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Recognizing International Opportunities by Born-digital Entrepreneurs: A Qualitative Approach

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Abstract. This article conducts an in-depth investigation of International Opportunity Recognition in a Born Digital Start-up based on how entrepreneurs' decisions drive the new firm's internationalization behaviour and explores the role of digital capabilities possessed by the entrepreneurs. Accordingly, the aim of this research is to enhance our understanding of entrepreneurs' digital capabilities and their decision-making logic regarding internationalization within a Born Digital Start-up using effectuation as a theoretical approach. A qualitative and interpretive method is used for this purpose in a single case setting. The primary data collection method was in-depth interviews conducted with two of the founders of the case company and two members of their management team. Moreover, an inductive analysis was applied. In doing so, this study offers novel and significant perspectives for the fields of Digital and International Entrepreneurship, as well as from the lens of effectuation theory.

Keywords: Digital Entrepreneurship, Born Digital firms, Effectuation, International Opportunity Recognition.

1. Introduction

The International Entrepreneurship (IE) literature (McDougall and Oviatt, 2000) posits that early and accelerated internationalization of new ventures is associated with strong organizational capabilities such as innovation, market orientation, and international marketing skills (Cavusgil and Knight, 2015). Oviatt and McDougall (2005) coined the following definition of the field:

> "International Entrepreneurship is the discovery, enactment, evaluation and exploitation of opportunities – across national borders – to create goods and services "(Oviatt and McDougall, 2005, p. 540).

More recently the International Entrepreneurship (IE) research field has moved on from its early emphasis on international new ventures and their early

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internationalization process towards studying international entrepreneurial behaviours (Mainela, Puhakka, and Servais, 2014) at different levels, i.e., organizations, groups and individuals, and the concept of opportunity has been referenced as a core construct to develop further IE research (Chandra et al., 2012; Dimitratos and Jones, 2005; Etemad, 2015; Jones et al., 2011; Mathews and Zander, 2007). These studies consider that opportunity is not only present in the environment waiting to be discovered, but it can also be created by the entrepreneur.

Entrepreneurs' capabilities to discover and create opportunities and their decision-making processes are argued as being central to understanding the firm's international growth (Mainela et al., 2014; Andersson and Evers, 2015). Nonetheless, extant IE literature has yet to systematically analyse how specific entrepreneur's capabilities are developed in a way to enable international opportunity recognition of an increased number of emerging companies that derive all of their revenue from virtual marketplaces and offer only digital products — these are referred to here as *born digital companies* (Monaghan et al., 2020). Most of the rather scarce studies on born digital firms' internationalization are based on digital capabilities at firm level (Brouthers et al., 2016; Coviello, Kano and Liesch, 2017; Cahen and Borini, 2020; Monaghan et al., 2020). In addition, it must be taken into account that the fact of being a born digital firm might create new forms of internationalization through digital sales, digital users, and digitally interconnected partnerships. This could imply the possibility of identifying entrepreneurs' developing digital capabilities that are different from non-digital firms. Digital technologies create more variability in entrepreneurial activities and allow entrepreneurs to rapidly and easily enhance their capabilities and performance to create value (Nambisan, 2017). In this context, the research stream of Digital Entrepreneurship has emerged as an intersection between digital technologies and entrepreneurship literature. Some scholars suggest that the capabilities required in undertaking the digital entrepreneurial process may also be different, because the digital entrepreneur faces increasingly dynamic paths, determined by diverse activities with uncertain time frames (Nambisan, 2017; Kraus et al., 2019; Hull et al., 2007). However, research is still scarce in identifying and understanding how the entrepreneurs' digital capabilities are developed in a way to enable a new venture to explore and exploit international opportunities in a digital context (Glavas, Mathews and Bianchi, 2017; Zaheer et al., 2019; Dillon et al., 2020). In this respect, this is one of the areas requiring further research in the International and Digital Entrepreneurship fields.

In addition, following the research stream on effectuation (Sarasvathy, 2001; Sarasvathy et al., 2008), this research posits that digital entrepreneurs develop specific capabilities (Schweizer, Vahlne, and Johanson, 2010) at the stage of starting new businesses and/or acting under high uncertainty, that influence their decision making-logic to recognize international opportunities (Dew et al., 2009; Perry et al., 2012; Read et al., 2009; Sarasvathy, 2001). Effectuation provides an

explanation of why individuals end up building new business activities even when that was not their initial goal when they started their operations. The entrepreneurs take risks merely to the extent to which they are prepared to take losses and retain the ability to adapt to changes brought on by the environment (Sarasvathy, 2001; Sarasvathy et al., 2008). Therefore, the effectuation approach appears adequate to understand the process of decision making in an uncertain operating environment or in a situation in which the market does not yet exist, and it can be described as an essential aspect of entrepreneurial capability (Sarasvathy et al., 2014). However, little research has applied effectuation logic in a digital context so far (Baber et al., 2019; Ghezzi, 2019; Anagnou et al., 2019). IE research is scarce in understanding entrepreneurs' decision-making ability concerning international opportunity recognition in a digital start-up. Besides, these few studies are focused on the firm level rather than on the individual level.

Accordingly, the aim of this research is to conduct an in-depth investigation of entrepreneurs' digital capabilities and their decision-making process to recognize international opportunities in the context of a Born Digital Start-up. For this purpose, the effectuation approach seems to be a suitable framework for fulfilling the objectives of this study.

Hence, based on these research gaps and future research suggestions from previous studies, the research questions for this article are as follows: (1) How and why do entrepreneurs' digital capabilities affect international opportunity recognition in a digital context? (2) How is digital entrepreneurs' decision-making logic applied in order to recognize international opportunities in a Born Digital Firm?

The above-mentioned research questions are answered through a longitudinal study conducted using a qualitative and interpretive method in a single case setting. This approach emphasizes the individual interpretations and enables in-depth descriptions of the studied phenomenon (Walsham, 1995a, 1995b). An interpretive approach provides a deep insight into "the complex world of lived experience from the point of view of those who live it" (Schwandt, 1994, p. 118).

We contribute to and expand on existing International and Digital Entrepreneurship literature in terms of both theory and practice in several ways. First of all, we contribute to understanding the digital entrepreneurial process by revealing how the entrepreneurs' digital capabilities are developed in a way to explore and exploit international opportunities in a digital context. Secondly, we contribute to effectuation theory by examining the entrepreneur's decision-making process to recognize international opportunities in a Born Digital Start-up. Finally, our study responds to calls of research for advancing the drivers on born-digital start-up internationalization at the individual level (Coviello, Kano and Liesch, 2017; Monaghan, Tippmann and Coviello, 2020; Mainela, Puhakka and Servais, 2014; Glavas, Mathews and Bianchi, 2017; Cahen and Borini, 2020).

In the following sections, we first lay out and justify our conceptual approach of entrepreneurs' digital capabilities and their decision-making process at recognizing international opportunities using an effectuation theory approach. The subsequent section describes the research design followed by empirical findings. Finally, we discuss the theoretical and practical implications of our findings and conclude with future research suggestions.

2. Literature and Conceptual Background

2.1. Internationalization of Born Digital Start-ups in International Entrepreneurship literature

International Entrepreneurship (IE) has emerged as an important area of investigation for researchers in both International Business and Entrepreneurship (McDougall and Oviatt, 2000; Oviatt and McDougall, 2005). Studies of born global firms (BGFs) (Knight and Cavusgil, 2004) and international new ventures (INVs) (Oviatt and McDougall, 1994) are deeply rooted with the IE field. The IE literature indicates that early and accelerated internationalization of new ventures is associated with strong organizational capabilities such as innovation, market orientation, and international marketing skills (Cavusgil and Knight, 2015). Many IE studies try to explain the power of such critical (dynamic) capabilities typically related to international market orientation, international marketing capabilities, and innovation capabilities (Knight and Cavusgil, 2004; Rialp and Rialp, 2007; Gassmann and Keupp, 2007; Knight and Kim, 2009). Empirical research has also analyzed the impact of those capabilities on a variety of new venture issues, including international performance (Knight and Kim, 2009), product innovation (Knight and Cavusgil, 2004), and speed of internationalization (Gassmann and Keupp, 2007). With the advent of the Internet, the IE studies have increasingly focused on any of two different perspectives: the first group considering the Internet as a tool (Gabrielsson and Gabrielsson, 2011; Kotha et al., 2001; Mahnke and Venzin, 2003; Singh and Kundu, 2002), in contrast with a second perspective that considers the Internet as a core competence (Loane et al., 2004; Chen et al., 2019; and Brouthers et al., 2016). In our study, we focus on the second perspective, that is, we focus on the articulation of IE using the organizational and entrepreneur's capabilities perspective to identify the specifics of companies that derive all of their revenue from virtual marketplaces and offer only digital products, referred here as born digital firms (BDFs).

