliciano-Cestero et al. (2023) focused on reviewing the existing literature to identify both the positive and negative impacts of digital transformation on firm internationalization in general. Goldfarb and Tucker (2019) covered the reduction in economic costs associated with digital economic activity, without focusing on internationalization. Piqueras (2020) reviewed the literature on the internationalization of born-digital firms without referencing EIFs, whereas Shaheer et al. (2022) focused on the internationalization of digital innovations, drawing attention to born-digital firms but not particularly EIFs. Finally, Vadana et al. (2020) investigated the prior literature on how value-chain digitalization affects companies' internationalization in general and international marketing in particular, whereas Ojala et al. (2022) focused on the role of digital services in companies' international operations, without referencing EIFs. Thus, despite their abundant and relevant merits, these previous reviews also have several shortcomings. First, while some dealt with born-digitals and/or digitalized/ing companies, they did not specifically focus on EIFs as their key object of study. Piqueras (2020) focused solely on born digitals, for instance, excluding articles related to firms without digital products/services or that relied on combinations of both online and offline channels. Moreover, not all born-digital firms are EIFs, as some are focused on the domestic market (Vadana et al., 2020). Second, the reviews usually neglected the underlying mechanisms on how digitalization influences EIFs' internationalization outcomes. A body of knowledge is evolving around the underlying mechanisms and outcomes of early internationalization at the interface of digitalization. Therefore, it is expedient to know the "state-of-the art" within the domain, and show current perspectives to guide future research (Kraus, Breier & Dasí-Rodríguez, 2020). Third, none of the abovementioned reviews provides an integrative exploration of the subject domain based upon a systematic application of the so-called TCCM (theories, context, characteristics, methodologies) analysis. Addressing this will help give researchers a deeper understanding of the whole picture of the research domain. The TCCM analysis also enables us to highlight existing gaps in the literature, and pinpoint potential topics for a future research agenda (Paul & Rosado-Serrano, 2019).

Besides, this systematic review study adopts a high-level perspective focusing on breadth rather than depth. Recent studies (e.g., Fisch & Block, 2018; Hund, Wagner, Beimborn & Weitzel, 2021) have shown that primarily adopting breadth allows for the identification and organization of a wider range of the extant knowledge. Therefore, in this review, we include all relevant studies that contribute to our better understanding of the phenomenon. It covers a sufficient mass of prior research starting from the early 1990 s, when Internet use was nascent, up until current times. The intention is to delineate the conceptual and empirical domain of early internationalization research at the interface of digitalization. We employ a predominantly manual process of systematic literature review rather than use artificial intelligence tools. A systematic literature review enables researchers to identify patterns, discrepancies, and gaps, and assess meanings across different bodies of knowledge with reference to methodology, theory, constructs, and contexts. This necessitates a manual process because AI cannot produce such results (Johnson, Bauer & Niederman, 2021; Paul & Rialp-Criado, 2020). Furthermore, we follow the advice of some earlier systematic literature reviews in conducting a confirmatory survey among the authors of the reviewed articles (e.g., Li, Larimo, & Leonidou, 2021). We deem this complementary approach appropriate because forming a 'think tank' of prominent researchers also contributes to a better

understanding of a phenomenon, and unveils new insights for future theoretical development (Leonidou, Katsikeas, Samiee & Aykol, 2018; Etemad, Gurau & Dana, 2021).

Thus, with the primary objective of systematically collating and synthesizing the prior research concerning early internationalization at the interface of digitalization, this review study looks to respond to five key research questions: 1) How have theories been applied in the reviewed studies to explain early internationalization at the interface of digitalization? 2) How have the reviewed studies been conducted within empirical contexts? 3) How can the characteristics of the reviewed studies be described in terms of research themes and underlying mechanisms on how digitalization influences internationalization? 4) How can the methods of the reviewed studies be described? 5) How can the information gathered and extracted from the reviewed articles and validated by a confirmatory survey among their authors be used to develop a conceptual model and a comprehensive future research agenda?

In our view, this study makes two main contributions. The first is related to the collection, assessment, synthesis, and integration enacted in this literature review of the prior research, examining how early internationalization is affected by digitalization. We identify three top-level themes related to digitalization and early internationalization: antecedents, processes, and outcomes. The specific sub-themes have been investigated within each top-level theme. This responds to recent calls for more consistent research on the impact of digitalization on internationalization (Coviello et al., 2017; Katsikeas et al., 2020). Second, this review seeks to contribute new insights to the research domain of early internationalization and digitalization, on which future studies can be built. Therefore, we identify some pending research gaps based jointly on 1) our own review of the field, and 2) a confirmatory ex-post survey conducted among authors of the reviewed articles in this research stream, to help reinforce the gaps and eventually propose additional gaps. Furthermore, in doing so, we build a new conceptual model on the role of digitalization in driving early internationalization processes and outcomes, as a new conceptual lens through which to further investigate the phenomenon.

Following this introductory section, our work proceeds as follows. We first describe the methods used, then present the results, and finally offer detailed future research directions and a conclusion.

2. Method for the literature review

In recent times, the utilization of AI tools has acquired notorious relevance due to its ability to efficiently extract data, manipulate texts, and infer knowledge from vast amounts of data, tasks which seem laborious and repetitive for scholars employing manual processes in conducting systematic literature reviews (de la Torre-López, Ramírez & Romero, 2023; Wagner, Lukyanenko & Paré, 2022). However, AI lacks the ability to make nuanced judgments, interpret complex findings, apply subject-specific knowledge, or assess meanings across different bodies of knowledge. Therefore, a computer-assisted but essentially manual process was adopted to conduct this systematic literature review, as one of the most useful research strategies to advance knowledge in a particular research domain (Elsbach & Knippenberg, 2020; Paul & Rialp-Criado, 2020; Snyder, 2019).

Following our predominantly breadth-oriented focus, we conducted scoping studies across the business, management, entrepreneurship, technology, information management, and social sciences disciplines, to assess how early internationalization and digitalization had been addressed in the prior research. According to Tranfield, Denyer and Smart (2003), scoping studies had been used in systematic literature reviews to assess the relevance and volume of the literature, and delimit the subject area or topic under study. Our scoping studies helped us explore the available literature on our topic and identify key related concepts. Those preliminary assessments confirmed the relevance of the phenomenon within the domains of IB, marketing, management, innovation management, information management, IE, and social sciences.

2.1. Data Collection: Search strategy and Eligibility (Exclusion and Inclusion) criteria

Data collection procedures in this review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, Altman & The PRISMA Group, 2009). The study selection flow chart is shown in Fig. 1.

Initially, a review protocol was developed that first determined the time frame of the research coverage set between 1994–2024. 1994 marked the publication of Oviatt and McDougall's highly influential paper on international new ventures (Oviatt & McDougall, 1994). It was a time when digital technologies were appearing in the form of personal computers and incipient Internet use through graphical web browsers such as Netscape (later followed by Microsoft's Internet Explorer). Therefore, firms internationalizing from 1994 could have begun using such pioneering digital technologies.

Our search terms made use of similar keywords and concepts relating to digitalization and early internationalization. We derived them from the research objectives and existing related studies. We performed a Boolean search using "and" to connect the main and secondary keywords in the search process. Our sources were the Google Scholar, EBSCO, ScienceDirect, and ProQuest databases. These contain some of the world's largest electronic collections of academic sources with searchable cited references. Search terms (keywords) used to search for potentially interesting studies in the four databases are shown in Web Appendix 1.

Primarily, we decided to focus our review on both conceptual and empirical peer-reviewed journal articles, thus omitting book publications, book chapters, doctoral or master's theses, conference proceedings, and other similar documents. That is because they could be somewhat mixed and superficial in terms of knowledge validation, due to the variability in peer review processes, and more restricted availability (De Clercq et al., 2012; Jones, Coviello & Tang, 2011). We decided, however, not to limit the review to top-tier journals in the IB field alone, but to include journals from any field that appeared in our chosen databases, in order to have a broader view on how different authors in diverse fields have addressed the research phenomenon. This broader focus of fields enabled us to incorporate relevant studies across different disciplines to contribute to our understanding of the phenomenon. According to Snyder (2019), limiting searches to just a few journals can result in a highly flawed or skewed sample, and missing relevant studies that can also lead to incorrect conclusions about gaps in the literature. A broad focus on fields "is supportive of new and innovative research ideas at an early stage of development as well as replications and extensions that refine knowledge" (Jones et al., 2011, p. 634). To ensure quality journals, we ranked them using SCImago Journal Ranking (SJR) and SSCI-JCR Impact Factor.

In the initial stage of our documents search, we set up the following parameters to control the data collection process. Thus, documents should be peer-reviewed journal articles published in English between (January) 1994 and (August) 2024. Using advanced search tools, a total of 1,118 records were initially found (572 documents from Google Scholar, 89 from EBSCO, 88 from ScienceDirect, and 369 from ProQuest). Subsequently, we carefully removed all grey literatures such as book publications, book chapters, conference proceedings, and dissertations (469 in total). Thereby, the overall number of articles was reduced to 649 for subsequent title and abstract reading, checking for duplicates, and full text screening, adhering to the following criteria: 1) all articles should focus explicitly on EIFs understood as entrepreneurial firms which, from inception or shortly thereafter, do not confine themselves to a single (domestic) market but leverage a distinctive mix of orientations and organizational strategies that allow them to succeed in diverse international markets (Chetty & Campbell-Hunt, 2004; Knight

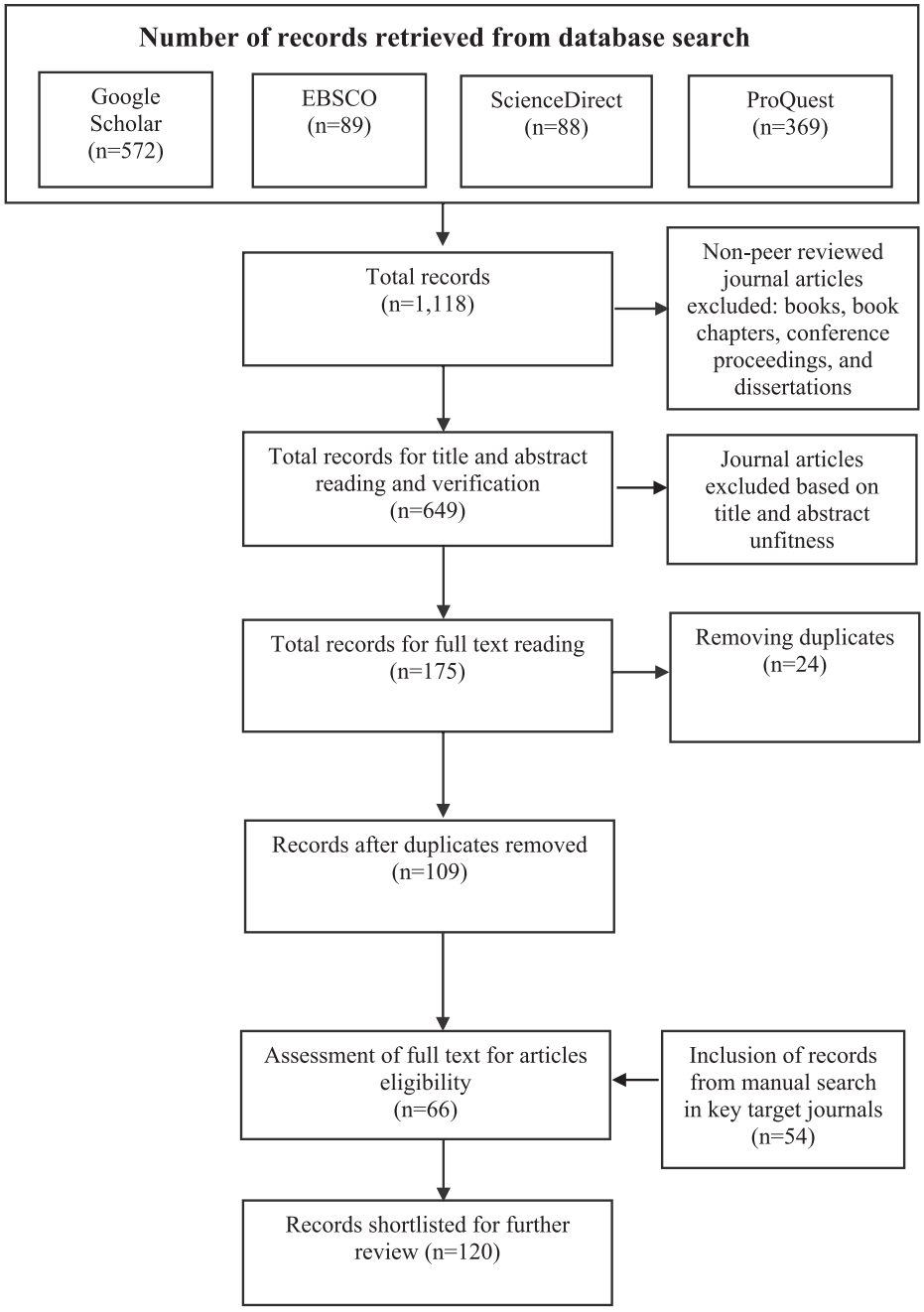

Fig. 1. PRISMA diagram showing systematic search process.

