CHAPTER 3

ASSESSING THE IMPACT OF SOCIAL FORCES IN INTERNATIONAL OPPORTUNITY RECOGNITION: A CASE STUDY OF BRAZILIAN TECHNOLOGY FIRMS

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ABSTRACT

This chapter explores how the recognition of opportunities regarding developing technology and entering a new market is influenced by the systemic effect of social forces. These include institutions, social networks and the entrepreneur’s cognitive frames. This study adopts a longitudinal perspective by capturing and analysing the phenomenon in two moments: first, when the businesses started to operate domestically and second, when they began to internationalise. The cases of five Brazilian technology firms are analysed. The findings reveal the systemic and mutually reinforcing effect of these social forces on the recognition of opportunities. The entrepreneurs’ cognitive frames were particularly vital in recognising opportunities to enter the Brazilian market. The institutional support provided by universities along with government mechanisms and entrepreneurs’ social networks were essential to accrue experiential and non-experiential knowledge of international markets, therefore contributing to the recognition of international opportunities. The temporal perspective employed in this research assists the understanding of how historical events shape entrepreneurs’ capabilities to recognise and change company discourse to pursue the recognition of international opportunities. The results provide guidelines for researchers, practitioners and policy-makers, particularly in the emerging
**INTRODUCTION**

Entrepreneurship is a process whereby new organisations, goods, services, processes and markets come into existence (Davidsson, 2015; McMullen & Dimov, 2013; Shane & Venkataraman, 2000; Zahra, Korri, & Yu, 2005). The recognition of opportunities is a focal entity of entrepreneurship studies (Venkataraman, 1997) and is crucial to grasp how businesses enter a new market or develop a new product (Lumpkin & Dess, 2001; Shane & Venkataraman, 2000).

Previous studies on opportunity recognition have examined the discrete impact of social forces in that process (Baker, Miner, & Eesley, 2003; Jones, Coviello, & Tang, 2011; Mainela, Puhakka, & Sipola, 2018; Zahra et al., 2005). Some studies, moreover, have investigated the individual-opportunity nexus (Grégoire, Barr, & Shepherd, 2010; Grégoire & Shepherd, 2012; Sarasvathy, 2001; Shane & Venkataraman, 2000; Zahra et al., 2005), by demonstrating the influence of entrepreneurs’ cognitive frames (Politis, 2005; Sarasvathy, 2001; Zahra et al., 2005) and capabilities (Andersson & Evers, 2015) with respect to outcome. Entrepreneurs’ cognitive frames enable them to ‘connect-the-dots’ and to recognise the emergent patterns as conceivable opportunities (Baron & Ensen, 2006). Other studies have looked into the community-opportunity connexion by bringing forward the effect of social networks (Ellis, 2011; Johanson & Vahlne, 2009; Mainela et al., 2018; Ozgen & Baron, 2007). Networks assist the free flow of information, facilitate cooperation and form the basis for discovering opportunities (Ellis, 2011; Kwon & Arenius, 2010). Previous studies have also suggested the importance of institutional mechanisms for the recognition of opportunities (Di Gregorio, Musteen, & Thomas, 2008), by determining the availability of support mechanisms such as capital, information and training (Buckley et al., 2007; Chittoor, Ray, & Sarkar, 2008; Kalotay & Sulstarova, 2010; Luo & Tung, 2007).

Beyond the discrete impact of social forces, a wide-ranging approach to opportunity recognition views opportunities as subjective and context-dependent, since individuals act on them according to how they interpret their external environment. In this regard, there is still a knowledge gap of the systemic influence of these social forces on how entrepreneurs recognise opportunities (Baker et al., 2003; Jones et al., 2011; Mainela et al., 2018; Zahra et al., 2005). Moreover, the literature on international opportunity recognition has mostly analysed firms in developed economies and the knowledge about this phenomenon in emerging economies is still nascent, as in the case of Latin America countries (Nicholls-Nixon, Davila Castilla, Sanchez Garcia, & Rivera Pesquera, 2011).