As mentioned above, mainstream International Entrepreneurship literature lacks a deeper discussion on specific entrepreneur's digital capabilities that enable internationalization of born digital start-ups. Most of the rather scarce studies on born digital firms' internationalization are based on digital capabilities

at firm level (Cahen and Borini, 2020; Monaghan, Tippmann and Coviello, 2020). For digital companies, the costs of transferring digital products over the Internet from one country to another are relatively small (Brouthers et al., 2016; Kotha et al., 2001; Loane et al., 2004). They reach users online and distribute their product in virtual marketplaces. The recent literature suggests that digital firms tend also to be international new ventures (INVs) and born global firms (BGFs) (Autio et al., 2017; Brouthers et al., 2016; Monaghan et al., 2020), because their products are "instantly accessible from anywhere in the world" (Brouthers et al., 2016, p. 514). Some scholars have argued that born digital firms reduce the need for market-seeking foreign direct investment (FDI) (Eden, 2016; UNCTAD, 2017). Digital firms are thought to pursue primarily 'virtual' internationalization, i.e., without establishing a physical presence in foreign markets (Singh and Kundu, 2002; Yamin and Sinkovics, 2006). However, other studies indicate that digital firms may follow different patterns of internationalization as compared to INVs and BGFs, and do not necessarily serve foreign markets from inception, because of differences in terms of culture, languages, and consumer preferences, among others, may require modifications on digital products and services to suit local needs (Blum and Goldfarb, 2006; Shaheer and Li, 2020). Based on this, digital companies cannot usually activate in a market without being partly present offline, in general, because of legal compliance and market-specific requirements (e.g., a dependence on local e-commerce merchants) (Wentrup, 2016). Moreover, these firms should deal with greater liabilities of outsidership (LoO), since the main concern is the creation of a large enough network of users to generate value on its platform and create thick ecosystems in new countries (Brouthers et al., 2016). Nevertheless, the extant literature on the internationalization of born digital firms is quite fragmented and disperse. Besides, avenues of research are opened in relation digital entrepreneurs' capabilities and their international orientation for active online internationalization of their firms. Therefore, digital entrepreneurs could develop capabilities that are different from those of non-digital entrepreneurs.

2.2. International Opportunity Recognition by Born-Digital Start-ups

Recognition of market opportunities is a central part of the entrepreneurial process (Shane and Venkataraman, 2000). Entrepreneurship contains the "processes of discovery, evaluation, and exploitation of opportunities; the individuals who discover, evaluate, and exploit them and the examination of sources of opportunities" (Shane and Venkataraman, 2000, p. 218). However, not only research on opportunities and their recognition is analysed in the disciplinary context of Entrepreneurship, it can be also found in the International Entrepreneurship literature (e.g., Chandra, Styles, and Wilkinson, 2009; Ellis, 2011; Nummela et al., 2014; Kontinen and Ojala, 2011; Zahra, Korri, and Yu,

2005). Although existing theories of internationalization draw from the premise that internationalization starts with opportunity recognition, definitions of international opportunity (IO) and of international opportunity recognition (IOR) vary as scholars examine it from different theoretical approaches. According to the view of Chandra et al. (2009), several propositions maybe advanced concerning each of the three main drivers of the initial international opportunity recognition process identified in the literature, i.e., prior knowledge, international network structure, and a firm's entrepreneurial orientation (EO), at both firm and individual level. In their study, they incorporate both the discovery of and search for opportunities in the opportunity recognition definition. Building on the initial international opportunity concept of Chandra et al. (2009), Angelsberger et al. (2017) define international opportunity recognition as "*the way an entrepreneur discovers the opportunity to exchange products and services with a new or existing partner in a new international market"* (p. 25). Kraus et al. (2017) deal with the effects of entrepreneurial alertness, systematic search, prior knowledge, and social networks on first-time international opportunity recognition by entrepreneurs inside born global firms (BGFs) in line with Chandra et al. (2009) on initial international opportunity recognition. Kraus et al. (2017) suggest several avenues for future research on international opportunity recognition, since this study has revealed that opportunities can be discovered through a combination of entrepreneurial alertness and systematic search. Furthermore, their study highlights how network relationships, entrepreneur's prior international knowledge as well as prior international experience are essential for entrepreneurs within BGFs because they can aid in identifying the initial international opportunity. Other studies argue entrepreneurs' capabilities to discover and create opportunities as being central to understanding the firm's international growth (Mainela et al., 2014; Andersson and Evers, 2015). From the perspective of dynamic managerial capabilities, Andersson and Evers (2015) present a conceptual framework oriented to understand why certain individuals discover and exploit opportunities that others do not, and they also discuss whether the international opportunities are discovered or created. In their conceptual framework, they consider that most of the extant studies in IE literature at individual-level approach have found that opportunity recognition depends mainly on three key individual attributes of the entrepreneur, such as: (i) prior knowledge (Kirzner, 1997; Shane, 2000), (ii) social networks (Ellis, 2000; Ozgen and Baron, 2007), and (iii) entrepreneurial marketing seeking behaviour and alertness (Kirzner, 1997; Shane, 2000). Prior international knowledge including education, experience from living abroad and from internationally oriented jobs, moulds the mind of the founder and lowers perceptions of uncertainty and, in particular, decreases perceptions of psychic distance to specific product markets (Johanson and Vahlne, 1977, 1990). Prior experience from similar settings helps to reduce uncertainty (Alvarez and Barney, 2005) in subsequent internationalization endeavours. Experience (from background,

knowledge and networks) creates competencies that make entrepreneurs be alert to opportunities to combine resources from different national markets (McDougall, Shane and Oviatt, 1994), and experientially based competencies help alleviate liabilities of newness and foreignness (Mudambi and Zahra, 2007). Within the IE literature, it is widely argued that a consciousness of foreign market opportunities is a result of the entrepreneur's prior international work experience, as entrepreneurs develop international relationships through gaining work experience overseas (Oviatt and McDougall, 1994; Bloodgood, Sapienza, and Almeida, 1996; Reuber and Fischer, 1997). The individual-level approach, based on Shane and Venkataraman's (2000) statement that opportunities are identified by individuals rather than by firms, claims that some individual aspects such as entrepreneurs' international orientation (Crick and Spence, 2005) social ties (Ellis, 2011), and behavioural (Tabares et al., 2021), affective, and cognitive aspects (Zahra et al., 2005; Muzychenko and Liesch, 2015) are the triggers for identifying international opportunities.

Regarding firms operating in Internet-based environments, recent research in the field of IE has emphasized the need for a better conceptualization of international opportunity recognition in this online context (Glavas, Mathews and Bianchi, 2017), advancing in the importance of IOR as a critical component for leveraging Internet capabilities and international market performance. In their analysis, these authors underline how international entrepreneurial orientation, international vision of the entrepreneur, Internet capabilities, and Internet-enabled networks are positively related with international opportunity recognition. This research highlights how firms achieve superior international market performance combined with understanding of how entrepreneurs make important decisions to identify and exploit new opportunities (Zahra et al., 2005). Recent research focused on digital firms identifies a new type of experience, named "digital internationalisation experience" (Dillon et al., 2020), and how this experience influences the way in which international opportunities are recognised and exploited by e-entrepreneurs. This study establishes the link between experiences acquired in business environments characterised by a high degree of digital involvement and enhanced opportunity recognition within the context of digital internationalisation. In turn, digital internationalisation experience contributes to enhanced international opportunity recognition for entrepreneurial individuals through increased idea generation and opportunity confidence.

However, IE research is particularly scarce in identifying and understanding which specific digital capabilities are developed by entrepreneurs in a way to explore and exploit international opportunities in Internet-based firms or born digital companies. Therefore, importing concepts from the digital entrepreneurship literature is much needed in the context of understanding internationalization of born digital firms so as to help capture the digital capability-building approach on an individual level in this case, the digital entrepreneur. We examine these concepts in the next section.

2.3. Entrepreneurs' Digital Capabilities in Digital Entrepreneurship Literature

Digital Entrepreneurship (DE) is generally referred to as the pursuit of opportunities based on the use of digital media and other information and communication technologies (ICTs) (Reuber and Fisher, 2011; Nambisan, 2017). In line with Hull et al. (2007), "digital entrepreneurship is a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized" (p. 293), and thereby can be seen "as the reconciliation of traditional entrepreneurship with the new way of creating and doing business in the digital era" (p. 293). It is necessary for digital entrepreneurs to be aware of differences, opportunities, and threats compared with traditional business models in order to be successful; otherwise, the digital venture is running considerable risk to fail. Wind (2008) states that digital businesses represent a "shift from traditional management approaches to 'network orchestration'" (p. 23), as networks and communities are crucial for digital entrepreneurs. Moreover, several authors do not only describe new business models through digitalization but also deal with challenges and opportunities inherent in the emergence of new digital business models at hand. For example, Hair et al. (2012) mention that strong market orientation is essential for entrepreneurs to succeed in the dynamic and rapidly changing environment. Compared to traditional businesses, the development of digital start-ups follows steps of redefinition again and again. Digital technologies make it possible to create, modify and repeat product development phases much quicker than ever before. Experimentation and implementation processes are accelerated in nowadays digital economies and restart within much shorter periods. Thus, the digital entrepreneur faces increasingly dynamic paths, determined by diverse activities with uncertain time frames (Nambisan, 2017). Another step to foster success of a digital start-up in an early stage is to start networking and building up valuable social capital, whereby those network partners acquired throughout the career of the entrepreneur are most crucial (Spiegel et al., 2016). Moreover, the entrepreneur and his/her founding team are the essential part of the digital business in its infancy. Therefore, it is crucial to get the right and stable team together in order to be successful (Kraus et al., 2019).