& Cavusgil, 2004; Madsen & Servais, 1997); and, 2) all selected articles should clearly emphasize the role of digital resources and technologies in EIFs. Therefore, studies were excluded and thus discarded for further analysis, if they did not explicitly stress the importance of digital technology and/or digitalization in the context of EIFs. By reading the titles and abstracts, we retained 175 articles. We exported them in RIS format to the HubMeta data entry system for deduplication. In all, 24 articles were identified as duplicates. The remaining 109 articles were considered for further full text reading. Ultimately, we found 66 articles that fulfilled all our inclusion criteria. However, in addition to the usual computer-assisted search from the bibliographic databases, we also manually scrutinized certain especially targeted journals in the EIF literature (such as Journal of International Entrepreneurship, International Business Review, Information Systems Journal, International Marketing Review, and Journal of International Management, among others) to ensure that no relevant articles for this review had been missed out. This manual doublecheck process significantly contributed 54 more articles to our final sample, which had not initially been retrieved by the electronic search. Thus, the entire data collection process identified a total of 120 pertinent journal articles that were fully relevant for further review and analysis (see Fig. 1), 20 conceptual and 100 empirical. The finally included articles and sourcing journals in this review are listed in Web Appendix 2.

2.2. *Data Analysis: Article screening and data Extraction*

The 120 selected articles were spread between 1997 and (August) 2024. Fig. 2 presents an overview of the number of articles per year.

While digitalization became increasingly prevalent in organizational activities during the last decade (Nambisan, 2017; Reuber & Fischer,

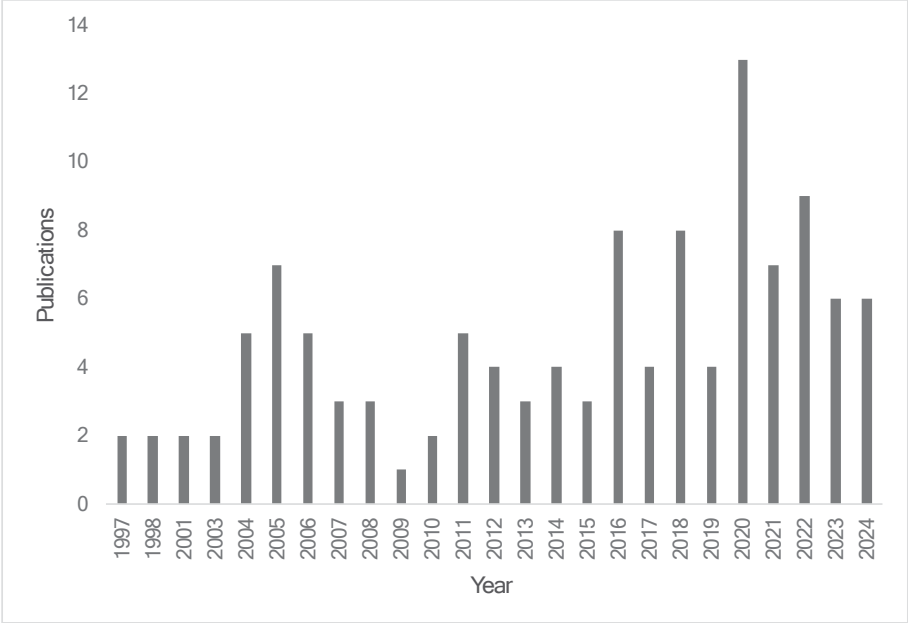

Fig. 2. Overview of selected articles per year.

2011), the year 2020 attracted the highest proportion of articles to date, which arguably can be attributed in part to the COVID-19 crisis. The pandemic surely forced more rapid digitalization among firms than ever before. However, it has also led to the growth of nationalism and politicization of institutions, which can reduce the entry of international new ventures and limit the scope of their operations (Zahra, 2021). This could underly the slightly lower number of publications in the last two post-covid years. As for contributors, the authors with the most journal articles in the field are S. Mathews with five, followed by C. Glavas, and M. Gabrielsson with four each, and M. Zhang, A. Rialp-Criado, S. Loane, C. Bianchi, R. Jean R, and R. Sinkovics with three articles each.

We used content analysis to review the articles. This analysis relied on a concept matrix in Microsoft Excel that encapsulated the article title, abstract, year of publication, methods, theoretical framework, themes, sub-themes, key findings, and future recommendations. Two researchers diligently read, analyzed, and coded the studies independently. Differences were reconciled via consensus with a third co-author to ensure consistent coding. Drawing on principles of thematic coding from qualitative research, we deductively identified the pattern of themes and sub-themes from the individual articles, using the TCCM (theories, context, characteristics, methods) framework proposed by Paul and Rosado-Serrano (2019) to structure the coding of the literature and the entire review. TCCM extended our understanding of the theoretical evolution, context, primary research areas, and methods related to a specific research domain. Using the TCCM framework in a systematic literature review has been proven to produce a robust structure (Aaltonen, 2020; Paul & Rialp-Criado, 2020). The main characteristics of the 120 reviewed studies are presented in Web Appendix 3, which outlines authorship, type of article, focus of article, method, country of origin of research sample, sector, and theoretical focus.

2.3. Confirmatory survey

In addition to the analytic literature review process described above, we also conducted a confirmatory survey analysis of the main future research directions in the field. We asked several researchers to rank in order of importance those broad future study areas and related specific future research questions already identified in the review, and, eventually, to propose additional areas and new questions for research. Thus, the survey questions were developed based on the previously identified future research avenues in the systematic review (by applying the TCCM framework), thereby complementing and validating our own appraisal. Therefore, we asked the respondents about the importance of the following themes identified in our review on early internationalization and digitalization (and, eventually, to propose new themes not mentioned in the survey): 1) broad thematic areas for future research, 2) extant theoretical approaches, 3) research questions about characteristics, and 4) extant methodological approaches. Table 4 details the precise items queried in the survey. To avoid biases in our survey, we provided potential respondents with an equal chance of participating. The respondents were identified as authors of articles included in this review. The online survey was sent via email in March 2021 to 112 potential respondents, reminded twice with a two-week interval, of whom 38 completed the survey, producing a response rate of 33.9 percent. Among the respondents, 20 (52.6 %) were senior researchers and professors, 10 (26.3 %) postdoctoral researchers, and 8 (21.1 %) PhD students.

3. Results of the review analysis

3.1. Theoretical Rationale

This section addresses the first research question in our study: *How have theories been applied in the reviewed studies to explain early internationalization at the interface of digitalization?* Several theoretical perspectives have been applied to explain the phenomenon, and this section focuses on some of the most dominant in terms of their frequency of usage.

First, the most common theoretical framework used in this review is based on depicting deviations compared to the Internationalization Process Theory, which is evident in both the Born Global (Knight & Cavusgil, 2004) and International New Venture (Oviatt & McDougall, 1994) approaches to internationalization. The Born Global (BG) approach, developed mainly in the international business field, was employed by 19 articles in this review. The emphasis among them (e.g., Gabrielsson & Kirpalani, 2004; Zhang et al., 2013) tended to be placed on the deviations of EIFs from the Internationalization Process Theory (traditional Uppsala Model) (Johanson & Vahlne, 1977; 2009). Thus, the BG perspective on internationalization challenges the slow and incremental internationalization process described by the International

Process Theory, by focusing on earliness and speed of venture internationalization (Paul & Rosado-Serrano, 2019). The focus in this theoretical approach is more on export than some other mode of operation, and rapid internationalization is explained by the firms' endowment with distinctive intangible resources and capabilities (Cavusgil & Knight, 2015). The BG approach to internationalization is a useful theoretical framework to gain a better understanding of early internationalization at the interface of digitalization. Some of the reviewed studies investigating internationalization via e-commerce (e.g., Foscht, Swoboda & Morschett, 2006) used this framework to illustrate how electronic commerce enabled new and small firms to internationalize within a short period. For instance, Wentrup (2016) showed how online service providers skipped sequential steps when moving into foreign markets, thereby increasing their speed of internationalization.

A closely related theoretical perspective is the International New Venture (INV) approach to internationalization that was originally developed in the international entrepreneurship field (McDougall 1989; Oviatt & McDougall,1994), and was applied in five articles in this review. The INV approach to internationalization is more specific and explains four necessary elements of existence for these types of venture: organizational formation through internalizing some transactions, a strong reliance on an alternative governance system to access resources, the establishment of foreign location advantages, and control of unique resources (Oviatt & McDougall, 1994). This approach also covers more widely the different value chain functions beyond export sales, such as importing, joint ventures, and manufacturing and R&D subsidiaries (Coviello, 2015). Tran, Yonatany, & Mahnke (2016) explored how an INV can expand effectively using crowd-sourced translation to localize its social media services, and thereby accelerate its internationalization speed. From the reviewed studies, the differences noted between the Internationalization Process Theory and the INV approach to internationalization usually related to the speed of internationalization being accelerated by digital technology, the fast-paced Internet industry, and the technically complex nature of online services (Lamotte & Colovic, 2015; Oviatt & McDougall, 2005).

The second very frequently applied theory is the Resource-based View (RBV), found in 14 articles in this review. This theoretical perspective states that firms possess resources and capabilities which are valuable, rare, inimitable, and non-substitutable. In due combination, they enable firms to achieve a sustainable competitive advantage (Barney, 1991). Reviewed studies utilizing this theoretical approach mainly focused on the role of Internet-enabled capabilities (e.g., Jaw & Chang, 2006; Tabares, Alvarez & Urbano, 2015). The application of RBV in this research domain has helped clarify how digital capabilities, and the nature of the resources on which they are built, critically influence the entry strategies of EIFs and their sustained international performance (e.g., Jaw & Chang, 2006), thus demonstrating the importance of digital resources and capabilities to the success of EIFs in foreign markets.

The third most frequently used theory is the Transaction Cost Approach, applied in seven articles. The utilization of this theory has brought the impact of digital technology to bear on transactions associated with early foreign market entry, and how such entry is organized. For example, with this theoretical underpinning, Houman (2005) found that the Internet has the potential to change the traditional way of organizing international activities. In the context of exporting, he asserted that the usage of the Internet had engendered the reshuffling of export marketing activities among the actors in the marketing channel, yielding new forms of specialized activity among actors. This theory has contributed to our understanding of the increased utilization of Internet sales channels among early internationalizing firms (e.g., Gabrielsson & Gabrielsson, 2011) due to lower transaction costs.

The fourth and fifth most frequently applied theories are the Network perspective (eight articles) and the Knowledge-based View (KBV) (five articles) respectively. Networking and knowledge are known to be key factors favoring the development of EIFs (De Clercq et al., 2012; Bembom & Schwens, 2018). According to Oviatt and McDougall (1994), learning about foreign markets provided EIFs with experiential knowledge, which Penrose (1959) already considered a key resource for firms. In addition, due to resource poverty/scarcity, EIFs used alternative transaction governance structures such as networking to survive in foreign markets (Oviatt & McDougall, 1994). Therefore, the utilization of the Network- and Knowledge-based views in the research domain is unsurprising (Autio et al., 2000; Lu & Julian, 2007; Maltby, 2012). In sum, the different theoretical perspectives jointly contribute to our understanding of the importance of Internet-enabled experiences and networking to accelerate internationalization in cyberspace.

Finally, although digitalization is associated with the information systems management literature, only two of the reviewed articles explicitly utilized information systems theories, that is, the Technology Acceptance Model and the Theory of Reasoned Action (Eid, Abdelmoety & Agag, 2020; Alarcón-del-Amo, Rialp-Criado & Rialp-Criado, 2018). This is somewhat surprising given the potential role these theories could play in understanding the early internationalization-digitalization phenomenon. Nonetheless, the two studies helped us understand what drives the adoption of digital technologies, and how they are used by new ventures in their prompt internationalization processes.