This chapter joins the debate by bringing a systemic approach to understanding how the recognition of opportunities is influenced by interrelations between...
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individual and contextual factors. This research adopts the lens of Beckert's (2010) social forces (see Granovetter, 1992; Mützel, 2009; Powell & DiMaggio, 1991) to investigate how individual cognitive frames and external elements such as social networks and institutions impact on the recognition of opportunities. Specifically, it looks at how these forces act as a facilitator (or hinderer) of entrepreneurial decisions regarding the recognition of opportunities to initiate a business venture in Brazil, and subsequently, to expand it internationally. The recognition of opportunities is investigated as encompassing the process of identifying a new product or service (technology based), as well as the market in which the economic transactions would take place (McMullen & Dimov, 2013; Pech & Cameron, 2006). For the purpose of this investigation, the recognition of international opportunities led to market-entry decisions through either exports or foreign direct investment (FDI) or a combination of the two.

This research is significant due to its contribution to the expanding knowledge base of how entrepreneurs from an emerging economy (Brazil) recognise opportunities. The study of entrepreneurship and particularly opportunity recognition is an important element of economic development and growth, particularly with reference to emerging economies. In comparison to developed economies, these are less innovation-driven and are still mainly efficiency-driven (Acs & Amorós, 2008). Although Brazil sees innovation as the impetus it needs for growth (Póvoa & Rapini, 2010), it is necessary to stimulate innovation in order to progress further, become more knowledge-based and encourage high-impact entrepreneurship that identifies and explores opportunities to generate greater dynamism in the economy (Baum & Bird, 2010; Davis & Shaver, 2012). The recognition of opportunities is critical to achieving growth in innovation-driven and internationally oriented entrepreneurship (Acs, Autio, & Szerb, 2014; Acs & Amorós, 2008; Ferreira, Fernandes, & Ratten, 2017; Nightingale & Coad, 2013). However, starting and growing a business in an emerging economy is different compared to advanced economies (Andersson, 2011; Mair, Marti, & Ventresca, 2012). Entrepreneurial systems, therefore, ought to be nurtured by public policies as they have the potential for making entrepreneurship a consistent activity at a national level (Acs et al., 2014). Thus, understanding how entrepreneurs identify opportunities that drive the initiation and expansion of a business can lead to perfecting the market by eliminating barriers to entrepreneurship and other market failures (Amorós & Cristi, 2008; Klapper, Laeven, & Rajan, 2006). Entering foreign markets is also a result of the engagement of public institutions and the entrepreneurs’ ability to cooperate and learn through institutionally established network relationships. Therefore, it is important to understand the extent to which these social forces can support the rapid and sustainable internationalisation of businesses (Amal & Rocha Freitag Filho, 2010).

This chapter analyses five case studies of Brazilian technological firms. The data collection took place between 2012 and 2017. The presence and intensity of the social forces are analysed in two distinct moments, first, when the firms began in the domestic market; and second, when they have identified opportunities abroad. The cases were selected from businesses that had begun their domestic or international activities around the time the research started and which provided good access to information (Stake, 1995). A decision was then made to identify
companies that were located in the same region of the country, owing to the size of Brazil and the researchers' budgetary constraints associated with travel. Rio de Janeiro and São Paulo, therefore, were chosen due to their geographic proximity.

This study has several implications. First, it provides insights into the extent to which the interactions between social forces (institutions, networks and cognitive frames) impact on the recognition of opportunities. Thus, new knowledge of the systematic nature of opportunity-recognition is generated (Mainela et al., 2018). Second, the study highlights the extent to which entrepreneurs can manage these different forces to identify opportunities. Third, it sheds light on how these social forces change in their impact on opportunity recognition over time (Andersson & Evers, 2015; Baker et al., 2003; Jones et al., 2011; Mainela et al., 2018; Zahra et al., 2005). Thus, by adopting a temporal perspective, this chapter foregrounds how historically developed circumstances influence future possibilities (Baker et al., 2003; Jones & Holt, 2008; Ramoglou & Tsang, 2016). Therefore, this study gives decision-makers an additional basis for supporting the creation of highly competitive entrepreneurial businesses.

This chapter begins with a literature review of institutions, networks and cognitive frameworks (i.e. experiential and non-experiential knowledge). It succeeds in substantiating the choice of the case study approach and describes the research design and methodology of the analysis. Subsequently, the results are presented and discussed, conclusions are drawn and a critique is provided on the research limitations and opportunities for further research.