Other authors have also made efforts to identify the 21st century digital skills dimensions of an entrepreneur (Van Laar et al., 2017) whereby they provide a framework with conceptual dimensions and key operational components. Their study identifies seven core skills: technical, information management, communication, collaboration, creativity, critical thinking and problem solving. Furthermore, five contextual skills are also identified: ethical awareness, cultural awareness, flexibility, self-direction, and lifelong learning. However, this framework suffers a lack of analysis of entrepreneurial skills, i.e., a person's innovation capacity and ability to perceive a new opportunity to market.

Other researchers analyze the "entrepreneur's digital start-up mindset" as an extension of entrepreneurial mindset (Zaheer et al., 2019). In their study, these authors underline the main characteristics of digital entrepreneurs, such as entrepreneurial orientation, opportunity driven, understanding of web and mobile technologies, global online marketplace, experimentation, and hands on both technology and business. This entrepreneurial attitude combined with a deep understanding of the scalable, open, born-global, generative nature of digital technologies are the factors that contributed to the success of digital start-ups. Although the success factors analyzed in their study do not focus on the internationalization process of digital companies, we have seen similarities with other studies of International Entrepreneurship (IE) literature. Namely, the human and social capital inherent in their education and work experience; the capacity to be more flexible, participative, and adaptive; and the capability to identify, evaluate and exploit entrepreneurial opportunities. Besides, the capabilities required in undertaking the digital entrepreneurial process may also be different. In fact, claims about the uniqueness of digital start-ups imply that the emergence of digital products/services requires a re-conceptualisation of human and social capital, organisations, ecosystems, and human behaviour in the start-up development process as "informed by the digital technology-perspective" (Nambisan, 2017). Digitalization creates social data (market networks) and intellectual data (market knowledge) about foreign markets earlier and faster than other methods, while also improving firms' attractiveness, decision processes, and capabilities of decision makers (Clark et al., 2018).

Current research also evaluates which specific capabilities of a firm enable its internationalization process, with an emphasis on companies with exclusively digital products (Cahen and Borini, 2020). These authors based their study on a new construct named "international digital competence" (IDC) which consists of four critical capabilities to expand a digital firm internationally through an on-line presence: cross-cultural and programming skills, global virtual networks, cross-border digital monetizing adaptability, and international business model reconfiguration. Although these capabilities refer to the company level, it is obvious that there is a blurred line when they can be studied at individual level. In their study, Cahen and Borini (2020) also conceived that the digital firm's strategy is moderated by the entrepreneur's international orientation, given that most of the founders designed their business model and their strategies to reach international markets from the very beginning of the business.

Finally, very recent research also addresses how technological affordances, especially direct engagement with stakeholders, automation, network effects, flexibility and scalability, affect the internationalization of born digitals (Monaghan et al., 2020). Their study underlines the potential to learn from other disciplines to revisit International Business Theory, for example, research in digital entrepreneurship (e.g., Nambisan, 2017; Ojala et al., 2018) allowing to

better understand how digital artefacts and features influence internationalization possibilities and behaviours.

In this context, born digital companies develop important distinctions regarding their entrepreneurs' digital capabilities to recognize international opportunities, which support and explain their distinctive internationalization processes. This suggests the need to better understand these digital capabilities and is an opportunity to extend the International Entrepreneurship field in a purely digital context.

2.4. Decision-Making Process in a Digital Context: Causation vs. Effectuation Approach

In IE literature, studies about managerial decision-making processes in international new ventures (INVs) and born global firms (BGFs) have been lately increasing in number, often focusing on the drivers of decision-making and the entrepreneurial orientation of these companies (Jones et al., 2011). Decision-making processes, and resultant decision outcomes can follow different logics due to the fact that decision-makers differ in terms of how they perceive the future, take action, evaluate risks and resources, and address uncertainty (Sarasvathy, 2001). From the foundational article on the effectuation topic in the *Academy of Management Review,* Sarasvathy (2001) introduced effectuation approach to describe how entrepreneurs behave when creating new ventures. In this seminal work, she differentiates between causation and effectuation to draw out their key elements. Causation processes take a particular effect as given and focus on selecting the means to create that effect. In contrast, effectuation processes take a set of means as given and focus on selecting between the possible effects that can be created with such means (Sarasvathy, 2001). In her sample, the expert entrepreneurs tend to shy away from prediction-based strategies; rather, they often (i) use a means-based approach, (ii) manage their level of affordable loss, (iii) forge partnerships, and (iv) leverage contingency (see Sarasvathy et al., 2008; Read and Sarasvathy, 2012). While effectuation is at its best in an unpredictable environment, causation is relevant in an easily predictable operating environment. It does not work particularly well, however, in a turbulent operating environment setting and in processes necessitating constant change (Sarasvathy, 2001; Sarasvathy and Dew, 2005). Thus, effectuation represents a considerable paradigmatic shift in understanding entrepreneurial behaviour and decision making at the stage of starting new businesses and/or acting under high uncertainty (Dew et al., 2009; Perry et al., 2012; Read et al. 2009).

The theory of effectuation has also expanded quickly into the domain of International Entrepreneurship (IE) and has shown its potential to help explain the phenomenon of SMEs' internationalization (Andersson, 2011; Chetty et al., 2013; Galkina and Chetty, 2015; Kalinic et al., 2014; Sarasvathy et al., 2014;

Schweizer et al., 2010). Some scholars have found evidence that effectuation and causation logics can actually work simultaneously in the same organization (Nummela et al., 2014; Evers and Andersson, 2021) providing insights on the co-existence of the two logics. Causation logic ensures that the venture stays focused and predicts what is predictable, while effectuation allows it to respond more flexibly to changes in its operating environment (Dew et al., 2009, 2011; Sarasvathy et al., 2008). Therefore, it seems that effectual decision-making is preferred in markets with high uncertainty such as turbulent transition markets (Mainela and Puhakka, 2009), or in situations when the market does not yet exist (Gabrielsson and Gabrielsson, 2013).

Due to the novelty of the phenomenon of born digital firms and their internationalization, the decision-making process to recognize and exploit international opportunities seems understudied in IE research. Therefore, further empirical studies on decision-making logic of digital entrepreneurs are needed in order to analyse how this type of decision-makers explore and exploit international opportunities. As mentioned above, the recent literature suggests that born digital firms tend also to be INVs or BGFs (Autio et al., 2017; Brouthers et al., 2016), because their products are "instantly accessible from anywhere in the world" (Brouthers et al., 2016, p. 514). Accordingly, it seems that earlier studies on effectuation theories in internationalisation and international entrepreneurship (Chandra et al., 2009; Evers and O'Gorman, 2011; Andersson, 2011; Gabrielsson and Gabrielsson, 2013; Galkina and Chetty, 2015; Kalinic et al., 2014; Spence and Crick, 2006; Schweizer et al., 2010) might be a suitable reference to understand the decision-making logic underlying in a digital context for at least two reasons: First, because when we consider the specifics of International Entrepreneurship research in terms of the "Why? When? Where? How? How fast?" of the internationalization decision, some studies focus on at least three characteristics of conducting cross-border business activities: cross-border uncertainty, limited resources, network dynamics (Sarasvathy et al., 2014). Secondly, because "effectual variables such as who the founding entrepreneurs are, what they know, and whom they know will also be important to IE research" Sarasvathy et al. (2014, p. 76).

The still quite scarce studies on decision-making logic in digital firms focus mainly on decisions concerning the business model design and how these decisions need to be made differently depending on the venture development stage (Anagnou et al., 2019). Fewer studies focus, however, on how such digital business models evolve when entrepreneurs move to new digital platforms and how this evolution is related to effectuation and causation logics (Baber, Ojala and Martinez, 2019). Other studies try to integrate effectuation theory with causation and lean start-up method providing antecedents on how effectuation theory can be integrated with agile development and business model theory in a competitive environment and with significant resource constraints (Xu and Koivumäki, 2019). The digital environment presents

challenges to the effectuation process in several ways. First, the disruptive nature of digital technology imposes a high demand of creativity and mindset shifting and the rapidly evolving digital environment calls for continual, frequent effectuation actions from entrepreneurs (Zaheer et al., 2019). Second, new digital technologies not only present an opportunity to reconsider businesses' operational processes, but often redefine the conditions of success and rules of competition (Monaghan et al., 2020). Third, the variety of possibilities offered by digital technologies also means an increase in the number of possible means in the effectuation process (Nambisan, 2017).

Therefore, the key principles of effectuation, namely "*Bird in hand", "Affordable Loss", "Crazy Quilt", "Lemonade", and "Pilot in Plane"*, might also help deepen our understanding on the digital entrepreneurs' ability to recognize and exploit international opportunities, therefore effectual decision-making logic approach could provide a useful lens to understand the born digital firm's internationalization. In the present study, we try to integrate all these notions and ideas reviewed above aiming to a better understanding of how digital capabilities and effectual decision-making processes may affect early internationalization of a born digital firm.