As many as 53 of the 120 reviewed articles did not mention or utilize any specific theory and were mostly descriptive in nature. More theory development and the application of existing theories are required to enable the advancement of the early internationalization at the interface of digitalization research area.

3.2. Context

This section addresses the second research question in our study: *How have the reviewed studies been conducted within empirical contexts?* Largely, the empirical context of the reviewed studies was single countries. However, these studies were not limited to a particular geographical area or country, and the set included different examples of studies on digitalization and EIFs from the USA, Finland, Sweden, Poland, Germany, Australia, New Zealand, China, Israel, and Ghana, among others. The dispersity of research contexts aligns with the ubiquity and importance of digital technologies to EIFs, due to their relatively low cost of application (Jean et al., 2020). Digital technologies include digital artifacts (i.e., digital components integrated into a new product or service), digital platforms, and digital infrastructure (i.e., digital communication tools) (Nambisan, 2017). Nevertheless, the dispersed nature of the research context calls for more cross-country comparison studies, in order to better understand how contextual and cultural differences and similarities may affect the utilization of digital technologies by EIFs.

Alternately, taking their "context" as an industry/sector perspective, the reviewed studies emerged from highly diverse sectoral contexts. Some of the studies focused on cross-industry sectors (e.g., Lamotte & Colovic, 2015; Langseth, O'Dwyer & Arpa, 2016), others on a single industry such as software or apiculture (e.g., Moen, Endresen & Gavlen, 2003; Plakoyiannaki, Kampouri, Stavraki & Kotzaivazoglou, 2014). The wide coverage of manufacturing and service sectors shows how important digital technology is in many value-adding activities nowadays, for example, networking with stakeholders, online payments, and virtual learning.

3.3. Characteristics

This section addresses the third research question in our study: *How can the characteristics of the reviewed studies be described in terms of research themes and underlying mechanisms on how digitalization influences internationalization?* Careful consideration of the reviewed articles suggested three top-level themes relating to early internationalization: antecedents, processes, and outcomes. This finding confirms the assertion made by Keupp and Gassman (2009) that early internationalization

research is fragmented in terms of areas studied.

3.3.1. Digital-related antecedents of early internationalization

The literature review nominated 52 articles as addressing digital-related antecedents of early internationalization (see Table 1). The significance of digital technology in stimulating early internationalization reflects three specific antecedents: virtual environment-specific advantages (VESAs), digital firm-specific advantages (DFSAs), and digital entrepreneur-specific advantages (DESAs).

On VESAs, the concept of "death of distance" (Cairncross, 1997) indicates that the global connectivity of the Internet greatly diminishes the impact of geographic distance on the internationalization processes of firms. Here, we frame the virtual environment as a space offering a firm access to a wide array of Internet-enabled resources, such as virtual data rooms, artificial intelligence, and virtual agents to internationalize activities earlier in time. We found at least nine studies relating the influence of digital technology to virtual environment-specific advantages (e.g., Langseth et al., 2016; Oyson, 2018). These studies recognized the greater accessibility of the Internet and other digital-orientated technologies, such as additive manufacturing and blockchain technology, as forces in the virtual environment that stimulate early and rapid internationalization (Hannibal, 2020; Zalan, 2018). The virtual environment provides an EIF with the flexibility to use existing infrastructures or outsourcing to adapt to changing business environments, and explains why small ventures may rapidly become significant players on the global stage, sometimes more quickly than larger competitors (Oyson, 2018). For example, EIFs can use a virtual data room to react more quickly and efficiently to changes by making timely and correct decisions. A virtual data room is an online cloud that enables the storage of individual documents to just one file (Kirilov, 2022). In addition, the Internet provides real-time communication to speed up decision-making by delivering messages that in the past could only be sent via post, fax, or telegram. The virtual environment also provides especially digital-oriented entrepreneurs engaged in cross-border e-commerce activities with access to the more advanced digital resources and capabilities of partnering service providers (online platforms) to foster the early internationalization of their ventures (Li et al., 2018). In all, the reviewed studies contribute to our understanding of how constantly emerging digital innovations in the virtual environment offer novel opportunities for firms' early internationalization.

As for DFSAs, the influence of digital technology in driving early internationalization is reflected in a firm's physical IT infrastructure, capabilities, and competences. Physical IT infrastructure is the firm's bundle of tangible digital assets, such as computers, communication technical platforms, and databases (Bharadwaj, 2000). A firm's IT capabilities define its ability to explore and exploit digital resources, whereas digital competence implies a cross-functional integration and coordination of such capabilities (Hunger & Wheelen, 2011). The article review revealed up to 35 different articles focused on the importance of firms' digital resources, IT capabilities, and competences in early internationalization activity (e.g., Bell & Loane, 2010; Gnizy, 2019; Jean et al., 2020; Williams, Du & Zhang, 2020). Cahen and Borini (2020) related a firm's digital competence to four main skills: cross-cultural programming, global virtual networks, cross-border digital monetizing adaptability, and international business model reconfiguration. Aside from those, online presence (having a website), online transactions (e-sales activities), and the proportion of employees with broadband Internet access or ICT education also instigated internationalization intensity (Hagsten & Kotnik, 2016). The reviewed studies further showed how firms made use of existing digital capabilities in combination with other capabilities and resources to drive early internationalization. Some exporters, particularly from regions with less-developed market intermediaries and big institutional challenges, deployed platform and web capabilities effectively to support their marketing capabilities and drive early export activity (Jean et al., 2019). Shaheer, Li and Preim (2020) reported how digital firms leveraged information

Table 1
Digital-related antecedents of early internationalization.

Digital-related antecedents (Themes)	Article count	Digitalization driving early internationalization	Researchers
Virtual environment-specific advantages	9	Influence of the Internet and other digital-oriented technologies on early and rapid internationalization	Hannibal (2020); Oyson (2018); Li, Su, Zhang & Mao (2018).; Langseth, O'Dwyer & Arpa (2016); Hamill (1997); Zalan (2018); Eid, Abdelmoety & Agag (2020); McCormick & Somaya (2020); Kudina et al. (2008)
Digital firm-specific advantages	36	Mobilization and deployment of IT-based resources in combination with other resources and capabilities	Rialp-Criado et al. (2020); Shaheer, Li & Priem (2020); Cahen & Borini (2020); Jean et al. (2020); Jean et al. (2019); Hervé et al. (2020); Williams et al. (2020); Jean & Kim (2019); Anwar (2017); Tabares et al. (2015); Kotha et al. (2001); Osarenkhoe (2008; 2009); Bell & Loane (2010); Bennett (1997); Samiee (1998); Plakoyiannaki et al., (2014); Bailetti & Zijdemans (2014); Mahmoud et al. (2020); Hagen et al. (2011); Loane, McNaughton & Bell (2004); Etemad, Wilkinson & Dana (2010); Hagsten & Kotnik (2016); Alarcón-del-Amo, Rialp-Criado & Rialp-Criado (2018); Bennett (1997); Mahmoud et al. (2020); Kromidha & Robson (2021); Westerlund (2020); Brieger et al. (2022); Gnizy (2019); Rakshit, Islam, Mondal & Paul (2022); Nowiński & Bakinowska (2012); Alarcón et al. (2024); Liu et al. (2024); Wang et al. (2024); Elia, Giuffrida, Mariani & Bresciani (2021)
Digital entrepreneur-specific advantages	7	Influence of entrepreneur's digital capabilities on early and rapid internationalization	Maltby (2012); Glavas et al. (2019); Zaheer, Breyer, Dumay & Enjeti (2019); Mozas-Moral et al. (2016); Bianchi, Glavas & Mathews (2017); Dillon, Glavas & Mathews (2020); Yang, Gabrielsson & Andersson (2023)

technology to remotely reap location-bound advantages to promote their internationalization. Location-bound advantages are the benefits that firms operating in some countries harness compared with firms operating elsewhere, which include access to partner firms' assets, interactions with stakeholders, and business connections (Shaheer et al., 2020). For example, Chinese Internet firms expanded into Europe because it has a relatively more developed IT infrastructure, higher Internet penetration rate, and other location advantages in terms of human talent, industrialization, and consumption levels (Vecchi & Brennan, 2022). On the other hand, location-bound disadvantages such as institutional voids may also cause firms to eventually go abroad. According to Brieger et al. (2022), firms using the Internet to sell their products and services were more likely to focus on foreign markets when they faced institutional voids and a lack of digital infrastructure in their home country.

Finally, we examine DESAs, which refer to the entrepreneur's qualities and skills that help drive early internationalization. They include past work experience, education, knowledge of foreign languages, and other competences including digital competence (Zucchella, Palamara & Denicolai, 2007; Mozas-Moral, Moral-Pajares, Medina-Viruel & Bernal-Jurado, 2016). Studies examining DESAs illustrated how entrepreneurs utilized their own digital competence and/or their firm's digital capabilities to eventually drive early internationalization. The reviewed papers included several studies in this category (Bianchi, Glavas & Mathews, 2017; Glavas, Mathews & Russell-Bennett, 2019; Maltby, 2012; Zaheer, Breyer, Dumay & Enjeti, 2019; Dillon, Glavas & Mathews, 2020; Mozas-Moral et al., 2016). According to Glavas et al. (2019), entrepreneurs leveraged their digital competences (*technical Internet-enabled experience*, *operational Internet-enabled experience*, *functional Internet-enabled experience*, *immersive Internet-enabled experience)* to generate knowledge that supported the early phases of the internationalization process, for example, using an Internet-enabled platform for communication and collaboration between firms and network partners. Dillon et al. (2020) pinpointed a new type of experience, known as *digital internationalization experience*, which entrepreneurs generated using digital technologies responsively in international contexts. For example, by operating on a digital platform characterized as a market leader (e.g., Alibaba) connecting many other firms, entrepreneurs could develop experience in areas such as the exploration of new ideas and exploitation of new international entrepreneurial opportunities. These studies established the potential efficacy of an entrepreneur's digital competence, capabilities, and experience in driving their firm's early and rapid internationalization.

3.3.2. Early internationalization process

We found 71 articles whose primary focus lay on investigating the early internationalization process from a certain digital perspective. Table 2 provides a summary of the identified studies on early internationalization processes at the interface of digitalization. The studies provided insights into how the Internet and other mobile technologies enabled a firm's early and rapid internationalizing activities from inception.

The reviewed articles suggested that early internationalization processes could be assisted by the Internet on the input side (e.g., international knowledge acquisition, opportunity recognition), output side (e.g., management of foreign marketing activities, overcoming the liabilities of foreign market entry), and within firms themselves (e.g., foreign entry modes and strategy development, marketing capabilities' development, business model development) (Etemad, Wilkinson & Dana, 2010). In this respect, the most important difference between EIFs and LIFs seemed to reside in the pace and variety of digitally supported internationalized activities, with digitalization supporting early internationalizing behavior and fast-paced internationalization expansion activities. Due to global technological competence, when digitalization is used for the management of foreign marketing activities, EIFs can expand faster internationally than LIFs (Knight & Cavusgil, 2004;

Table 2
Early internationalization processes.