**LITERATURE REVIEW**

The recognition of opportunities will be investigated by adopting a systematic perspective viewed through the lens of Beckert's (2010) conceptual framework (see Fig. 1): institutions (Beckert, 2010; Kalantaridis & Fletcher, 2012; North, 2000;...
Institutions, Entrepreneurship and Opportunity-Recognition

An institution-based view of entrepreneurship highlights the interactions between entrepreneurs and institutions, according to which strategic choices have shaped the formal constraints of a particular context (Ahlstrom & Bruton, 2010; Peng, Wang, & Jiang, 2008; Yamakawa, Khavul, Peng, & Deeds, 2013). Institutional laws, norms, habits (Kiss & Danis, 2008; North, 1994), values (Stephan & Uhlaner, 2010) and role models (Obschonka, Goethner, Silbereisen, & Cantner, 2012) influence how entrepreneurs understand their environment (Kalantaridis & Fletcher, 2012) and also impact on their actions (North, 1994; Yamakawa et al., 2013).

Regulatory institutions such as public policies play a decisive role in the development of market-friendly conditions that promote entrepreneurial activity, the creation of jobs, economic growth and development (Borges, Bezerra, Silva, Andreassi, & Ferreira, 2018; Busenitz, Gomez, & Spencer, 2000; Nightingale & Coad, 2013; Scott, 1995). In emerging economies, market-supportive institutional environments facilitate access to capital and technologies (Chittoor et al., 2008; Luo & Tung, 2007; Shi, Sun, & Peng, 2012) and provide mechanisms (e.g. fiscal incentives, grants and venture capital) for the rapid commercialisation of innovations (Buckley et al., 2007; Kalotay & Sulstarova, 2010). Institutions influence the formation of strategic alliances with investors (Bhaumik, Driffield, & Pal, 2010; Oparaocha, 2015; Shirokova & McDougall-Covin, 2012). Consequently, the institutional environment influences the recognition of opportunities by entrepreneurs (Helmke & Levitsky, 2004).

Brazil has experienced profound changes in its institutional environment with respect to creating and developing knowledge-intensive new ventures and rapid-growth entrepreneurship (Borges et al., 2018; Póvoa & Rapini, 2010). These transformations started in the 1960s and became stronger (Moguillansky, Bielschowsky, & Pini, 2001) amid a process of market liberalisation in the late 1980s. The abolition of trade barriers, the creation of efficient capital markets and the promotion of investments for economic and social growth supported the development of a knowledge-intensive economy (Chudnovsky & López, 2000; Santiso, 2005; Stallings & Peres, 2010, 2011) (see Table 1).

By 2013, Brazil had 94 technology park initiatives hosting 939 enterprises and employing 32,237 persons (including 1,098 Ph.D. and 2,950 masters graduates) and 384 business incubators hosting 2,640 start-ups (Mazzucato & Penna, 2016). In 2011, the combined annual turnover of more than 5,100 firms integrated into the National Network of Technology Parks and Business Incubators exceeded 15 billion BRL, providing over 53,000 jobs (ANPROTEC, 2012, 2016; IBGE, 2014; Lahorgue, Guimarães, Aranha, Fátima de Faria, & Pires, 2012; MCTI, 2015). Approximately 58% of the firms entering this network were derived from Academia (Lahorgue et al., 2012). By 2011, more than 3 billion BRL had already been invested by public and public–private funds targeting technology start-ups in approximately 500 firms (Ramalho, Furtado, & Lara, 2011).
Since 2007, CRIATEC (a venture capital fund) has invested up to BRL 5 million per company in 36 emerging and innovative companies, 16 of which have been sold and 20 more had a combined turnover of 220 million BRL in 2017 (CRIATEC, 2019). Patent applications made by resident companies in Brazil grew from less than 2,500 per year between 1985 and 1995 to almost 5,000 per year in 2012 (IBGE, 2014; Stallings & Peres, 2010, 2011). These results highlight that the regulatory institutional transformations had a relevant impact on the promotion of a knowledge-intensive economy in Brazil.

The next section will investigate networks and how they relate to other social forces with respect to influencing the recognition of opportunities.

Networks and Opportunity-Recognition

The recognition of opportunities is an instance of collective activity (Mainela et al., 2018), whereby entrepreneurs’ motivations can be gauged (or hindered) by the norms or collective beliefs of their networks (Acs et al., 2014; Ahlstrom & Bruton, 2010; Elam & Terjesen, 2010; Scott, 1995; Vandor & Franke, 2016). Granovetter (1992) argued that economic transactions between individuals (and organisations) are both embedded in and strongly influenced by social relationships. Business and social networks have a different scope, as social networks represent all of an individual’s relationships within a society (Burt, 2002). They can be either professional or personal (Musteen, Datta, & Butts, 2014; Musteen, Rhyne, & Zheng, 2013), whereas business networks include only the relationships between firms (Ellis, 2011). However, despite being initiated by business-to-business relationships, business networks are gauged by the professional relationships between individuals. Investigating entrepreneurs’ internationalisation decisions from the perspective of social networks allows the understanding of how opportunities are identified and not restricted to the markets where the firms already have business relationships (Ellis, 2011; Johanson & Vahlne, 2009).