3. Research Methodology

To gain further insights on how and why entrepreneurs with digital capabilities are able to recognize and exploit international opportunities, and how digital entrepreneurs' decision-making logic is applied in order to recognize international opportunities in a born digital firm context, we conducted our study using a longitudinal and interpretive approach in a single case setting (Yin, 2009). This approach emphasizes the individual interpretations and enables in-depth descriptions of the studied phenomenon (Walsham, 1995a, 1995b).

The single case study method is particularly helpful at revealing aspects of a phenomenon that has so far been largely inaccessible (Yin, 2009). This approach enables concentration on a single case over a period of time, necessary for an in-depth, intensive description, analysis, and interpretation of data. Besides, an interpretive approach provides a deeper insight into "the complex world of lived experience from the point of view of those who live it" (Schwandt, 1994, p. 118). Overall, the aim of this research is to provide an extensive description of what is happening in this particular context (Welch et al., 2011). Hence, our methodological approach may offer new insights in the subjects of International Entrepreneurship and Digital Entrepreneurship as well as Effectuation Theory and help us provide novel future research avenues for these streams of research.

3.1. Case Selection and Description

This is a longitudinal single case study. The case company (codenamed) is a Born Digital Start-up (BDS), operating in the e-healthcare sector. This company was formally established in 2017, but its entrepreneurial opportunity originated in January 2015. We selected our single case by applying mainly three criteria: first of all, the research set the requirements to gain insights on entrepreneurs' digital capabilities in which decision-making logic evolved during a long period of time. Conducting rigorous longitudinal studies demands a considerable time and effort to collect and interpret data over a long period time. Therefore, access and having long-term relationships with the case firm was an important asset. Secondly, the company is one of the first B2C and B2B digital platforms in Spain in the healthcare and nutrition sector. Therefore, an innovative business idea was another prerequisite. The third requirement was to select a company that from the initial phases (pre-launch) might apply digital technologies that could influence decision-makers at recognizing international opportunities. The born digital firm' internationalization process, and how the digital technologies affect entrepreneurs to recognize and exploit international opportunities is an understudied but significant topic both in recent International Entrepreneurship and Digital Entrepreneurship literatures. The organization we chose fitted these selection requirements.

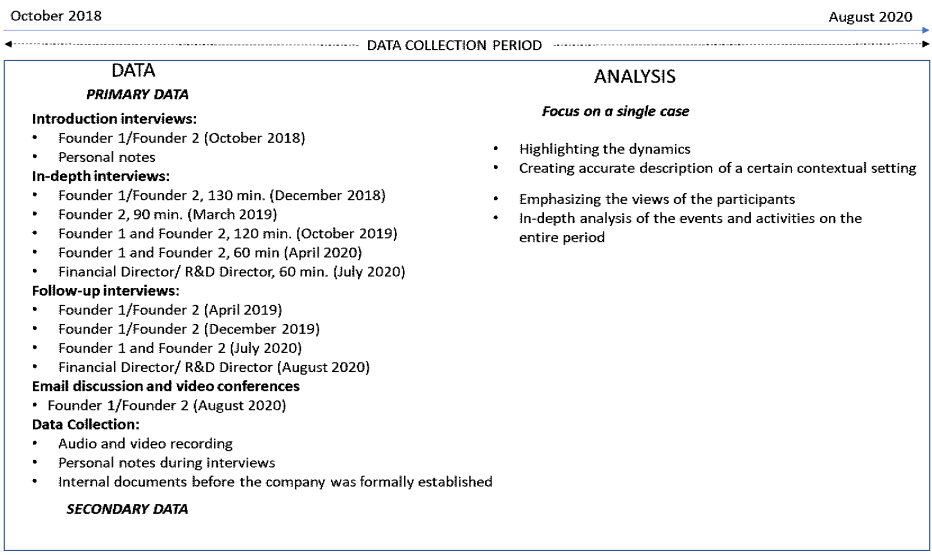
3.2. Data Collection

The data collection process was iterative, following the recommendations by Walsham (1995a, 1995b). Data collection took place over a period of approximately 23 months, from October 2018 to August 2020, as shown in Figure 1. We collected empirical material covering the entire history of the case firm, from 2015 to 2020. The primary data collection method was in-depth interviews conducted with the two founders, who have worked on the opportunity process from the beginning till August 2020, and with two members of the management team, financial director and R&D director. Data were obtained through studies of internal and public documents, a total of 10 semi-structured interviews, discussions, and observations, particularly involving: Chairman (codenamed founder 1), CEO/CTO (codenamed founder 2), financial director, and R&D director (see Figure 1).

Because the case firm is relatively small, 8 interviews with the two founders (Chairman and CEO/CTO) formed the main source of information. However, to improve the validity of the study, to avoid personal bias, and to gain the most relevant information on each topic (Huber and Power, 1985), we interviewed two additional managers in the firm. The interview questions were designed for inducing lived experiences while using a case study protocol. All interviews were

initiated by asking questions covering a broad range of topics, inquiring about firm history, job roles and personal skills, current and potential international projects, team, clients and environmental interactions, changes and new services and technology development infrastructure. The interview method was selected because it emphasizes individual interpretations of the actions and events related to the phenomenon (Walsham 1995b, p. 78). Moreover, the use of open-ended interviews may raise novel insights and, in doing so, promote theory building of the phenomenon (Suddaby et al., 2015).

Figure 1. Data collection period



The introductory interview with the two founders took place in October 2018. This introductory interview focused on the initial establishment of the firm, the development of the business and technical strategy, as well as on potential international business development. The first in-depth interview with the two founders took place in December 2018, and the founder 2 was interviewed later again in March 2019 separately. In October 2019, a third in-depth interview took place with the two founders with the objective of contrasting the information collected in the first interviews and analysing in depth the changes that were taking place in BDS from the initial business idea. Likewise, to avoid personal bias, and to gain the most relevant information on each topic (Huber and Power, 1985), the Financial Director and the R&D Director were also interviewed in July 2020. Each in-depth interview was subsequently contrasted by follow-up interviews. The follow-up interviews were conducted from 2019 until 2020 and were focused on the development of the business and technical strategy and operations, as well as on international business development, since the previous interview.

The interviews took place in the office space of BDS, which was situated at that time in TecnoCampus (Universitat Politécnica de Catalunya, UPC) in Barcelona. The duration of the first in-depth interview with the two founders was 130 min, the founder 2 interview was for 90 min, whereas the third interview was 120 min. The interviews were tape recorded and transcribed into word documents. Interview questions were related to (i) the personal education, digital capabilities, international orientation, and work histories before the initial opportunity discovery, (ii) motives for working with the opportunity, (iii) the description of the events and activities during the start-up BDS creation and after the legal establishment, and (iv) the current state of the international opportunity recognition at the time of the interview. In addition, these interviews included informal discussions on international entrepreneurship and innovation. Notes were also taken during the interviews, for instance, on the general atmosphere of the interviews and the mood of the interviewees.

To avoid retrospective bias (Huber and Power, 1985; Miller, Cardinal, and Glick, 1997), we collected several types of secondary data, covering the entire history of the firm, with a view to validating the interview data whenever possible. The data included internal and external memos of the firm, such as a commercial and financial information from the year of its establishment, promotion materials for potential partners, press releases, video materials for advertising purposes, websites, brochures, and social media publications.

3.3. Data Analysis

The data analysis period covers the timeframe from the initial business idea in January 2015 until August 2020 in a single case company in the e-health sector. We adopted the Gioia et al. (2013) method for data analysis. This method is inductive in nature and allowed us to iterate between data and theories (Eisenhardt and Graebner, 2007). Three data analysis steps were undertaken.

First of all, we organized the case firm's development phases putting critical events in chronological order. Longitudinal research should preferably be an objective illustration of past events. Thus, we followed Pettigrew (1990), in order to gain a clearer view of the causal links between critical events in chronological order. By means of this process, we were able to arrive at a historical and evolutionary review of the firm.