Activities (Themes)	Article count	Digitalization and early internationalization processes	Researchers
Entrepreneurial opportunity recognition	3	Influence of Internet capabilities in entrepreneurial opportunity recognition	Bianchi et al. (2017); Glavas et al. (2017); Mostafa et al. (2005)
Foreign entry modes and strategy development	23	Influence of digital technology on foreign market entry and strategy development	Jaw & Chang (2006); Morgan-Thomas et al. (2004); Wittkop et al. (2018); Gabrielsson et al. (2011); Wentrup (2016); Yoos (2018); Grönroos (2016); Lee, Falahat & Sia (2019); Zhang et al. (2008); Foscht et al. (2018); Neubert (2018); Deng et al. (2016); Teixeira et al. (2014); Arenius et al. (2005); Mahnke et al. (2003); Ojala et al. (2018); Chetty & Campbell-Hunt (2004); Pezderka & Sinkovics (2011); Maltby (2012); McCormick & Somaya (2020); Vadana et al. (2021); Stallkamp & Schotter (2021); Crespo, Crespo, Silva & Nicola (2023)
Management of foreign marketing activities	28	Influence of digital technology in online channel support and sales, communication, networking, market research, sales, and image enhancement of EIFs	Tanev (2012); Houman (2005); Hinson & Sorensen (2006); Brasil, Ogasavara, Oliveira, Tassigny & Fontenele (2013); Hinson et al. (2007); Servais, Madsen & Rasmussen (2006); Bennett (1998); Gabrielsson et al. (2004); Saban & Rau (2005); Neubert (2018); Pini et al. (2018); Bianchi et al. (2016); Hamill (1997); Sinkovics et al. (2013); Wang et al. (2011); Zhang et al. (2013); Lu & Julian (2007); Sharma, Taiani & Sariteke (2006); Sharma (2005); Kevin Tseng & Johnsen (2011); Zhou & Charoensukmongkol (2020); Eid et al. (2020); Alarcón-del-Amo et al. (2018); Saban & Rau (2005); Kotha et al. (2001); Deng et al. (2022); Galkina et al. (2023); Alarcón et al. (2024)
Development of marketing capabilities	2	Influence of digital technology in development of international marketing capabilities	Prasad et al. (2001); Jean et al. (2019)

(*continued on next page*)

Table 2 (*continued*)

Activities (Themes)	Article count	Digitalization and early internationalization processes	Researchers
Development of business model	4	Influence of digital technology in business model development	Andersson et al. (2014); Autio (2017); Morgan-Thomas & Bridgewater (2004); Anwar (2017)
International knowledge acquisition	8	Influence of digital technology in knowledge generation and acquisition	Prashantham (2005); Tran et al. (2016); Glavas et al. (2019); Moen et al. (2003); Loane (2005); Hinson et al. (2007); Hu, Filipescu & Pergelova (2024); Ballerini, Herhausen & Ferraris (2023)
Overcoming liabilities of foreign market entry	3	Influence of digital technology in mitigating liabilities of foreign market entry	Arenius et al. (2005); Stallkamp & Schotter (2021); Fraccastoro, Gabrielsson & Chetty (2021)

Wentrup, 2016). Furthermore, because of the absence of existing domestic relational ties, EIFs can find it relatively easier to generate value by creating and coordinating a network of users, via the construction and management of digital platforms in overcoming the liabilities of foreign market entry (Hervé, Schmitt & Baldegger, 2020).

The Uppsala Internationalization Process model and research on early internationalization (Born Global and International New Venture approaches to internationalization) have both emphasized that a firm's speed of internationalization depends on its ability to acquire new knowledge about foreign markets (Johanson & Vahlne, 1977; 2009; Autio et al., 2000). Considering the crucial importance of knowledge to both theoretical perspectives, the influence of digitalization in the acquisition of international knowledge might not be that different between them. However, in line with the LAN argument posited by Autio et al. (2000), EIFs can use digital technology to acquire international knowledge earlier and faster than LIFs. In addition, the absence of existing domestic routines creates the potential for EIFs to capture and disseminate a considerable amount of data using the Internet as a medium (Neubert, 2018; Glavas et al., 2019).

3.3.3. *Outcomes of early internationalization*

The reviewed papers illustrated the importance of digital technology adoption contributing to post-entry internationalization speed, international market performance, and international financial performance (see Table 3).

First, we found six studies on post-entry internationalization speed (i.e., Deng & Wang, 2016; Hossain, Azam & Quaddus, 2021; Neubert, 2018; Mihailova, 2022; Mithani, 2023; Liu, Ying, Ying, Wang & Chen, 2024), which is the time elapsed between the first foreign market entry and subsequent international activities (Zahoor & Al-Tabbaa, 2021). Casillas and Acedo (2013) conceptualized internationalization speed into three dimensions: speed of change in the breadth of a firm's international markets, in the growth of a firm's international commercial intensity (i.e., growth in foreign sales as a percentage of total sales), and in a firm's commitment of resources abroad. The studies inform the efficacy of digitalization in improving decision-making efficiency and strategy optimization for the evaluation and rapid development of new markets. Neubert (2018) showed that digitalization enabled lean global startups to use social data (market networks) and intellectual data (market knowledge) to predict future market development. In the past, firms had to spend huge sums traveling to gather foreign market information. However, the influx of Internet-enabled tools such as social media, big data, and predictive analytics allows lean global startups to create knowledge and networks at a faster rate, which in turn increases the efficiency of decision-making processes and speed of internationalization (Gnizy, 2019; Neubert, 2018). Digitalization also offers the creation of e-marketplaces for firms to search out customers, conduct a business transaction, and expand international networks (Loane, 2005; Kevin Tseng & Johnsen, 2011). A significant underlying mechanism that supports the power of digitalization in influencing post-entry internationalization speed is data-driven decision-making based on data analytics, which enables the adaptation and scaling of born digitals (Mihailova, 2022; Monaghan et al., 2020). Furthermore, data analytics facilitated by artificial intelligence allow EIFs to expand the scope of new knowledge, thereby promoting the creation, application, and dissemination of knowledge, and accelerating the redundancy of existing knowledge to enhance adaptability to global dynamics (Liu et al., 2024). Second, we found eight studies (i.e., Bianchi & Mathews, 2016; Glavas, Mathews & Bianchi, 2017; Denicolai, Zucchella & Magnani, 2021; Hamill, 1997; Neubert, 2018; Sinkovics, Sinkovics & Jean, 2013; Pini, Dileo & Cassetta, 2018; Wang, Khalil, Blankson & Cheng, 2011) on international market performance. The importance of digitalization to international market performance is reflected in the effectiveness of the Internet, online channels, big data, and predictive analytics in internationalization activities. For example, Neubert et al. (2018) found that

Table 3
Outcomes of early internationalization processes.

Themes	Article count	Digitalization and early internationalization outcomes	Researchers
Post-entry internationalization speed	6	Use of digital technology to enhance the decision-making process; resource and strategy optimization influence rapid development into new markets.	Deng & Wang (2016); Neubert (2018); Mihailova (2022)Hossain, Azam & Quaddus (2021); Mithani (2023); Liu et al. (2024)
Positive international market performance	8	Efficient digital reorganization in international activities (e.g., using digital technology such as the Internet, AI, big data, and predictive analytics to evaluate markets, promote transparency, realize international opportunities, support marketing activities and sales) has a positive influence on international market performance.	Neubert (2018); Pini et al. (2018); Glavas et al. (2017); Bianchi et al. (2016); Hamill (1997); Sinkovics et al. (2013); Wang et al. (2011); Denicolai et al. (2021)
Positive international market and financial performance	4	Efficient and effective integration of digital technology to mitigate costs and the development of international marketing capabilities has a positive impact on export marketing performance, profitability, sales growth, sales volumes, market share, and strategic global competitiveness.	Lu & Julian (2007); Mostafa et al. (2005); Prasad et al. (2001); Zhang et al. (2013)

the effective use of big data and predictive analytics to evaluate markets supported strategic international decision-making processes, which enhanced export performance and international competitiveness. The reviewed studies suggested that the efficacy of digitalization in promoting transparency, developing opportunities, making market information available, and promoting an online presence led to positive international market performance.

Third, we found four articles addressing both international market performance and international financial performance (i.e., Lu & Julian, 2007; Mostafa, Wheeler, & Jones, 2005; Prasad, Ramamurthy, & Naidu, 2001; Zhang et al., 2013). The studies showed that effective Internet usage in tandem with cost reductions boosted export marketing performance, profitability, sales growth, sales volumes, market share, and strategic global competitiveness. Cost reductions in the context of digitalization included using Internet-enabled communication technology to reduce the cost of communicating with foreign customers/suppliers, and tools such as big data and predictive analytics to reduce the cost of gathering information on foreign competitors (Neubert, 2018).

Therefore, several of the reviewed studies investigated the crucial role of digitalization in early internationalization-related outcomes. They revealed that the efficient integration of digital technology to nurture international marketing capabilities positively impacts export performance metrics, including (export) sales growth, market share, the achievement of strategic objectives, and profitability.

3.3.4. Exploring the linkage between digital-related antecedents and early internationalization processes

This section explores the linkage between digital-related antecedents and early internationalization processes. First, among the reviewed articles, we found three addressing the link between digital capabilities and opportunity recognition (i.e., Bianchi et al., 2017; Glavas et al., 2017; Mostafa et al., 2005). Glavas et al. (2017) found that Internet capabilities, referring to the use and leveraging of Internet technologies to support the international business processes of the firm, enabled international entrepreneurial firms to realize international opportunities. Those opportunities translated into initiatives to create new businesses in digital and Internet-enabled environments (Reuber & Fischer, 2011), find information about buyers, support the buying process, and build positive brand meanings. Glavas and colleagues contributed to remedying the shortage of research linking international opportunity recognition to the internationalization of firms operating in Internet-based environments (Glavas et al., 2017; Glavas & Mathews, 2014).

Second, 21 studies investigated the relationship between digital technology and foreign entry modes, strategies, and decisions of EIFs. The group includes both conceptual (e.g., Grönroos, 2016; Jaw & Chang, 2006) and empirical examples (e.g., Gnizy, 2019; Mahnke & Venzin, 2003; Neubert, 2018). The reviewed studies showed that the Internet offers incredible opportunities for firms to engage in Internet-based e-marketplace applications as a form of foreign market entry and resource maximization (Hossain et al., 2021). Mahnke et al. (2003) found that some born-global firms, such as eBay, preferred to enter foreign markets that had high Internet penetration levels and advanced telecommunication infrastructures, due to minimal transportation costs associated with digital information goods. These studies have contributed to our better understanding of how the Internet, and other mobile technologies, have enabled new entry strategies allowing firms to internationalize their activities globally almost from their inception. The studies also revealed that EIFs could adopt an Internet-based sales channel strategy to serve global markets. Through a digital technology, some EIFs opted for Internet-based direct exporting and e-commerce solutions, where the firm could operate in a foreign country without having to be physically present there. Further, big data analytics has challenged traditional management perceptions that suggest a chosen strategy determines the selection of data, and instead provides data on which firms develop their strategies (Ginzy, 2019). The studies also bring to bear the impact of social media developments on online strategies and foreign markets. Maltby (2012) reported how digital social media enabled entrepreneurs to develop effective mutual relationships with customers and partners, helping them increase their tacit knowledge and develop marketing strategies for rapid internationalization.

Third, five studies explored the linkage between digital technology and business model development (i.e., Anwar, 2017; Andersson, Evers & Kuivalainen, 2014; Autio, 2017; Hasselwander, Bigotte & Fonseca, 2022; Morgan-Thomas & Bridgewater, 2004). The three characteristics of digital technologies—digital artifacts, digital platforms, and digital infrastructures—create opportunities to develop a layered modular architecture business model for platform-based international new ventures (Nambisan, 2017; Ojala et al., 2018). Alibaba's business model, labeled the Alibaba phenomenon, is a typical example of the linkage between digital technology and business model development (Anwar, 2017). Due to internetization (Etemad et al., 2010), Alibaba has been able to fine tune its technology-based online platform and business model to expand internationally, enabling it to develop web portfolios of diverse online platforms for different product offerings and services. In sum, the reviewed studies illustrated the key role of the Internet in the successful implementation of new business models, that is, virtual export channels.

Fourth, 25 studies assessed the linkage between digital technology and the management of foreign marketing activities (e.g., Gabrielsson & Gabrielsson, 2011; Hinson, Sorenson & Buatsi, 2007). These studies have contributed to a better understanding of how digital technology has changed the conventional way of managing foreign transactions. Before the era of digitalization, indirect export and related foreign transactions were managed using intermediaries and agents. However, the reviewed studies indicated that EIFs had adopted the Internet as a means of smoothing delivery and payment. Examples included receiving revenues, payment for exports, or raw materials used in production (e.g., Gabrielsson & Kirpalani, 2004; Hinson et al., 2007). Similarly, several studies provided evidence on how digitalization enabled EIFs to communicate cheaply with stakeholders, and to meet the express and implied needs of global customers (Tanev, 2012). For example, Saban and Rau (2005) reported that websites enabled firms to publish company and product information, and interact with customers in foreign markets. Also, websites had a positive influence on firms' international presence, in that the more data were sent and received by visitors to the firm's website, the more knowledge the firm acquired on visitors to support and expedite its internationalization decision-making process (Kotha, Rindova & Rothaermel, 2001).