The benefits for entrepreneurs of entering network relationships are widely acknowledged in the literature. Networks can assist in finding business opportunities (Ahlstrom & Bruton, 2010; Ellis & Pecotich, 2001; Gulati, Nohria, & Zaheer, 2000; Huggins & Johnston, 2010; Musteen et al., 2013, 2014; Ozgen & Baron, 2007) as they are a valuable source of information about clients, competitors and institutions (Ellis & Pecotich, 2001; Gulati et al., 2000; Yamakawa et al., 2013). Recent studies suggest that entrepreneurs participate in online social networks (communities-of-practice) to gain access to international marketing knowledge (Hafeez, Alghatas, Foroudi, Nguyen, & Gupta, 2019; Hafeez, Foroudi, Nguyen, Gupta, & Alghatas, 2018; Musteen, Curran, Arroteia, Ripollés, & Blesa, 2018). The individuals with whom entrepreneurs hold relationships offer access to their networks, which in turn, can lead to further linkages with other stakeholders (Harris & Wheeler, 2005; Johanson & Vahlne, 2009). Hence, uncertainty (Brass, Galaskiewicz, Greve, & Tsai, 2004; Zain & Ng, 2006) and risks (Sharma & Blomstermo, 2003) are reduced. Network ties affect the paths through which entrepreneurs from emerging economies internationalise (Che Senik, Scott-Ladd, Entrekin, & Adham, 2011; Dimitratos Amorós, Etchebarne, & Felzensztein, 2014; Oparaocha, 2015; Shirokova & McDougall-Covin, 2012; Yamakawa et al., 2013). Participating in networks is particularly relevant for
resource-constrained firms (Hafeez, Malak, & Zhang, 2002) and less experienced entrepreneurs. They cannot compete based on economies of scale but rather exploit linkages with others as an alternative method of acquiring and controlling essential means, such as knowledge and information (Zahra et al., 2005). Some countries have adopted cluster-based strategies to develop essential networks and service elements to ensure the success of new businesses (Hafeez, Foroudi, Dinnie, & Parahoo, 2016). Entrepreneurs can identify more opportunities through networking than when acting alone (Ardichvili, Cardozo, & Ray, 2003; Bai, Johanson, & Martin, 2017; Ellis, 2011; Ozgen & Baron, 2007).

In Brazil, interactions with stakeholders involved in scientific and technological activities (e.g. universities and industry) has favoured the co-creation of knowledge through collaboration (Cassiolato, Lastres, & Soares, 2014; Cassiolato & Vitorino, 2009). Opportunities are then identified by entrepreneurs to exploit knowledge towards initiating and growing new ventures (Cassiolato & Vitorino, 2009; Cassiolato et al., 2014; Etzkowitz, 2003; Mazzucato & Penna, 2016). Customer–supplier collaborations with new ventures that provide larger companies (i.e. more experienced and knowledgeable about the market), have supported the identification of international market opportunities (Amal & Rocha Freitag Filho, 2010; Ciravegna, Lopez, & Kundu, 2014; Dib, Da Rocha, & Da Silva, 2010; Mazzucato & Penna, 2016).

The next section will investigate entrepreneurs’ cognitive frames and how they relate to other social forces with respect to influencing the recognition of opportunities.

**Entrepreneurs’ Cognitive Frames and Opportunity-Recognition**

Entrepreneurs’ cognitive frames shape their strategic decisions and responses to transformations in their external environment (Sarasvathy, 2001). This chapter will analyse entrepreneurs’ cognition from the perspective of experiential and non-experiential knowledge. Experiential knowledge relates to the experience of creating new organisations, products or markets (Buckley et al., 2007; Harms & Schiele, 2012). It can be acquired only through personal experiences such as studying and working (Politis, 2005), travelling or living abroad (Acedo & Jones, 2007). An augmented experiential knowledge in internationalising businesses (Eriksson, Johanson, Majkgård, & Sharma, 2015) may reduce entrepreneurs’ perceptions of risk and uncertainty towards entering the market with a new product or service (Johanson & Vahlne, 2009). On the other hand, non-experiential knowledge (Buckley et al., 2007) relates to clients, competitors, markets and institutions (Eriksson et al., 2015). It is obtained from informational resources (Kalinic, Sarasvathy, & Forza, 2014) such as education, training (Hafeez & Abdelmeguid, 2003) and networks (Eriksson et al., 2015). Opportunity recognition can be triggered by prior experiential as well as non-experiential knowledge, as individuals may recognise opportunities because they have had the relevant experience to make this possible (Dimitratos et al., 2014; Eriksson et al., 2015; Shane & Venkataraman, 2000).