Secondly, we attempted to identify how interviewees understand international opportunity recognition in their company through firstorder analysis. This analysis is similar to Strauss and Corbin's (1998) notion of open coding (Gioia, Corley, and Hamilton, 2013). We repeatedly read the interview transcripts to capture the informants' meanings. During this process, we coded and compiled the initial coding table. We thus derived a set of firstorder concepts that represented informants' views of what was going on in the case setting (Van

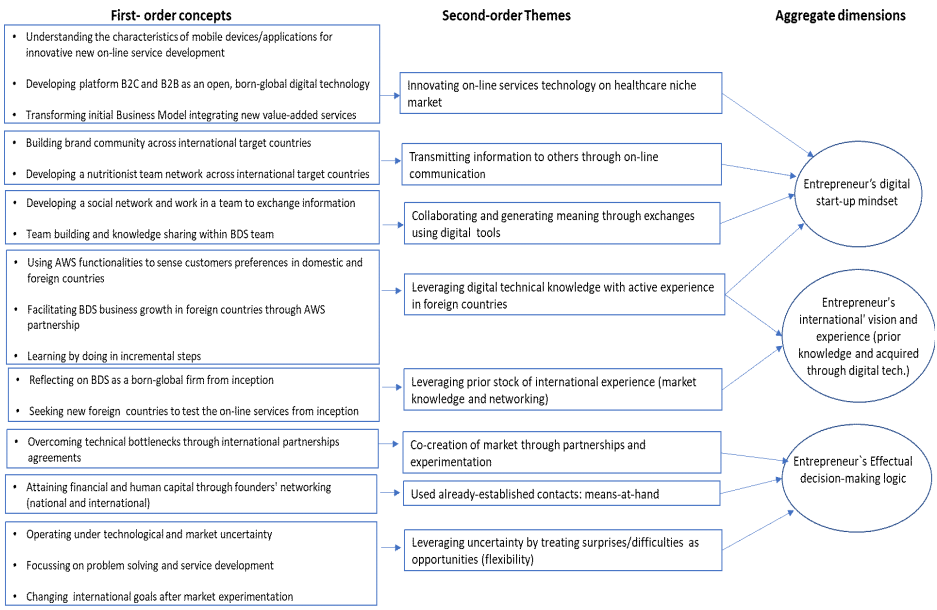
Maanen, 1979). In order to trace the connection between international opportunity recognition and entrepreneurs' digital capabilities, we used as a template the framework proposed by Nambisan (2017) about the intersection of digital technologies and entrepreneurship, and the framework created by Zaheer et al. (2019) for the founders' perspectives on achieving "TrAction (trajectory and action)" in digital start-ups. For a more detailed coding of actions related to the decision-making process, we used the framework created by Sarasvathy (2001) and Sarasvathy et al. (2014) on intersection of international entrepreneurship and effectuation research: (1) means-driven actions (means-at-hand), (2) prevention of big losses by trying to avoid committing more resources than a firm can afford to lose (affordable loss), (3) interaction with other people (networking) (4) leveraging uncertainty by treating surprises as opportunities (flexibility), and (5) the formation of partnerships and alliances (pre-commitment).

Thirdly, through the secondorder analysis, we endeavoured to find theoretical interpretations for the firstorder concepts derived in Step 2. We shifted back and forth between the derived concepts, the themes emerging from the concepts, and extant literature on international opportunity recognition for theories that could help us better understand the concepts and themes. The first-order concepts were clustered and linked to second-order themes, which allowed identification of more fine-grained categorization of entrepreneurs' digital capabilities and their decision-making logic at recognizing international opportunities during the entire phases of the firm. This step is iterative in nature. We engaged in repeated comparison and contrast of the firstorder concepts, looking for both similarities and differences between them. We made conscious efforts to identify theoretical differences between the concepts so that we could group and congregate similar first-order concepts to allow second-order themes to emerge. Consequently, these second-order themes became the notions we used to "explain the patterning of the first-order data" (Van Maanen, 1979, p. 541).

As the second-order themes emerged and we gained a better understanding of both entrepreneurs' digital capabilities and their decision-making logic at recognizing international opportunities, we began to see if we could cluster and link the secondorder themes into aggregate dimensions. For the purpose of our study, we were opened to using concepts identified in previous research to summarize the secondorder themes and aggregate dimensions, a practice also embraced by Pan and Tan (2011). It was in this effort that we discovered that the secondorder themes emerging from this study could be further categorized into aggregate dimensions related to the development of the entrepreneurs' digital capabilities and their decision-making logic. Finally, we wrote down the entire case story, with supporting quotations, as a longitudinal narrative. This helped us to serve as a foundation for our theoretical model.

The data structure presented in Figure 2 summarizes the firstorder concepts, secondorder themes, and aggregate dimensions we derived from Steps 2 and 3.

Figure 2. Data structure



4. Findings

In this section, we first present the background of the case firm and entrepreneurs. Thereafter we present the findings based on our research questions: how and why entrepreneurs with digital capabilities are able to recognize international opportunities, and how the digital entrepreneurs' decision-making logic is applied in order to recognize international opportunities.

4.1. Background of the Case Firm and Overview of the Critical Events and Activities of BDS

The case company (codenamed Born Digital Start-up, abbreviated BDS) is a Born Digital Start-up based in Spain operating in the healthcare and nutrition sector. BDS was formally established in 2017, but its entrepreneurial opportunity originated in January 2015. The business opportunity was based on the diagnosis of food allergies and nutrition as one of the founders suffered from this problem himself. It seemed that there was no mobile application at that time that would provide real-time information to detect possible food allergies after performing a diagnosis of the product components by scanning the barcodes. The initial BDS's business idea was grounded on a healthcare and nutrition advising mobile application to provide healthy habits and nutrition for end-consumers. During the

pre-launch period (2015-2017) the initial business idea evolved towards a digital platform not only oriented to the end consumer, but also to the food industry. The platform was launched in 2017 to operate both as a Business-to-Consumer (B2C) and Business-to-Business (B2B) model. BDS has been engaged in several development projects of healthcare mobile application solutions in Central America and Continental Europe from its idea generation phase.

To shed light on the two founders who have been working on the opportunity from the beginning, Table 1 outlines their main characteristics on prior stocks of educational background, technical experience, and other work experience. The founder 1 and Chairman of BDS was an entrepreneur and owner of a chemical company in the industry sector until a few years ago, when he decided to sale it and to start the BDS project. Moreover, he had participated in other entrepreneurial projects in technological initiatives in the United States and Central America as an investor. The founder 2 and CEO/CTO started working in Communication and Audio-visual industry for several years in different positions. During his tenure in these companies, he constantly travelled around the world in several projects. He decided to start BDS project as a niche market opportunity and he worked full time on technological development from the beginning. Currently, he is CEO and CTO in BDS, although the firm hired an ICT responsible to support him.

Table 1. Presentation of the entrepreneurs

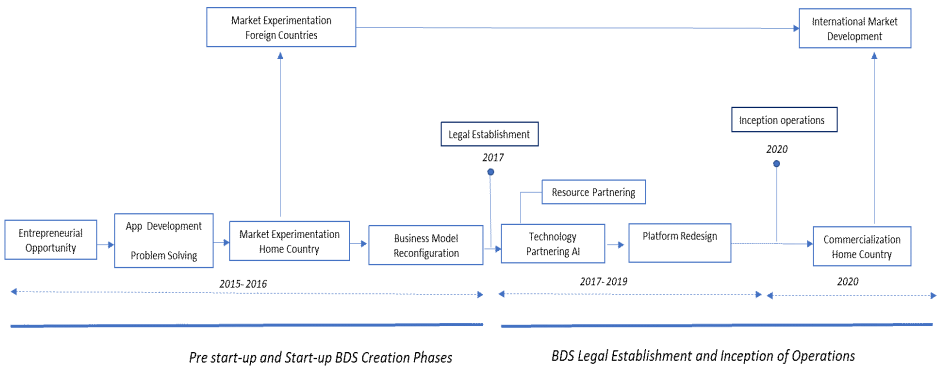
	Job Role	*Age Range*	*Gender*	*Highest level of education attained*	*Prior Technical experience*	*Other work experience*	*Role in Pre-start up BDS creation*	*Role after establishment and inception operations*
Founder 1	Chairman	45-55	Male	Bachelor`s degree Economics	Yes	Entrepreneur/ Owner	Commercially oriented Knowhow	Commercially oriented/ Networking and partnership oriented
						International Projects		
Founder 2	CEO/CTO	45-55	Male	Bachelor`s degree Communication	Yes	Communication Director	Technological Knowhow (hands-on knowledge)	Technology oriented/ Artificial Intelligence partnership/
						International Projects		Strong attachment to the international opportunity

The phases from pre/start-up BDS creation to the establishment and inception of operations containing the critical events and activities related to international opportunity recognition are described in Figure 3 in chronological order. Grounded on the findings, during the pre/start-up BDS creation process, we identified four stages: (1) entrepreneurial opportunity creation (2) application

development and problem solving, (3) market experimentation, and (4) business model reconfiguration. After the company was formally established, we identified four stages that characterized this post-establishment phase: (1) technology and resource partnering, (2) platform redesign, (3) commercialization at the home country and (4) international market development.

In the next sections, we present the key findings based on our case study contributing to the international opportunity recognition in chronological order.

Figure 3. Background and critical events and activities of BDS



4.2. Entrepreneurs' Digital Capabilities and International Opportunity Recognition

4.2.1. Entrepreneurs' Digital Capabilities at Start-up Creation

BDS' business idea presented a fairly innovation service to the healthcare and nutrition market on-line services. It was an idea with huge business potential due to the scarce existence of digital applications in the market that offered an online service to end-consumers on the diagnosis of food allergies and nutrition. In the pre-start-up and start-up phases of the venture, the founders worked on application development and solving problems related to a specific health on-line service, and they immediately focused on market experimentation, both in the home country and in the potential target countries. Their main goal was to devise an innovative healthcare digital service breakthrough to address a diagnosis through technological innovation.