Fifth, six studies examined the linkage between digital technology and international knowledge acquisition (i.e., Glavas et al., 2019; Hinson et al., 2007; Loane, 2005; Moen et al., 2003; Prashantham, 2005; Tran et al., 2016). These contributions have enhanced our knowledge on the role of digital technology in knowledge acquisition activities, such as searching for information about customers, distributors, partners, and competitors, which are also part of the internationalization process. Glavas et al. (2019) reported that Internet-enabled experiences allowed the entrepreneur to generate both explicit and tacit forms of knowledge for the pre-, early-, and later phases of the internationalization process. Using an Internet-enabled platform such as Zoom or Skype for Business to support communication and collaboration between firms and customers, allows firms and/or entrepreneurs to benefit from improved learning experiences that lead to knowledge generation, which can potentially accelerate the internationalization process.

Sixth, two studies probed the linkage between digital technology and the development of marketing capabilities (i.e., Prasad et al., 2001; Jean et al., 2019). For instance, Prasad et al. (2001) demonstrated the ability of firms to integrate Internet technology into marketing activities, strengthening the influence of market orientation on the firms' marketing competencies. These studies emphasized the importance of marketing capabilities in the international market entry of EIFs, and the functionality of digital technology as a supportive mechanism, and thus extended knowledge on the efficacy of digital technology in developing

international marketing capabilities.

Finally, two studies addressed the linkage between digital technology and how liabilities associated with foreign market entry could be mitigated (i.e., Arenius, Sasi & Gabrielsson, 2005; Stallkamp & Schotter, 2021). Digital platforms were found to generate within-country and cross-country network externalities for EIFs to overcome the liability of foreign market entry (Stallkamp & Schotter, 2021). Arenius et al. (2005) reported that the Internet could provide a way to reduce the effects of the liability of foreignness (LOF), and resource scarcity. The study also provided an alternative perspective on how the liabilities of smallness and newness could be mitigated. A firm using the Internet as its main sales channel, or as a support system for sales and marketing subsidiaries in target markets, could reduce the required resources and costs. Further, the Internet created market pull by raising awareness of the firm's image and services (Arenius et al., 2005).

3.3.5. *Exploring the linkage between digital-related antecedents and outcomes of early internationalization*

Nine studies focused on examining the linkage between digital technology capability as a firm-level antecedent and the outcomes of early internationalization (e.g., Hervé et al., 2020; Langseth et al., 2016). Four of those studies showed that the use of digital technologies and social media tools had a positive impact on the firms' export market performance (i.e., Eid et al., 2020; Mahmoud, Adams, Abubakari, Commey & Kastner, 2020; Mostafa et al., 2005; Zhang et al., 2013). According to Mostafa et al. (2005), however, the digital technology–export performance relationship was moderated by high levels of entrepreneurial orientation. Thus, the finding implied that firms with a strong entrepreneurial orientation were more likely to use the Internet to develop export market opportunities. That, in turn, would lead to better export performance, in terms of export sales growth, export profitability, achieved strategic objectives, perceived success, and competitors' perceptions of the firm's export success, than was generally realizable for firms with a weaker entrepreneurial orientation. Eid et al. (2020) and Mahmoud et al. (2020) explained the mechanism through which digital social media impacted positive export performance. Eid et al. (2020) reported that the mediating channels which precipitated social media usage had a positive impact on export performance, in terms of overall profit, market share, and export sales. The employment of social media tools enabled firms to establish higher quality international business contacts, better understand customers' views and preferences, create brand awareness, and gather knowledge on the competition in the international market. Mahmoud et al. (2020) also identified trust and commitment as key elements through which social media positively impacted export performance, as they generated firms' willingness to share and cooperate with others on social media.

In contrast, six studies were centered on post-entry internationalization speed (i.e., Anwar, 2017; Hervé et al., 2020; Langseth et al., 2016; Rialp-Criado, Alarcon-del-Amo & Rialp Criado, 2020; Stallkamp et al., 2022; Westerlund, 2020). Langseth et al. (2016) identified the enabling force of technological advances, that is, the Internet and other digital technologies to strongly impact the speed of internationalization. The study also showed that the relationship was moderated by foreign market knowledge and tie strength in networks, and mediated by entrepreneurial actor perceptions/owner-managers' global vision. Rialp-Criado et al. (2020) found a positive influence of speed of social media usage on speed of internationalization, albeit moderated by the industry in which the firm operated and its export intensity.

3.3.6. *Exploring the linkage between processes and outcomes of early internationalization*

The first linkage, addressed by two studies, was between opportunity recognition and outcomes of early internationalization (Glavas et al., 2017; Mostafa et al., 2005). According to those studies, effective Internet capabilities and resources for opportunity recognition positively influenced international market performance. The underlying mechanism originated from the pivotal role of Internet-related capabilities in the creation of new businesses in digital and Internet-based environments, and the discovery of information about buyers, in order to support the buying process and build positive brand meanings online (Reuber & Fischer, 2011). Recognizing international opportunities beyond a firm's domestic market can foster the development of new markets, new customers, meeting new market needs, and resolving other economic inefficiencies (Knight & Liesch, 2016).

The second linkage focuses on the development of foreign entry-mode strategies and the outcomes of early internationalization. Five studies addressed this issue (Deng & Wang, 2016; Neubert, 2018; Vadana, Kuivalainen, Torkkeli & Saarenketo, 2021; Wittkop, Zulauf & Wagner, 2018; Yoos, 2012). They highlighted how the use of digital technology influenced rapid development into new markets by enhancing foreign entry strategy optimization. For example, Yoos (2012) reported that born globals, that is, technology startups, usually combined the use of the Internet with a focal relationship with a multinational, distributors, resellers, or a direct sales force, in order to enter foreign markets. Among born digitals, Vadana et al. (2021) reported that the digitalization of value chain activities facilitated the reuse and mixing of the resources at hand to create new opportunities for the development of international growth. Wittkop et al. (2018) also outlined factors such as firm-specific capabilities and resources, ways to create value, and the individual customer interface to impact the foreign market entry strategies of digital-based firms.

The third linkage should focus on the development of new business models and early internationalization outcomes. Some of the reviewed studies examined the emergence and development of new business models as facilitated by digital technology. However, a further linkage to international performance or post-entry internationalization speed is generally overlooked. Only Autio (2017) highlighted the importance of digital infrastructures to experimentation with cross-border business models, connecting the practice with international new ventures achieving sustainable competitive advantage.

The fourth linkage focuses on the management of foreign marketing activities and early internationalization outcomes. Eleven studies addressed a linkage between the activities' management and international marketing performance (Bianchi & Mathews, 2016; Hamill, 1997; Lu & Julian, 2007; Neubert, 2018; Pini et al., 2018; Sinkovics et al., 2013; Wang et al., 2011; Zhang et al., 2013). The studies reported that digital technology influencing the management of foreign marketing activities enhanced international market performance. Using digital technology, that is, the Internet, for marketing activities encapsulated online channel support, communication, networking, market research, sales, and image enhancement (Lu & Julian, 2007). Neubert (2018) showed that the effective use of big data and predictive analytics to evaluate markets generated data that supported international strategic decision-making processes, which in turn enhanced export performance and international competitiveness.

The fifth linkage focuses on international knowledge acquisition. While the Internet usually plays a highly relevant role as a knowledge building tool in the internationalization process of EIFs, with regard to marketing, distribution, business processes, market intelligence, and competitor analysis activities (Glavas et al., 2019; Loane, 2005), studies that explore the linkage of international knowledge acquisition and international performance or post-entry internationalization speed are still lacking. The only study found to date was that of Tran et al. (2016), who showed how digital platforms, in this case Facebook, adopted crowdsourced translation to accelerate rapid internationalization. Facebook, for instance, outsourced the translation of some of its online pages to Internet users around the world via a crowdsourcing translation model (Anastasiou & Gupta, 2011).

The sixth linkage focuses on early internationalization outcomes associated with overcoming the liability of foreign market entry. Arenius et al. (2005) addressed the linkage between the mitigation of liabilities of operating in a foreign market and internationalization speed,

demonstrating the role of the Internet in reducing the LOF and resource scarcity, which could foster rapid internationalization. The Internet facilitates foreign market entry that takes place "in the virtual rather than the real or spatial domain" (Yamin & Sinkovics, 2006, p. 340). It increases the speed of service delivery and access to talent across time zones for firms in the global IT and business process outsourcing industry (Manning, Larsen & Bharati, 2015). The findings refined and extended the LOF theoretical framework to yield a more comprehensive understanding of the role of digital technology. Amidst the benefits of the Internet, however, Yamin and Sinkovics (2006) warned of a potential fall into a "virtuality trap": the perception of the internationalizing firm that using online channels obviated the need for a physical presence as a sales channel in export marketing. As posited by Drašković, Fraculj and Šebek (2024), the absence of a local presence and the inability to conduct face-to-face meetings can sometimes impede marketing activities, given that some foreign clients prefer face-to-face interactions. Similarly, Galkina, Atkova and Ciulli (2023) put forth the proposition that interpersonal business relations conducted in physical locations are likely to result in the formation of a user network in the digital space for international digital platform firms. Rong, Kang and Williamson (2022) raised the concern of the liability of ecosystem integration, referring to the costs and challenges digital foreign firms encountered in developing a necessary stakeholder ecosystem in the host market. This was caused by the differences in business models deployed in many types of digital industry (Rong et al., 2022).

Finally, the seventh linkage focuses on the development of marketing capabilities and early internationalization outcomes. We found two relevant studies (Jean & Kim, 2019; Prasad et al., 2001). Both demonstrated a linkage between the development of marketing capabilities and international marketing performance, in terms of sales growth, export performance, market share, the achievement of strategic objectives, and profitability. The Internet provides the potential for information acquisition, sharing, and dissemination, all of which are essential for the development of marketing capabilities. For example, Prasad et al. (2001) showed that the integration of Internet technology into marketing activities influenced a firm's market orientation and marketing competencies, which in turn positively impacted its export performance. Also, according to Jean and Kim (2019), marketing capabilities transformed the information generated by the Internet into desirable internationalization outcomes. In sum, the reviewed studies broadened our understanding of how the Internet can benefit marketing capabilities and early internationalization outcomes.

3.4. Methods

This section addresses the fourth research question in our study: *How can the methods of the reviewed studies be described?* Studies on early internationalization at the interface of digitalization initially employed quantitative methods, particularly surveys. Research later gravitated toward more qualitative studies, mainly using the case study method. Recently, longitudinal qualitative case studies, web searches, and data mining have been adopted. Altogether, 37 of the reviewed studies were qualitative, ranging from single cases (e.g., Tabares et al., 2015) to multiple case studies (e.g., Langseth et al., 2016). Forty studies were quantitative, with 36 employing survey methods (e.g., Zhang et al., 2008). Similarly to the qualitative studies, most of the quantitative studies were cross-sectional, with one longitudinal study (i.e., Deng & Wang, 2016), and one mixed approach study (i.e., Mozas-Moral et al., 2016). Amongst the quantitative studies, the scholars operationalized digitalization in different ways, arising from how different conceptual meanings define digitalization, and the role that digitalization plays in the context of internationalization. Two of the studies (i.e., McCormick & Somaya, 2020; Brieger et al., 2022) operationalized digitalization using a dichotomous scale. For example, to capture whether the entrepreneur used the Internet to sell products or services.. The other quantitative studies (e.g., Hervé et al., 2020; Saban & Rau, 2005) operationalized digitalization using a non-dichotomous self-evaluating scale. Hervé et al. (2020) used a four item scale (processes and infrastructure, people and culture, digital sales, customer involvement) related to companies' various strategic pillars to operationalize the degree of digitalization. Finally, digitalization was operationalized by Saban and Rau (2005) as the functionality of websites, in terms of publishing (i.e., using a website to distribute information on the firm or its products), interactivity (i.e., interaction with customers), transactions (i.e., facilitation of exchanges with customers), and process improvement (i.e., improvement of the efficiency of the firm).

The reviewed studies showed that the impact of digitalization on the outcomes of early internationalization is somewhat fragmented. Some of the qualitative studies conceptualized early internationalization performance in terms of resource maximization, profitability, sales growth, market share, and general international success (Zhang & Tansuhaj, 2007; Hossain, Azam & Quaddus, 2021). Within the quantitative studies, some of the measurements of early internationalization performance were subjective, with researchers using self-reported subjective questions as a performance proxy (Sinkovics et al., 2013; Wang et al., 2011; Zhang & Tansuhaj, 2007). In contrast, some performance measurements were both objective and subjective (e.g., Bianchi et al., 2016). Katsikeas et al. (2000) discussed the logic of performance assessment through the themes of effectiveness (i.e., the extent to which the firm's objectives are met); efficiency (i.e., the ratio of performance outcomes (e.g., financial goals) to the efforts required to achieve them); and adaptiveness (i.e., the firm's ability to respond to changes in the environment). Our literature review also identified effectiveness and efficiency as performance measurements (e.g., Neubert, 2018). In sum, the reviewed studies have contributed to our understanding of the efficacy of digital technology in promoting efficiency and effectiveness in early internationalization.