In Brazil, a wide range of regulatory initiatives has been established towards supporting entrepreneurs’ experiential and non-experiential knowledge (see Table 1). For example, training programmes have been designed (e.g. Start-up Brazil and Brazilian service of assistance to micro and small enterprises [SEBRAE]) to aid
Table 1. Regulatory Initiatives Supporting a Knowledge-Intensive Economy in Brazil.

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Changes and Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>Created Brazilian service of assistance to micro and small enterprises (SEBRAE) to facilitate market entry for SMEs by providing training and support for entrepreneurs, making it easier for them to obtain credit, reduce bureaucracy and tax burden through partnerships with the government and financial institutions.</td>
</tr>
<tr>
<td>1993</td>
<td>Passed the Law Nr. 8.661/1993 which established conditions to grant tax incentives to industries that invest in R&amp;D (Neto, 2012).</td>
</tr>
<tr>
<td>1999</td>
<td>Launched sectoral funds to promote research in strategic sectors such as oil and gas, telecommunications, energy, hydric resources, health, agro-business, biotechnology and transportation (Cardoso, 2009; Neto, 2012).</td>
</tr>
<tr>
<td>2000</td>
<td>Launched public programmes to provide equity finance for new technological new ventures and encourage private match-funding (Ramalho et al., 2011).</td>
</tr>
<tr>
<td>Since 2002</td>
<td>Initiated the Technical Entrepreneur Award to stimulate and foster the entrepreneurial spirit of technical and technological course students (Borges et al., 2018).</td>
</tr>
<tr>
<td>2004</td>
<td>Passed the Innovation Law (Nr. 10.973/2004) to promote knowledge transfer initiatives between academia and industry (Neto, 2012). Allowed for public procurement of R&amp;D that aimed to develop a solution for a specific technical problem or an innovative product/process (Mazzucato &amp; Penna, 2016).</td>
</tr>
<tr>
<td>2005</td>
<td>Passed the Good Law (Nr. 11.196/2005) conceding tax incentives for R&amp;D, whereby established firms were encouraged to take on tax benefits by engaging in innovation-based research projects, either independently or by partnering with academia and research organisations (Neto, 2012).</td>
</tr>
<tr>
<td>2007</td>
<td>The Brazilian National Development Bank (BNDES) launches the CRIATEC programme which initiates public–private partnerships to invest in startups through venture capital vehicles.</td>
</tr>
<tr>
<td>Since 2012</td>
<td>From 2012 onwards, the government announced a sequence of programmes to fund knowledge sharing between academia and industry, leading to innovation across a diverse range of sectors: Inova Petro (for the oil and gas sector) and Inova Energia (energy sector); in 2013, it established Inova Saúde (health sector), Inova Defesa (defence sector), the National Programme for Incubators and Technology Parks, Inova Agro (agriculture), and Inova Sustentabilidade (for sustainability projects); in 2014, it set up Inova Telecom (telecommunication sector) (Mazzucato &amp; Penna, 2016).</td>
</tr>
<tr>
<td>2013</td>
<td>Start-Up Brazil, a National Startup Acceleration Programme was initiated to support new technology-based companies. The programme provides training and funding form start-ups through a public-private partnership between the state and private business accelerators throughout the country. The programme also supports match funding from public funds (originated in the Brazilian Development Bank) and private venture capital funds.</td>
</tr>
<tr>
<td>Since 2016</td>
<td>Human Resource Training in Strategic Areas which is part of the National Strategy on Science, Technology and Innovation to aggregate highly qualified staff in R&amp;D in companies and train and capacitate people working in applied research or technological development projects (Borges et al., 2018).</td>
</tr>
</tbody>
</table>
entrepreneurs in defining business plans and obtaining funding, while also incentivising collaborative projects with industry aimed at promoting the research and development of technology (e.g. Inova Programmes, Innovation Law and Good Law). By participating in such processes, entrepreneurs accrue experiential knowledge by creating, testing and launching a technology on the market and spinning it off to start a business. On the other hand, non-experiential knowledge is also obtained as entrepreneurs initiate and develop network relationships. These include collaborating with Higher Education Institutions (HEI) and industry (Cassiolato & Vitorino, 2009; Cassiolato et al., 2014) and supplying large and established companies, whose executives are more knowledgeable and experienced about domestic and international markets (Amal & Rocha Freitag Filho, 2010; Ciravegna et al., 2014; Dib et al., 2010; Mazzucato & Penna, 2016).