Nevertheless, its development in practice faced several difficulties, notably the fact that the resources needed for the services were not available in Spain at the time. The first difficulty was raised by the application database and how to gather information about food products and their components with a high level of detail. This severely limited the number of potential target countries. Consequently, BDS started to seek countries where potential technological partners could provide the database information according to the application

development requirements. The CEO/CTO commented on this in 2018, as follows:

> "Despite the fact that BDS was conceptualized as a global firm, during the testing phase of the application, we identified an important entry barrier for the early internationalization of the company, since the product databases in each country should have qualitative and quantitative data (i.e., allergens) that allowed validating the algorithms to give off a correct diagnosis. We had to re-think our internationalization strategy."

Despite the two founders predicted that their digital services would create value for foreign customers and that they could be sold in several foreign markets, the main challenge was to acquire a database to solve the technical and strategic bottlenecks. Initially, the founders focused on developing their own database, but limited resources in Spain led them to make changes to their strategic plan. The founder 1 commented on this as follows:

> "The innovation capacity and ability to perceive new opportunities to market were the main challenges for us in the pre-launch period. Probably we were wrong in our initial strategic plan both in Spain and in foreign countries because we mainly focused on technological issues from the beginning".

As a result of the market experimentation in Spain and in foreign countries, the founders highlighted the importance of changing their original digital business model to reach new users in Spain and foreign markets. As the CEO/CTO said: *"We started as a B2C platform, but after the testing in Spain and other countries in Central America and Europe, we were forced to quickly develop B2B digital services to meet the high demand of potential food industries testing services in our platform. After we went to Mexico, we changed the business model to become a company that provides digital services based on B2B solutions, which can be integrated into any software or platform".* Thus, the initial business idea had to be transformed into a platform incorporating new B2B services.

The CEO/CTO and the management team decided to reconsider the firm's strategy and to reconfigure the business model in order to adjust this opportunity in the domestic and international context. The CEO/CTO commented: *"Our business model reconfiguration allowed us fast engagement in changing opportunities of digital technology innovations across international markets. Our flexibility and testing redesign enabled to rapidly abandon losing initiatives".*

Based on this situation, new designs, processes, and routines needed to be worked out and adjusted within the new business model in accordance with the firm's domestic market and international targets. Therefore, as a result as the market experimentation phase, the company focused on launching the new platform based on B2C and B2B model, and the two founders reoriented the international strategy focussing only on two countries, México and France, where

the required database was available to be integrated in the platform through partnership agreements.

Summing up, during the Start-up BDS creation, the CEO/CTO's technological capabilities and the two founders' international vision and prior international experience in the target countries played a dominant role used to build the technology infrastructure and to integrate business processes. The two founders reflected on BDS as a born-global firm from idea generation process, which led them to define an early internationalization strategy. The founders began a market experimentation process on the application both in the domestic market and in the target countries in Central America and Continental Europe where they gained prior work experience in other ventures. During this phase of experimentation, the founders identified technical bottlenecks regarding to database. To solve this problem, first of all, they redefined the business model by incorporating new services and scaling the mobile application towards a B2C and B2B platform. Secondly, they revised the company's internationalization strategy, focusing only on those countries where they could reach agreements with partners that could provide a customized database according to the technical and strategic requirements of new business model. This opportunity seeking behaviour was linked to the 'opportunity driven mindset" of the two founders, and therefore included the willingness of the entrepreneurs to seize new opportunities.

Thus, the findings related to the Start-up BDS creation phase indicate that both founding entrepreneurs demonstrate a deep understanding of the characteristics of mobile devices and applications, developing a new platform incorporating new value-added services. The founders emphasised having a vision and purpose based on solving technical problems focusing on a limited range of activities while pursued iterative service development. Furthermore, the findings indicate that relationships with potential international partners to test the platform were crucial to overcoming technical bottlenecks.

4.2.2. Entrepreneurs' Digital Competencies at BDS Establishment and Inception of Operations

Since the formal establishment of BDS in 2017, the entrepreneurs faced new challenges in the company development. First of all, it was necessary to create a stable team and incorporate a scientific director who was an expert in nutrition. As a digital start-up firm, BDS lacked credibility in negotiating with renowned experts. The CEO/CTO commented on this in 2018, as follows:

> "The negotiation process was crucial at this moment, since the major goal before the launching was to create a nutritionist's network in Spain, Mexico and France. We finally hired a R&D Director, Ph.D. in Nutrition and Cardiovascular diseases from an important Centre of Research in Spain".

Secondly, as the platform incorporated new technological requirements, it was necessary to pursue a technological partner expert in Artificial Intelligence

(AI). The project was becoming more complex and a partnership with and AI provider was required to create new value-added services according to the new business model. The final AI partnership agreement was signed with a Spanish University Incubation Centre in 2019, and the platform re-design process started to validate the new services to launch it.

The CEO/CTO and the management team began to seek new partnership agreements to drive the growth in the home country and the firm's globalization. During this time, the third challenge was financing the firm since BDS did not have the financial resources initially to develop the new technological requirements on its own. Although they had a large network of contacts to enable knowledge leveraging, capital remained their greatest challenge. Because of this, the potential partners in the target countries were contacted directly, with efforts to convince them of the value of the platform services, and demonstrations of how it would benefit their business. Despite subsequent investor activity, the founders were determined to maintain majority ownership to guide the firm's strategic growth and development. The two founders expressed a goal of international growth; however, detailed planning was not its main focus. The founder 1 commented on this in 2019, as follows:

> "The most crucial thing for the company's international growth was grasping opportunities when they turn up. Thus, the most important aspect for establishing an international partnership was to find stakeholders whom the firm could trust and who could deal with unexpected incidents".

During 2020, an initial agreement was signed with the Amazon Web Services to enhance the new skill of Amazon`s Alexa application for the commercialization of the company's services. Amazon Web Services (AWS) is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis. These cloud computing web services provide a variety of basic abstract technical infrastructure and distributed computing building blocks and tools. AWS operates from many global geographical regions including North America. This new partnership agreement with AWS has been a crucial milestone for BDS in several ways: first, BDS have integrated AI as a key part of its algorithms to offer new value on-line services. Second, due to AWS operates from global geographical regions, BDS has started its new platform commercialization and international market development during 2020. Third, the company is nowadays sensing customers preferences using AWS functionalities both in domestic and foreign countries. The two founders commented on this in 2019, as follows:

> "Our business strategy before the new platform launch focused on offering value-added customer- oriented services (B2C and B2B services) to lower business barriers, both in home and foreign countries. Then, we initiated the negotiations with AWS in order to facilitate our business international growth integrating the new skill of Amazon's Alexa application".

Therefore, after the BDS legal establishment, the two founders emphasized their efforts to create a stable team and incorporating a scientific director to enhance new value-added services based on AI algorithms before the new platform's launching, both in Spain and target countries. Likewise, the two founders focused on building a brand's community (access to end-customers, suppliers and partners), since the main goal was to build up an international network to support the new services created in the platform at this time. Thus, the on-line communication capability through developing a social network and working in a team to exchange information was essential for business growth both in Spain and in foreign countries. The findings also show that entrepreneurs' innovation capability can facilitate the creation of value-added services (e.g., incorporating artificial intelligence features). However, the development process of the new value-added services was supported on incremental step learning process both in Spain and foreign countries where the platform was being tested.

Entrepreneurs also focused on how the international business development might be accelerated. For this challenge, the partnership agreement with Amazon Web Services to develop a new skill in the platform was decisive. The findings show how the entrepreneurs' international vision enabled BDS to pursue new international business opportunities through the partnership with AWS. The findings point to the entrepreneurs' propensity to enhance the BDS international growth by leveraging their knowledge of digital technologies features and international experience in the target countries (e.g., using AWS functionalities to sense customers preferences in domestic and foreign countries). The findings also demonstrate how the interplay between their knowledge of digital technologies features and their international experience in the target countries relate to a better understanding to solve-problem issues.

4.3. Entrepreneurs' Decision-making Process to Recognize International Opportunities

In this section, we analyse the case results on decision-making process from BDS' entrepreneurial opportunity originated in 2015 to the inception of operations in 2020. As mentioned above, the entrepreneurial business idea was a health and nutrition mobile app to advise healthy habits and nutrition to end-consumers. The two founders had no scientific knowledge in the fields of healthcare and nutrition, although they had been involved in digital ventures in Spain and abroad in other fields. The founders identified the objective of the solution and leveraged their technical knowledge with the scientific assessment from external experts in healthcare and nutrition. Their international background and international experience in other digital ventures in Central America and Continental Europe led them to conceptualize BDS as a born-global firm to initiate the internationalization process from inception. However, their decision

regarding the pace and sequence to enter foreign markets in BDS's internationalization strategy took some barriers such as language, cultural and geographical distances as a limitation to develop company internationalization. The two founders commented on this in 2018, as follows:

> "Our international strategy was planned based on our prior experience in those markets where we had some knowledge and we decided to initiate our international activity in Central America and Continental Europe to overcome barriers such as language, cultural and geographical distances. However, we also knew that technological uncertainty was a relatively strong factor for us due to our innovative application solution. We had to reorient our internationalization strategy several times."