4. Future research directions

In this section, we address our fifth research question: *How can the information gathered and extracted from the reviewed articles and validated by a confirmatory survey among their authors be used to develop a conceptual model and a comprehensive future research agenda?* Taking the TCCM analytical review framework into consideration, we have grouped several areas meriting further investigation into four broader future research avenues: 1) theoretical approaches, 2) context, 3) characteristics, and 4) methodological approaches. Each broader research avenue addresses underlying specific questions derived from our review and synthesis of the relevant literature. In addition, we complemented these broader areas with the results from our confirmatory survey. Table 4 summarizes the complete results derived from the survey addressed to expert authors in the field.

The averages presented in Table 4 were calculated on the basis of the individual questions. Consequently, for each question, the total number of responses was calculated by summing all the individual responses and dividing by the number of responses obtained for the given question. As our key decision criterion, the items assessed to have an average rating of 3 or above were considered important in contributing to the future theoretical and empirical development of the research area.

4.1. Theoretical approaches

Our review clearly indicates that no single influential theory drives this research domain in full. This finding confirms Keupp and Gassmann's (2009) assertion that the research on early internationalization is multifaceted and fragmented in terms of unifying themes or theoretical paradigms. As a significant portion of our reviewed studies was not associated with clear theoretical paradigms, we argue for the explicit use of theoretical approaches in the study of the phenomenon, since theories present a systematic method to understand behaviors and events. We need to advance from purely descriptive studies on the use of digital

Table 4
Summary of Survey Results.

		Average [1)]	Standard deviation
Theoretical approaches	Cross-fertilizing theories from information economics and other disciplines to study early internationalization and digitalization.	4.05	4
	Adopting capability-based theories, for example, dynamic capability theory, and learning advantage of newness (LAN) to study early internationalization at the interface of digitalization.	3.61	4
	Applying institutional theory to examine institutional factors that affect the use of digital technology tools in the internationalization process of new ventures.	3.45	4
	Applying role theory in sociology to uncover how digitalization influences the role of the entrepreneur in both prior international market entry and the entry phase.	3.08	3
	Strategic IT planning framework.	a)	a)
	Technology adoption model for early internationalization.	a)	a)
Characteristics	***Digital-related antecedents of early internationalization***		
	How does the integration of the entrepreneur's and firm's digital capabilities affect early internationalization?	4.18	0.98
	How does website traffic drive the early internationalization of firms?	3.16	1.15
	What is the influence of IT infrastructure on early internationalization?	a)	a)
	What is the effect of different types of digital/social media platforms/interactive chats on early internationalization?	a)	a)
	Early internationalization processes		
	How can digitalization engender the adaptation of entry-strategy choices of early internationalizing ventures?	4.11	0.98
	How can entrepreneurs achieve a desirable balance between the opportunities and challenges of digitalization in foreign transaction management and communication?	4.11	0.92
	How do big data analytics, blockchain technology, 3D printing, artificial intelligence, or robotics influence early internationalization processes and outcomes?	3.05	1.13
	How does the utilization of digital technology affect geographic scope among EIFs?	a)	a)
	How do digitalization or digital channels affect transaction costs?	a)	a)
	The need to study digitalization strategy in a rapidly changing environment.	a)	a)
	Training and promoting a digital culture in EIFs.	a)	a)
	Outcomes of early internationalization		
	How does the influence of digital technology on business model development influence the post-entry internationalization speed of EIFs?	4.13	0.78
	How does the utilization of digital technology influence post-entry internationalization speed and the survival of EIFs?	4.01	0.72
	How to quantify the efficacy of digital processes after the initial foreign market entry.	3.79	1.04
	How does international knowledge acquisition at the interface of digitalization influence the international performance or post-entry internationalization speed of EIFs?	3.04	1.00
	Influence of digital technology accessibility on financial performance.	a)	a)
Context and methodological approaches			
	More longitudinal and process studies are required.	4.26	0.92
	More cross-country comparison studies between advanced economies and developing nations are required.	3.95	1.18
	Mixed study approaches are required.	3.92	1.08
	How do organizational-, industry-, or country-specific factors influence the implementation of digitalization in the management of foreign marketing activities?	3.79	1.07
	Need to compare and contrast B2B and consumer firms.	a)	a)
	Thick, in-depth, lengthy face-to-face interviews with a sizable number of marketing managers to understand how they perceive the importance of digitalization and internationalization of their firms and their offerings.	a)	a)
	Flexible pattern matching.	a)	a)

Note: [1)] Scale of 1–5 used in survey: 1 = not important; 2 = slightly important; 3 = moderately important; 4 = important; 5 = very important.
a) Those without standard deviations and average score are the new issues or initiatives proposed by the respondent.

technologies by EIFs to a deeper theoretical understanding of the key mechanism and reasons for the underlying relationships.

A large portion of the review findings clearly defied the key prediction of the Uppsala Internationalization Process Model, in the form of slow and incremental internationalization. Digitalization has critically contributed to the early and rapid international expansion of firms by reducing the psychic distance assumption on which the Uppsala model strongly leans (Wentrup, 2017; Mihailova, 2022). Using the Internet to

foster virtual interactions with remote customers and partners has largely reduced both social and cultural distance (Dethine et al., 2020; Yamin & Sinkovics, 2006). Furthermore, the Internet also mitigates the high uncertainty that causes traditional firms to internationalize sequentially or incrementally, and has enabled EIFs to skip stages, create new businesses in digital and Internet-based environments, discover new information about buyers, and supports a more rapid buying process (Reuber & Fischer, 2011; Glavas et al., 2017; Wentrup, 2017). The fact that digital technology can undermine the validity of the original Uppsala Internationalization Process Model does not mean that it cannot be revisited in the light of digitalization. Given the capacities of digital technology to support networking (Lu & Julian, 2007; Maltby, 2012), scholars are encouraged to focus on how digitalization mitigates the liability of network outsidership, strongly emphasized by Johanson and Vahlne (2009) as the main root of uncertainty in their revised version of the Uppsala Model.

The concept of liabilities of foreignness has widely illuminated how foreignness affects the actions and strategic decisions of internationalizing firms. Zaheer (1995) described how liabilities of foreignness encompassed "all additional costs a firm operating in a market overseas incurs that a local firm would not incur" (p. 343). This perspective asserted that a foreign firm would not perform as strongly as a domestic firm because it is disadvantaged in terms of legitimacy, and its familiarity with the local business environment and local cultural norms (Zaheer, 1995). However, in an epoch where digital transformation has drastically changed the face of business operations worldwide, it is essential that scholars further investigate how digitalization impacts liabilities of foreignness. The efficacy of digitalization in promoting operational efficiency and flexibility may imply great benefits for EIFs in overcoming liabilities of foreignness (Autio, Nambisan & Thomas, 2018). Furthermore, reflecting on the need to overcome liabilities of foreignness, future studies should also focus on how EIFs and internationalizing born digitals can overcome the liability of ecosystem integration (Rong et al., 2022), which would contribute to our understanding of the 'dark side' that such firms may also encounter when entering new host countries.

The efficiency of the Internet in reducing export barriers is a main driver of its employment as an alternative to developing a physical presence abroad (Grewal, Comer & Mehta, 2001; Sinkovics et al., 2013). This situation provides scholars with a very good option to apply in future studies on the early internationalization phenomenon a wide range of technology adoption theories emerging in the field of information systems (such as the task-technology fit theory), in order to clarify what drives the adoption of digital technologies by EIFs, and how the firms use those technologies to accelerate internationalization processes and performance.

Future studies should also apply capability-based theories deeply to unveil the intersection of digital technologies and earliness of firm internationalization. Capability-based theories that could advance our understanding of the growth and survival mechanisms employed by EIFs in foreign markets include the Dynamic Capability perspective (Teece, Pisano & Shuen, 1997), and the organizational learning-related notion of LAN (Autio et al., 2000). We also advocate cross-fertilization with theories derived from other fields, for example, Information Economics, Institutional Economics, and Sociology to further investigate this phenomenon.

According to the survey, in terms of developing current theoretical approaches, respondents indicated that cross-fertilizing with theories from other areas and disciplines is one of the most important areas in which to conduct further research. Respondents particularly highlighted *applying theories from Information Economics (such as Signaling Theory) to evaluate, for instance, the digital platform-based internationalization of EIFs* (average value 4.05 on a 5-point scale, anchored by not important (1) and very important (5)). Other items attracting considerable interest included *adopting capability-based theories to study early internationalization at the interface of digitalization* (average value 3.61), *applying the Institutional Theory to examine institutional factors that affect the use of digital technology tools in the EIF internationalization process* (average value 3.45), and *the sociological Role Theory to discover how digitalization influences the role of the entrepreneur both prior to international market entry and in the post-entry phase* (average value 3.08).

In addition, the experts proposed the adoption of a strategic IT planning framework and technology adoption models. The implementation of digital technologies necessitates the formulation of tactical or short-term decisions within the IT domain (Boar, 2002). Consequently, the deployment of a strategic IT planning framework in the initial stages of internationalization is paramount in enhancing our comprehension of digitalization in EIF operations.

4.2. Context

Context is very important in internationalization research because context-related trends can heavily influence firms' internationalization (Nummela, Saarenketo & Loane, 2014; Knight & Liesch, 2016; Welch, Paavilainen-Mäntymäki, Piekkari & Plakoyiannaki, 2022). Internationalization studies are usually contextually limited, since countries may differ widely in terms of governmental support and infrastructures to promote the internationalization process of firms (Oliva et al., 2022; Jean et al., 2020).

Our review study has revealed how dispersed and heterogeneous the context was in which earlier studies on digitalization and early internationalization had been conducted. Future research should provide a more complete and balanced view of digitalization and internationalization (Westerlund, 2020; Stallkamp et al., 2022), conducting not only single-country studies but mainly cross-country comparisons of how social, environmental, economic, and institutional factors influence early internationalization at the interface of digitalization in different settings (e.g., countries, sectors). Organizational-, industry-, and/or country-specific factors facilitating or hindering digitalization for early internationalization are significant areas for future comparative studies. For example, further research is needed on how conflicting institutional demands and specific regulations across countries may influence the implementation of digitalization by EIFs in their management of foreign entry modes and marketing activities (Birkinshaw, 2022; Holm, Decreton, Nell & Klopf, 2017; Rong et al., 2022).

Therefore, we call here for more comparative research to better understand how contextual similarities and differences may affect the impact of digital technologies and capabilities on the internationalization processes and outcomes of EIFs, especially in comparison with those of LIFs. Similarly, as proposed by survey respondents, there is still a need to compare and contrast B2B and consumer firms, for example, in the employment of social media in internationalization processes. This is due to a paucity of empirical evaluation of social media usage in the context of SMEs engaged in business-to-business (B2B) transactions (Eid et al., 2020).

According to feedback sought from the survey respondents, the research question on *how organizational-, industry-, or country-specific factors influence the implementation of digitalization in the management of foreign marketing activities* drew significant interest amongst the surveyed researchers in the field (average value 3.79). More cross-country comparison studies between advanced economies and developing nations (average 3.95) was also ranked as an important future research endeavor. Sharp differences in the IT infrastructure and availability of digital technologies in advanced versus developing economies can be reasonably expected. Also, the fact that most EIFs from emerging and developing countries face institutional voids and barriers that hinder their foreign activities with EIFs from developed countries, which do not usually experience those challenges, makes such comparisons very interesting in the present era of digitalization.

4.3. Characteristics

4.3.1. Digital-related antecedents

At the firm level, current research on EIFs shows that the firms utilize their digital web capabilities and social media tools for early and rapid internationalization (e.g., Maltby, 2012; Tran et al., 2016). However, we found that the reviewed papers did not greatly expand on the long-term effect of having a corporate website, thus, more research should focus on how website traffic drives early internationalization and, subsequently, post-entry speed. In the survey, this research issue was also considered important by several of the respondents (average value 3.16). Respondents additionally proposed that studies should be conducted on the role of IT infrastructure in supporting the application of digital technologies, and the influence of digital/social media platforms and interactive chats on early internationalization, which extend beyond the scope of website traffic.

At the entrepreneur level, the way in which EIF founders and/or entrepreneurs acquire digital skills and competencies that may affect their firm's early internationalization processes and outcomes remains unclear. As the entrepreneur will continue to play a decisive role in the decision-making process of the EIF, it is imperative to study how that individual's digital competence is acquired and developed to meet the requirements of today's digitalized world. As also confirmed by the survey, more research is needed on how digital capabilities at the entrepreneur level can be augmented and/or integrated with those at the firm level, in order to explain early internationalization processes and outcomes (average value 4.18).

4.3.2. Early internationalization processes

The digital era has brought a new set of opportunities in the form of global digital platforms, data analytics, artificial intelligence, digital ecosystems, and new organizational structures. However, in line with Autio et al. (2021), our review shows that the influence of digital technology on early internationalization processes is excessively skewed toward examining the adoption of Internet-enabled communication technologies and e-commerce. Other newly emerging digital technologies, such as big data analytics, blockchain technology, 3D printing, artificial intelligence, additive manufacturing, and robotics (Autio et al., 2021; Hannibal, 2020) continue to be neglected. While all seem to offer great potential to extend the research domain, artificial intelligence in particular is emerging as a pivotal enabling and disruptive technology in SMEs. Consequently, it is facilitating decision-making and automating business processes, providing insight through data analysis, and engaging more deeply with customers and suppliers (Denicolai et al., 2021).

Also, while scholars have made abundant contributions related to the importance of digitalization to the early internationalization process, we found very few studies focused on how digitalization influences entry strategy choices. Sheth (2020) asserted that digitalization has meant the axiom "think global, act local" has been replaced by "think local, act global". In fact, there are early internationalizing born-digital platforms, for example, Uber, that can reach customers instantly and everywhere through the Internet. However, the fulfillment of their services also demands an on-the-ground presence, which means they have to adapt their international market entry modes and strategies locally (Birkinshaw, 2022; Domurath, Coviello, Patzelt & Ganal, 2020). Such adaptation will be possible as long as EIFs' entrepreneurs and managers demonstrate a learning goal orientation (Domurath et al., 2020). It would therefore be expedient for future studies to consider how digitalization engenders the adaptation of entry strategy choices to be made by EIFs. Due to the inherently complex and uncertain nature of the foreign market (Teece et al., 2024), adaptation versus standardization of entry strategy choices also calls for the need to study EIFs' digitalization strategy in a rapidly changing environment, as subsequently confirmed by respondents to our survey.

Future research on the adaptation and standardization of entry strategy choices, for example, Internet-based sales channels, should also seek to expand our current understanding of how EIFs manage their foreign marketing activities. This can be further extended to focus on how Internet-based sales channels affects transaction costs, a proposal backed by respondents. In our review of this research stream, we found that the theoretical contributions concerning the role of digitalization in the management of foreign marketing activities generally emphasized only the light sides, and not the 'dark sides' (Verbeke & Hutzschenreuter, 2021). Therefore, new studies addressing both the opportunities and challenges associated with digitalization, and how to achieve a desirable balance between them, would provide a fuller picture of its effects on foreign transaction management and communication.

According to the feedback obtained from the survey respondents, all the abovementioned research gaps merit further investigation. The surveyed researchers in the field highlighted the following research questions as amongst the most relevant for future research: *How do big data analytics, blockchain technology, 3D printing, artificial intelligence, or robotics, among others, influence early internationalization processes and outcomes?* (average value 3.05); *How can digitalization engender the adaptation of entry strategy choices of early international ventures?* (average value 4.11); *How can entrepreneurs achieve a desirable balance between the opportunities and challenges of digitalization in foreign transaction management and communication* (average value 4.11).

It is evident that digitalization in EIFs has been the subject of considerable research. However, a notable gap remains in the examination of digital culture, defined as the working environment shaped by digital tools and technologies (Llopis, Gonzalez & Gasco, 2004). In a similar vein, our survey respondents also recommended that future studies prioritize the development and promotion of digital culture in EIFs. We believe that by reinforcing the digital culture, EIFs can enhance their digital implementation, and, in turn, improve their international performance.

4.3.3. Outcomes of early internationalization

Research on the post-entry internationalization speed, maturity, and survival of EIFs has attracted increased attention from scholars in the last few years (Romanello & Chiarvesio, 2019; Freixanet & Federo, 2022). However, the role of digitalization in increasing the post-entry internationalization speed and growth/survival prospects of these firms remains largely unaddressed. The studies in our review focused on early internationalization outcomes revealed very limited research on the speed of internationalization and survival consequences of EIFs at the interface of digitalization. Therefore, more studies would be welcomed on how the utilization of diverse digital technologies influences EIFs' post-entry internationalization speed, long-term growth and survival, and reaching maturity in foreign markets. Prior research has shown how digitalized service providers skip sequential steps when moving into foreign markets, and increase their post-entry internationalization speed. Yet, more research should quantify the efficacy of such digital processes after the initial foreign market entry.

Furthermore, as noted above, different reviewed studies have established key linkages between early internationalization processes and outcomes. There is, however, still ample room for improvement. Despite increased research linking digitalization and business model innovation for internationalization (Evers, Ojala, Sousa & Rialp-Criado, 2023), further theoretical efforts are still needed to explicate the impact of digital business models on EIFs' international performance or post-entry internationalization speed. Also, while prior evidence exists for the link between digitalization and international knowledge acquisition, there is a lack of research extending this linkage to key early internationalization outcomes, such as international performance or post-entry internationalization speed. The research community must move toward a deeper theoretical understanding of how the deployment of digital technologies impacts the early internationalization process-outcomes relationship. We, therefore, call for more research focused on the

linkages between digitalized/digital-enabled early internationalization process and internationalization outcomes.

Based on the feedback from the survey respondents on research gaps concerning outcomes of early internationalization, the research question on *how digital technology-oriented business model development influences the post-entry internationalization speed of EIFs* was assessed by the respondents as the most important for further exploration (average value 4.13), followed by *how the utilization of digital technology influences the post-entry internationalization speed and survival of EIFs* (average value 4.01). Future enquiries can also be expected regarding the efficacy assessment of digital processes after initial foreign market entry (average value 3.79), and impact of international knowledge acquired via digitalization on EIFs' international performance and post-entry internationalization speed (average value 3.04).

Finally, our review shows that many studies on EIFs usually focus primarily on their international market performance. It is therefore not surprising that the survey respondents called for more studies on the influence of digital technology accessibility on diverse financial indicators of performance. Focusing on variables such as sales growth, foreign profit growth, foreign market share growth (Zhou et al., 2012), profit margin, and return on sales (e.g., Li, Qian & Qian, 2012) will help improve our understanding of the financial performance implications of digital technology for EIFs.

4.4. Methodological approaches

Our review of the early internationalization and digitalization literatures indicates that a considerable number of empirical studies in this research stream apply either survey or case study methods, the latter including both single and multiple cases. The cross-sectional approach largely dominates quantitative research, with little reference to a longitudinal time horizon. However, the concurrent collection of data in cross-sectional studies limits our ability to comprehend the causalities affecting independent and dependent variables. We argue that longitudinal and process studies are essential to advance future research because early internationalization is a dynamic phenomenon that unfolds over time. For example, as respondents proposed, "Thick in-depth lengthy face-to-face interviews with a sizable number of marketing managers can also help us understand how they perceive the importance of the digitalization and internationalization of their firms and their offerings." They also argued for the need to conduct more mixed-method studies. Such methods would extend our understanding of the digital-related triggers, mechanisms, and micro-foundations underpinning early international entrepreneurial development, post-entry speed of international expansion, and international performance.

Therefore, according to our survey results, in considering the improvement of methodological approaches, other researchers in the field also seem to place the greatest importance on increasing the number of longitudinal and process studies (average value 4.26), followed by the request to conduct mixed-method studies (average value 3.92). This confirms our call for more longitudinal and process studies, as well as the application of mixed-method approaches. A move in this direction would provide a more holistic picture of the early internationalization process and outcomes at the interface of digitalization, and facilitate the comparison of results between studies.

Measurement is a fundamental activity of science that enables researchers to acquire knowledge on a phenomenon (Morgado, Meireles, Neves, Amaral, & Ferreira, 2017), and, as indicated by our review, the fragmented nature of the conceptualization of digitalization has resulted in different operationalizations. However, our review found that the operationalizations are mainly based on self-evaluating scales. This raises the possibility of social desirability bias and participant bias response sets, which may, in turn, affect the validity of the operationalizations. We encourage scholars to incorporate other objective or independent measures to supplement the operationalization of digitalization as a construct.

4.5. Toward a holistic framework of the digitalization-early internationalization relationship

The analysis of the data gathered from the review shows that over almost three decades scholars have made considerable advances in understanding the influence of digital technology on early internationalization. In this section, we propose a conceptual model summarizing the extant scholarship, and providing a multilevel explanation of how digital-related antecedents combined with other non-digital moderating factors influence early internationalization processes and outcomes (see Fig. 3).

As Knight and Liesch (2016) have already noted, "scholars should aim to integrate perspectives from entrepreneurship and IB and span theoretical boundaries and disciplines to create new perspectives or frameworks that improve understanding of […] early internationalization" (p. 98). Accordingly, we build our model with complementary elements derived from the internalization theory and knowledge-based view, in combination with insights from the Information Systems (IS) field.

Internalization theory assumes that a firm exploits its idiosyncratic firm-specific advantages (FSAs), for example, technological knowledge and capabilities, as well as location-bound advantages (Rugman & Verbeke, 2001; Verbeke, Zargarzadeh & Osiyevskyy, 2014). The underlying constructs of the digital-related antecedents of early internationalization derived from the reviewed studies focus on three different levels: (virtual) environment, firm, and entrepreneur. At the environment level, we consider the *virtual environment* a space where the firm has access to resources bound to the virtual world to connect global markets. Therefore, current technological advances and digital resources from the virtual space, such as IoT, artificial intelligence, and blockchain, that are made possible by Internet-enabled infrastructures operating worldwide, are digital-related antecedents we consider VESAs. At the firm level, our model proposes that a firm's physical IT infrastructure, digital resources and capabilities, investment and commitment to digital technology, and the embeddedness of digital technology within the firm, are digital-related antecedents in the form of DFSAs. Further, an entrepreneur's digital competence and capability is considered a crucial digital-related antecedent in the form of DESAs. Hence, taking the internalization approach (Rugman & Verbeke, 1992; Verbeke, Zargarzadeh, & Osiyevskyy, 2014), we propose that a firm's early internationalization process, and the associated outcomes, is driven by its ability to combine different digital-related antecedents in the form of VESAs, DFSAs, and DESAs.

However, based on our review findings on the underlying factors of the linkage between digital-related antecedents and early internationalization process activities (Aspelund & Moen, 2004; Langseth et al., 2016; Rialp-Criado et al., 2020; Wentrup, 2016; Brieger et al., 2022), we also consider that the relationship is contingent upon the impact of other non-digital firm-specific factors (i.e., entrepreneurial orientation, international customer orientation, and strategic intent), and environment-level factors (i.e., information intensity, and domestic institutional voids), acting in our model as moderating variables of the digital-related antecedents-early internationalization process relationship. As the early internationalization process is a product of mutually interdependent forces (Osarenkhoe, 2008), the impact of digital-related antecedents in the process can be enhanced or diminished by the collective impact of such non-digital firm-specific and environment-level factors.