Subsequent steps during the start-up BDS creation phase focused on market experimentation in those countries where the database was available to integrate into the new platform. The partnerships agreements with companies in order to co-create the market and market experimentation in these countries were critical to advance in the application development.

Despite that initial decision-making process to recognize the international opportunities could be conceived as a planned process, evidence shows that the uncertainty environment and the technical bottlenecks found during the database development were critical factors to re-shape the decision-making logic. Market co-creation through partnerships and experimentation were key aspects to considering an effectual rather than causal decision-making logic. In addition, the findings indicate a high degree of flexibility on the basis that the entrepreneurs decided to change the BDS' international strategy and business model to cover new business situations and to engage new international users in accordance with the firm's strategy (e.g., food industry companies).

After the legal establishment of the company, the founders attained financial and human capital through their network. Through personal contacts, the CEO/CTO recruited a scientific director for developing new value-added services. The entrepreneurs also signed a partnership agreement with the University Incubator Centre to integrate artificial intelligence on the platform and with Amazon Web Services. The CEO/CTO commented on this in 2020, as follows:

> "Our main challenge to expand our business internationally was to create new services and algorithms based on AI, as well as to boost the platform abroad. We rapidly engaged in conversations with a variety of people who already knew our platform, or they were personal contacts".

The findings demonstrate an effectual decision-making logic through the formation of partnerships and alliances (pre-commitment) and means-driven actions (experimentation). The two founders focused on "means at hand" approach rather than on a predictive analysis to recognize international opportunities and to develop international markets. The findings also demonstrate

how the two founders focused on what they can afford to lose rather than on prediction of possible gains. By focusing on affordable loss, the need to predict future returns is eliminated, thus the founders employed less time engaged in planning.

5. Discussion

This study examined e-entrepreneurs' digital capabilities and their decision-making process to recognize international opportunities in a born digital firm context. We established the relevance of entrepreneurs' digital capabilities and their decision-making logic for the fields of Digital and International Entrepreneurship, as well as from the lens of effectuation theory, which has been little studied.

For the entrepreneurs' digital capabilities development, our case findings show a digital start-up mindset characterized predominantly by an understanding of digital technologies, such as web and mobile applications, and AI as an innovative digital technology to create value-added services in a global on-line marketplace. Moreover, entrepreneurs' digital start-up mindset was underpinned on creativity, collaboration, problem solving and on-line communication capabilities, demonstrated during the BDS creation and launching the platform. Besides, the founders conceptualized BDS as a born-global firm grounded on their international vision and prior international experience. Likewise, their international experience acquired through digital technologies enhanced the international opportunity recognition. The founders aggressively and actively explored new business opportunities in international target markets from the early stages of BDS' creation.

Regarding the decision-making logic at recognizing international opportunities, our case findings show that the effectuation logic was the dominant path to decision-making in the key stages from BDS creation phase to launching the platform. The entrepreneurs demonstrated opportunity driven mindset, flexibility and means-driven actions. We also find that a direct lack of prior technical knowledge of several bottlenecks in the stage of the application development forced entrepreneurs to mainly act in effectual ways throughout market experimentation and learning by doing in incremental steps.

5.1. Entrepreneur's Digital Start-up Mindset at Recognizing International Opportunity

The pursuit of international opportunities within born digital firms may enable entrepreneurs to develop digital capabilities based on the fact that a digital firm can be indeed international from the very beginning (Brouthers et al., 2016; Kotha

et al., 2001; Loane et al., 2004). Technical affordances of digitalization such as direct engagement with stakeholders, automation, network effects, flexibility, and scalability let these firms operate to a very high degree 'in space', and their connection to markets around the world can be nearly instant (Monaghan, Tippmann and Coviello, 2020). Prior research asserts that Internet capabilities can enhance the firm's ability of identifying international opportunities (Reuber and Fischer, 2011). Glavas et al. (2017) argue, however, that simple 'use' of the Internet will not be sufficient for achieving international market performance. Instead, firms are often forced to become more innovative to take advantage of international market opportunities in an online environment. In line with this, our findings show which digital capabilities in particular enable entrepreneurs to pursue international market opportunities within a born digital firm.

Our findings support Zaheer et al.'s (2019) entrepreneurs' digital start-up mindset framework, highlighting the main characteristics of digital entrepreneurs, such as entrepreneurial orientation, opportunity driven, understanding of web and mobile technologies, vision of a global online marketplace, experimentation, and hands on both technology and business. Specifically, BDS' digital entrepreneurs adopted a vision on innovating on-line services technology in a niche market, transmitting information to others through on-line communication, collaborating and generating meaning through exchanges using digital tools, building a brand's community, and building networking on target countries to integrate their technology (see Figure 4). These findings also support Nambisan (2017), who argue that the capabilities required in undertaking the entrepreneurial process may also be different due to the fact that the emergence of digital products requires a re-conceptualisation of human and social capital, organisations, ecosystems, and human behaviour in the start-up development process. This is in line with prior studies indicating that it is necessary for digital entrepreneurs to be aware of differences, opportunities, and threats compared with traditional business models in order to be successful, otherwise, the digital venture is running considerable risk to fail (Hull et al., 2007).

Similarly, our findings concur with Wind (2008) who found that digital businesses represent a "shift from traditional management approaches to 'network orchestration'" (p. 23), as networks and communities are crucial for digital entrepreneurs, and with Hair et al. (2012) who argue that strong market orientation is essential for entrepreneurs to succeed in the dynamic and rapidly changing environment of born digital firms.

5.2. Entrepreneurs' 'International' Vision and Experience at Recognizing International Opportunity

As mentioned above, many born digital firms are international from the very beginning because their connection to markets around the world can be nearly

instant (Monaghan et al., 2020), and this implies that digital entrepreneurs develop digital capabilities as our findings support in this study. However, research also suggests that in an Internet-based environment, decision-makers with an international mindset and higher levels of international vision are more global in nature and tend to outperform those without such an international vision (Johnson, 2004; Andersson and Evangelista, 2006). The international vision of the entrepreneur is argued to be an important component in the firm's international expansion enabling the firm to identify new international opportunities, which may have not been previously considered (Nummela et al., 2004). In many instances, it is the entrepreneur's drive and vision that allows firms to expand into international markets and seek out new international business opportunities.

In line with these scholars, our findings show that BDS' entrepreneurs conceptualized their digital business internationally from the idea generation process, transforming their business model and their strategies to reach international markets from the very beginning of the business lifecycle. These entrepreneurs also highlighted their global ambitions and willingness to take risks in foreign markets. They were actively pursuing foreign digital users and digital sales, and they actively adapted the digital services to foreign languages and users' preferences.

Similarly, our findings concur with Jones and Casulli (2014) who argue that prior knowledge (experience) is widely identified as influential in internationalization. It is then an attribute or knowledge resource of key individuals within the firm that influences internationalization decisions. Very recently, Dillon et al. (2020) have identified a new type of experience, named "digital international experience" as a type of experience encompassing both technical and international dimensions of business knowledge, and show how this "digital international experience" enhances opportunity recognition within the context of digital internationalisation. Our findings also point to the entrepreneurs' propensity to deal with problem-solving issues by leveraging their knowledge of digital technology features and international experience acquired in the target countries (see Figure 4). Besides, the founders developed experientially based digital competences during the start-up creation and launching processes in order to help alleviate liabilities of newness and foreignness. Thus, a link between international vision, prior stock of international experience, and international experience acquired through digital technologies enhanced international opportunity recognition by the entrepreneurs of our investigated firm.

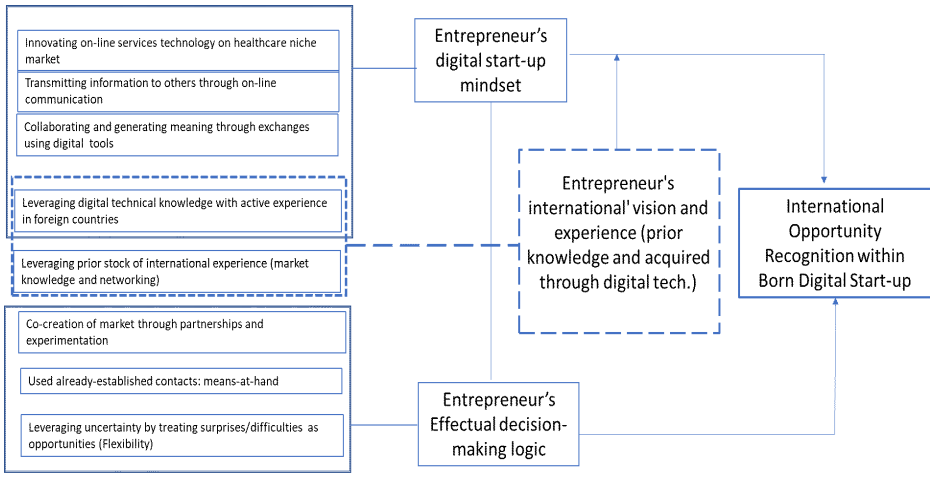
5.3. Entrepreneurs' Effectual Decision-making Logic at Recognizing International Opportunity

From all stages of the entrepreneurial process, from idea generation to inception of operations, BDS' digital entrepreneurs engaged in processes of effectuation and co-creation with stakeholders in market experimentation because of the lack of pre-existing markets (Sarasvathy et al., 2008). Although the founders originally intended to engage in rational decision-making (e.g., initially planned sequence to enter in foreign markets), the inherent uncertainty present in the digital global market and their lack of healthcare business "know-how" motivated them to become highly trustful on effectual means to recognize the opportunity internationally (see Figure 4). These findings concur with Sarasvathy and Dew (2005), who argue that entrepreneurs attempt to exercise control over what can be done with available resources (effectuation rationality) rather than decide what ought to be done given a set of predictions about what happens next (predictive rational view).