As for non-digital firm-specific moderators, the level of entrepreneurial orientation (EO) within a firm would affect the extent to which it is willing to engage with new technologies and systems (Gupta, Niranjan, Goktan & Eriskon, 2016). According to Mostafa, Wheeler and Jones (2005), firms with a high entrepreneurial orientation were more likely to use the Internet to develop export market opportunities and improve export performance than firms with a low entrepreneurial orientation. Furthermore, due to the ability of technology to transform

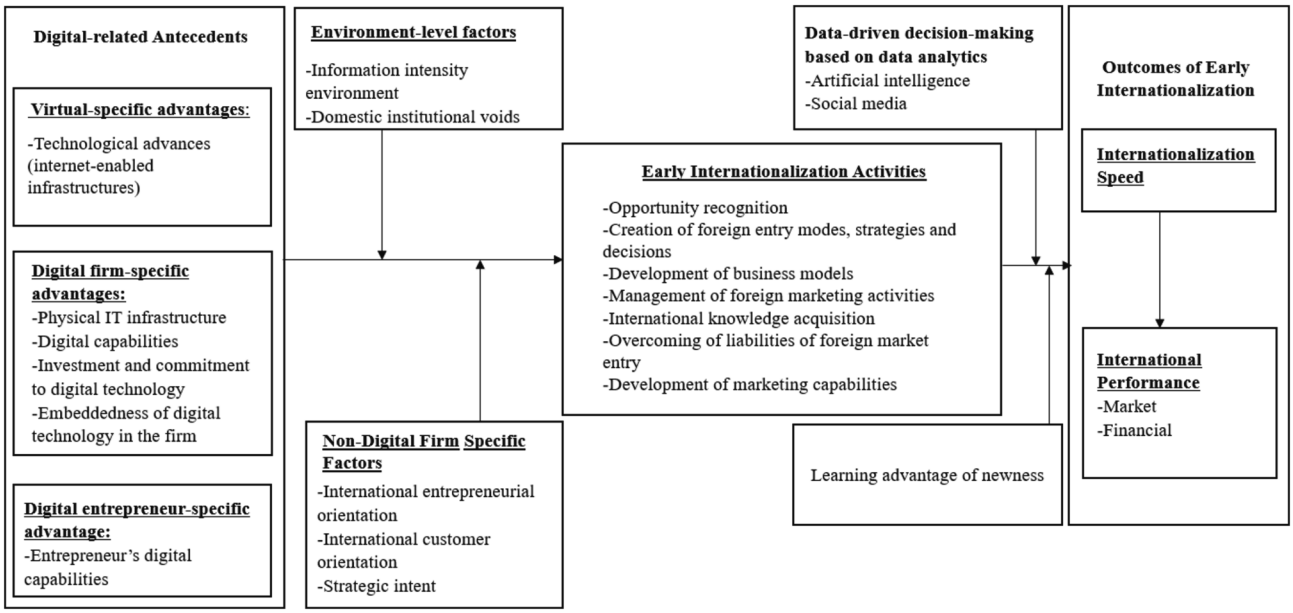

Fig. 3. Proposed Conceptual Model of antecedents, processes, and outcomes of early internationalization.

the dynamic nature of customer needs, Aspelund and Moen (2004) also suggested that a strong international customer orientation (ICO) enables the adoption of digital-related solutions to realize internationalization intentions. Therefore, we can expect that firms with high levels of EO and/or ICO would more likely be sensitive to the recognition of the digital-related antecedents (VESAs, DFSAs, and DESAs) enhancing early internationalization processes and outcomes. Our review results also show that the impact of digital-related antecedents on the early internationalization process is contingent on the more innovative and strategic use of digital technologies embedded in a firm's operations (Hagen & Zucchella, 2011; Zhang et al., 2013), which ultimately depends upon its strategic intent.

As for environment-level moderating factors, we found in our review that environmental information intensity, referred to as the extent to which firms are dependent on external information, also drives the development of a firm's digital capability, so as to maintain its ability to engage properly in business processes and activities in a given environment (Zhang et al., 2013). Therefore, EIFs operating in more information-intensive sectoral environments will be more willing to invest in improving their digital capabilities, in order to ensure their ability to engage in early and rapid internationalization. With regard to domestic institutional voids, our review shows that in the midst of high institutional voids, especially in the domestic market, firms using the Internet to sell their products and services are more likely to focus on the foreign market early after inception (Brieger et al., 2022).

Taking the knowledge-based view, we propose in our model the learning advantages of newness (LAN) as another key moderator that can influence the linkage between early internationalization processes and outcomes, based on the argument that the survival of EIFs in the early phase of internationalization has been found to depend mostly on their LAN (Autio et al., 2000). Moreover, as indicated by respondents, we propose data-driven decision-making based on data analytics, such as artificial intelligence and social media, as other moderators of this early internationalization process-outcome relationship. According to recent studies such as Mihailova (2022), decision-making based on data analytics enables the scaling and adaptation of internationalizing born digitals in foreign markets. Therefore, our model depicts two main relationships where moderation effects may apply: the relationship between the digital-related antecedents and activities of early internationalization processes, and that between the activities and outcomes of early internationalization.

We believe that future empirical studies on EIFs could benefit from the proposed framework by addressing the following research questions, among others: What is the role of digital-related factors, for example, VESAs, DFSAs, and DESAs, in the international performance and post-internationalization speed of EIFs? How are these relationships mediated by different early internationalization activities? Future researchers might also focus on particular activities, that is, international opportunity recognition, business model development, and international knowledge acquisition mechanisms of the early internationalization process, and test their digital-related antecedents at the virtual environment (VESAs), firm (DFSAs), and entrepreneur (DESAs) levels, as well as on associated internationalization outcomes. Future studies could also focus on investigating the role of the different moderating effects postulated in our theoretical framework. For instance, how do non-digital firm-specific factors moderate the relationship between digital-related DFSAs and DESAs and different activities associated with the early internationalization process? How do virtual environment-specific advantages (VESAs) and other environment-related factors interact in explaining early internationalization processes and outcomes among EIFs? How does LAN and/or data-driven decision-making (data analytics) moderate the relationship between digitally-driven early internationalization activities and EIFs' international performance or post-entry internationalization speed? Additional comparative research could even examine the extent to which these relationships may differ between EIFs and late internationalizers in different research contexts.

5. Conclusion

Our primary objective was to systematically collate and synthesize prior research on the subject matter with regard to early internationalization at the interface of digitalization, and address five associated research questions focused on theoretical approaches, empirical contexts, characteristics in terms of research themes and underlying mechanisms, methods, and conceptual model and future research agenda development.

First, with respect to theoretical approaches used in the reviewed articles, our findings showed that the research on early internationalization at the interface of digitalization is multifaceted and fragmented in terms of unifying theoretical paradigms (Keupp & Gassmann, 2009). As a significant portion of our reviewed studies was not associated with clear theoretical paradigms, it is argued that we need to advance from

purely descriptive studies on the use of digital technologies by EIFs to a deeper theoretical understanding of the key mechanisms and reasons for the underlying relationships. However, the theoretically inclined studies have broadened our understanding of the importance of digital resources and capabilities to the success of EIFs in foreign markets. For instance, research such as that conducted by Jaw and Chang (2006) and Tabares et al. (2015), which employed RBV, has contributed to elucidating how digital capabilities and the underlying resources profoundly shape the entry strategies of EIFs and their ongoing international performance.

Second, regarding the empirical contexts in which the reviewed studies were conducted, our findings showed that they have been applied in different empirical contexts, such as industrial sectors and geographical locations. The industrial sectors included manufacturing, software, and apiculture (Moen et al., 2003; Plakoyiannaki et al., 2014). Geographical areas included developed and developing nations. As highlighted by Jean et al. (2020), the relatively low cost of digital technology has led to its vast application in different contexts and areas. Also, the immense benefits that digital technology provides have contributed to its wide usage. For example, in firm internationalization, the application of digital technologies alters the timing, pace, and rhythm of internationalization, as well as location and entry strategic decisions (Coviello et al., 2017).

Third, in terms of the characteristics of the reviewed studies, this review organizes research themes and synthesizes the previous research to increase understanding of the underlying mechanisms on how digitalization influences internationalization outcomes. Careful analysis of the review articles suggested three high-level themes relating to early internationalization: digital-related antecedents of early internationalization, early internationalization processes, and outcomes of early internationalization. The linkages between the high-level themes and the sub-themes within the high-level themes were also discussed. The understanding of the current knowledge, themes, and research gaps in the domain provides a platform from which to advance the field in the future.

Fourth, methodologically, our findings showed the applicability of diverse methods in the research on early internationalization and digitalization. Most of the reviewed studies were either quantitative or qualitative and utilized cross-sectional data, which failed to capture the dynamic nature of early internationalization, especially in this fast-paced and continuously changing technological environment (Sinkovics et al., 2013). Our findings also showed that the operationalization of digitalization is mainly based on self-evaluating scales. Although these scales provide insights for theorizing, more suitable objective or independent measures are needed that are explicitly designed to measure digitalization.

Finally, based on the reviewed articles, we have developed a conceptual model and proposed a comprehensive future research agenda. Our conceptual model specifies a more subsumed, multilevel explanation of the interface of early internationalization and digitalization, which we believe will also be valuable for future researchers. The model provides an explanation of how digital-related antecedents combined with non-digital moderating factors influence early internationalization processes and outcomes. We propose that future research should empirically examine the model by focusing on certain parts that may be of interest. From this model, we call for future research to shift toward a deeper theoretical understanding of how the underlying mechanisms or contingencies support the relationships among the antecedents, early internationalization processes, and outcomes.

Furthermore, we outline a number of future avenues based on the identified research gaps in the reviewed literature, and insights gained from researchers in the field courtesy of our survey. The agenda includes research avenues with regard to theoretical approaches, contexts, characteristics, and methodological approaches that we expect to be valuable for future researchers in this important field of enquiry. Concerning theoretical approaches, since a significant portion of the reviewed studies was not associated with clear theoretical paradigms, we argue for theories such as the task-technology theory, capability-based, organizational learning-related notion of the LAN, and interdisciplinary theories from other fields such as Information Economics, Institutional Economics, and Sociology. This is to further broaden our theoretical understanding of the key mechanisms and reasons for the adoption of digital technologies in early internationalization. On context, future research should provide a more complete and balanced view of digitalization and early internationalization by conducting not only single-country studies, but also cross-country comparisons between advanced economies and developing nations on how social, environmental, economic, and institutional factors influence early internationalization at the interface of digitalization in different empirical settings, and in comparison with those of LIFs. With regard to characteristics, we found there was a lack of research on how EIF founders and/or entrepreneurs acquire digital skills and competencies that may affect their firms' early internationalization processes and outcomes. Furthermore, a particular area of interest that merits empirical enquiry is adaptation of entry strategies. We encourage future studies to delve deep into how digitalization influences the adaptation and standardization of EIF entry strategy choices (Birkinshaw, 2022; Domurath et al., 2020). Finally, we consider it appropriate for future research to focus on studies that establish key linkages between early internationalization processes and outcomes. In particular, theoretical efforts are needed to explicate the impact of digital business models on EIFs' international performance or post-entry internationalization speed. Moreover, data-driven decision-making based on data analytics such as artificial intelligence and social media needs more research attention, as it has the potential to enhance the impact of early internationalization activities on both internationalization speed and international performance. With respect to method, since the application of longitudinal studies and mixed-method studies was limited, we argue that more longitudinal and process studies are essential to advance future research, since early internationalization and digitalization is a dynamic phenomenon that unfolds over time (see e.g., Van de Ven & Sminia, 2012). Finally, as suggested by survey respondents, future research could adopt innovative analytical methods such as flexible pattern matching to search for patterns within data, while allowing for variations in the pattern itself to derive in-depth understanding of the underlying mechanisms of digitalization and early internationalization processes and outcomes.

Furthermore, this research demonstrates the importance of employing a predominantly manual process over the use of artificial intelligence tools in systematic literature reviews. It creates additional, novel intellectual insights for the research community that AI cannot replicate. Practically, our review provides insights that can help entrepreneurs and managers understand the role of digitalization, in terms of the important antecedents or drivers, activities/processes, and outcomes that can help optimize the use of digitalization in internationalization processes. An improved understanding of the digital capabilities that can benefit entrepreneurs and firms will enable practitioners to focus on the selection and application of modern digital tools to assist in the search for appropriate foreign markets, and to make decisions on the best mode of international operation. Our conceptual model contributes to helping managers and entrepreneurs more effectively implement digital technologies in their internationalization processes, by highlighting the contingent factors that influence early internationalization at the interface of digitalization.

The present review has some limitations. First, it did not include book chapters and other grey literatures. Therefore, we encourage future studies to investigate these in order to increase the relevance and impact on early internationalization and digitalization research. Second, our strict inclusion and exclusion criteria might have excluded relevant articles. However, given the broad similarities across studies captured by this review, we believe our findings adequately synthesized the key themes in the extant literature. Furthermore, potential knowledge-mapping in the form of intellectual structures of the research domain

was excluded from the scope of our study. Therefore, we invite future studies to undertake, for instance, a bibliometric literature review. The authors encourage a careful review and analysis of the results presented in this work, and hope this will inspire more studies based on the future research directions.

CRediT authorship contribution statement

Emmanuel Kusi Appiah: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Peter Gabrielsson:** Writing – review & editing, Supervision. **Alex Rialp Criado:** Writing – review & editing, Supervision, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbusres.2024.115043.

Data availability

No data was used for the research described in the article.

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