Also, in line with Sarasvathy (2001), our findings show that effectuation can therefore be more relevant in the context of uncertainty environments because it copes well in front of risky situations; through experimentation and flexibility, effectuation activities can be modelled by the entrepreneurs. We find that BDS' digital entrepreneurs were focusing on what they can afford to lose rather than on prediction of possible gains during all stages of the venture. An effectual approach risks only resources that can be affordably lost; thus, it also drives partnerships as the central method to expand resources. We find that the company's founders forged partnerships to overcome technical bottlenecks, to create new value-added services, and to launch the platform abroad. These findings are consistent with Ojala et al. (2018) internationalization model for digital platform providers in which it is demonstrated how digitalization creates possibilities but, at the same time, sets limits to the global expansion of digital-based INVs. Accordingly, digital entrepreneurs' decision-making process is driven to focus on foreign market entries where the required technical resources are available, and their firms can extend their resource base through collaborative network relationships and exchange important resources with partners.

Drawing on the case findings, we propose a theoretical model of how and why the entrepreneurs' digital capabilities are developed in a way to enable a firm to recognize international opportunities and their decision-making logic within an internationalizing born digital start-up (see Figure 4).

Figure 4. Theoretical model



6. Conclusions

This longitudinal single case study has empirically examined how and why entrepreneurs with digital capabilities are able to recognize and exploit international opportunities, and how digital entrepreneurs' decision-making logic is applied in order to recognize international opportunities in a born digital firm context. We contribute to and expand on existing International and Digital Entrepreneurship fields of literature and theory and practice in several ways. First of all, the study extends the Digital Entrepreneurship theories on factors impacting on the propensity of internationalization of new ventures, stressing the influence of entrepreneurs' digital capabilities (Nambisan, 2017). Digitalization creates social data (market networks) and intellectual data (market knowledge) about foreign markets earlier and faster than other methods, while also improving firms' attractiveness, decision processes, and capabilities of decision makers (Clark et al., 2018). Here, we extend this understanding by demonstrating how and why entrepreneurs with digital capabilities are able to recognize and exploit international opportunities in a born digital firm context. International opportunity recognition is in our study viewed broadly as an iterative and complex process comprising interwoven aspects of search, discovery, and creation, and overlapping with international opportunity evaluation, development, and exploitation (Chandra, Styles, and Wilkinson, 2009) whereby the individual plays a central role in line with Shane and Venkataraman's (2000) approach. Here, we expand this view within an internationalizing born digital start-up in which the "e-entrepreneurs" or digital entrepreneurs have to develop a "digital start-up mindset" characterized predominantly by innovating in on-line services technology in a niche market, transmitting information to others through

on-line communication, collaborating and generating meaning through exchanges using digital tools, building a brand's community, and building networking on target countries to integrate their technology. This suggests the need to better understand these digital capabilities and it becomes an opportunity to extend the International Entrepreneurship field in a purely digital context.

Secondly, we contribute to very recent IE literature and theories in the context of the internationalization of born digital firms (Brouthers et al., 2016; Ojala et al., 2018; Monaghan et al., 2020; Glavas et al., 2017) by integrating entrepreneurs' digital capabilities and their international vision and international experience. Although within the IE literature it is widely argued that a consciousness of foreign market opportunities is a result of the entrepreneur's prior international work experience (e.g., Oviatt and McDougall 1994; Johanson and Vahlne, 1977, 1990), and how experientially based competencies developed by entrepreneurs help alleviate liabilities of newness and foreignness (Mudambi and Zahra, 2007), we extend this by demonstrating how the interplay of entrepreneurs' international vision, prior international experience and international experience acquired through the deployment of digital technologies relates to a better understanding to recognize international opportunities. Thus, our research contributes to the IE literature by providing empirical evidence regarding how entrepreneurs interact with digital technologies (e.g., through social media, AI, cloud computing platforms) when undertaking international business activities within their born digital start-up, and how they leverage this knowledge acquired during the international entrepreneurial process. This type of digital international experience is in our theoretical model a key digital capability forming part of our digital capability-building approach.

Thirdly, by integrating insights from the effectuation theories and IOR with Digital Entrepreneurship literature (e.g., Sarasvathy et al., 2014), we expand the effectual decision-making logic to digital entrepreneurial process by developing a theoretical model of international opportunity recognition within a born digital firm. The model shows how an effectual decision-making logic can be more relevant in a digital environment in several ways. Firstly, the disruptive nature of digital technology imposes a high demand of creativity and mindset shifting and the rapidly evolving digital environment calls for continual, frequent effectuation actions from entrepreneurs. Secondly, new digital technologies not only present an opportunity to reconsider businesses' operational processes, but often redefine the conditions of success and rules of competition. Thus, the digital entrepreneur faces increasingly dynamic paths, determined by diverse activities with uncertain time frames (Nambisan, 2017). Thirdly, the variety of possibilities offered by digital technologies also means an increase in the number of possible means in the effectuation process. Thus, our study sheds light on international opportunity recognition unfolding within a born digital firm formation by examining digital entrepreneur's decision-making processes.

6.1. Empirical Implications

This study raises important questions about the relationship between e-entrepreneurs' capabilities and international opportunity recognition, and the impact of effectuation approach that could be relevant to digital start-up firms and their entrepreneurs. First, knowledge is limited concerning how the disruptive nature of digital technology imposes an entrepreneurs' digital start-up mindset, and how an uncertain digital environment calls for continual effectuation actions by e-entrepreneurs. Indeed, this study acknowledges how entrepreneurs with international vision and prior international experience are more global in nature and tend to outperform by seeking out new international business opportunities from the very beginning. However, our study outcome also highlights the entrepreneurs' level of knowledge acquired through the deployment of digital technologies during the initial phases of the company's creation as a key capability at recognizing international opportunities. In this manner, we acknowledge that the interplay of international vision and prior experience with the experientially based digital competences can enable entrepreneurs pursue international opportunities to a variety of markets at low costs and in less time. Such experientially based digital competences acquired by the e-entrepreneurs help alleviate liabilities of newness and foreignness**.**

Second, we acknowledge that in practice e-entrepreneurs are required to make favourable and knowledgeable decisions to facilitate international opportunity recognition and company performance. Although the entrepreneurs could intend to engage in rational decision-making from the early stages of the companies, the inherent uncertainty present in the digital global market attempt entrepreneurs to exercise control over what can be done with available resources (effectuation rationality) rather than decide what ought to be done given a set of predictions about what happens next (predictive rational view). The present exploration of entrepreneurs' effectual and causal logics and how their choices influence value appropriation makes a promising contribution to the international entrepreneurship research on IOR.

7. Limitations and Further Research Directions

There are several limiting issues to be considered in evaluating our findings. The first limitation of this study is the fact that the findings are based on material involving one company and therefore even if the research method applied makes it possible to collect in-depth data and to gain a detailed view of the case in question, in a single case study method over-generalization should be avoided. Secondly, the observation period concerned only both the pre- and post-establishment periods until the inception of operations. Thus, based on the results of the study, it is not possible to analyze on what happens to the international

opportunity recognition processes once the company has started its new platform commercialization and international market development. Future longitudinal research will be valuable as for how international opportunities develop over time in a digital context. Thirdly, although key decision-makers have been widely viewed as an acceptable representation of the firm, particularly in smaller firms (e.g., Loane et al., 2004), future research may seek to extend data collection to multiple levels of analysis, such as at the level of the firm itself and the management team. This would allow for findings to be validated across levels, potentially shedding further light on the development and transfer of international knowledge and experience for international business activities. Fourthly, our study has been underpinned according to Chandra et al.'s (2009) opportunity recognition definition as a process that consists of both discovery and creation. Therefore, our study has not taken sides in the discussion whether international opportunities are discovered and/or created by digital entrepreneurs inside born digital firms. More empirical research is needed on this topic in a digital context in the IE literature and theory. Finally, our research supports that effectuation logic is the dominant path to decision-making in the key stages of the firm operating in a digital context. However, we call for further multiple case studies to corroborate our findings. Future research would be valuable to evidence if both effectuation and causation logics can actually work simultaneously in the same organization (e.g., Nummela et al., 2014; Evers and Andersson, 2021) in a digital context.

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