**METHODOLOGY**

This section introduces the research methodology. It is subdivided into two subsections: first, the presentation of the case studies and second, the methods used to collect and analyse the information.

*Case Studies*

This chapter analyses five case studies of knowledge-intensive professional service firms from Brazil. The choice of a case study approach was inspired by the exploratory nature of the research in which multiple factors dependent on human actions affect the outcome (Chetty, 1996; Eisenhardt, 1991; Johanson & Wiedersheim-Paul, 1975; Yin, 1984). As suggested by other researchers in the social sciences, five cases have been identified to provide polarity of examples for the analysis (see Table 2) (Andersson & Wictor, 2003; Hafeez, Malak, & Abdelmeguid, 2006; Ojala, 2009). Multiple case studies permit possibilities for complementarity, comparison and replication (Eisenhardt & Bourgeois, 1988; Harris & Sutton, 1986). Another factor considered in the selection was the quality of access to information provided by the firms during the fieldwork (Stake, 1995).

The unit of analysis is the entrepreneur. In order to control for the diversity of environmental factors that could affect the entrepreneurs’ behaviours (Andersson & Wictor, 2003; Ojala, 2009), the chosen cases share the following five similarities: they are related to firms that started in Brazil between 1999 and 2010; they are knowledge-intensive; started by students of Brazilian HE; provide professional services to other businesses and have begun the process of internationalisation towards economic development between 2002 and 2017.

*Collection and Analysis of Information*

The information was collected and analysed in five stages. Stage 1 identified the information to be collected. Stage 2 dealt with the identification of the sample of the firms (Table 2) (Eisenhardt, 1991). Stage 3 dealt with the primary data collection by conducting interviews (Table 3) (Yin, 1984). For the primary data collection, a semi-structured approach was followed, with a set of questions sent
<table>
<thead>
<tr>
<th>Case (Fictional Name)</th>
<th>Services</th>
<th>Main Customers</th>
<th>Patented Technology</th>
<th>Employees (2017)</th>
<th>Year Created</th>
<th>Year of Foreign Market Entry and Entry Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRM</td>
<td>Software for managing human resources</td>
<td>Banking, finance and retail</td>
<td>No</td>
<td>50</td>
<td>1999</td>
<td>In 2002, initiated exports to Spain via an agent, and subsequently in 2006, established a joint-venture (FDI)</td>
</tr>
<tr>
<td>INT</td>
<td>Data mining software</td>
<td>Businesses with transactional websites</td>
<td>No</td>
<td>35</td>
<td>2009</td>
<td>In 2015, established a subsidiary in Houston (USA)</td>
</tr>
<tr>
<td>OIL</td>
<td>Identification of oil exudation on the seabed using satellite images</td>
<td>Oil</td>
<td>Yes</td>
<td>4</td>
<td>2010</td>
<td>In 2017, established a subsidiary in Portugal (FDI)</td>
</tr>
<tr>
<td>SUB</td>
<td>Underwater surveillance and remote monitoring with drones</td>
<td>Oil, gas, chemicals and petrochemicals</td>
<td>Yes</td>
<td>12</td>
<td>2007</td>
<td>In 2012, initiated a joint-venture in the US (FDI)</td>
</tr>
<tr>
<td>VIS</td>
<td>Process reengineering and optimisation</td>
<td>Manufacturing, telecoms, transport and logistics</td>
<td>No</td>
<td>200</td>
<td>2002</td>
<td>In 2004, initiated exports; in 2012 started a joint-venture in the UK (FDI)</td>
</tr>
</tbody>
</table>
### Table 3: Sources Used for Primary Data Collection for Each Case

<table>
<thead>
<tr>
<th>Interviews and Additional Contacts</th>
<th>HRM</th>
<th>INT</th>
<th>OIL</th>
<th>SUB</th>
<th>VIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In person interviews on-site (number of interviews: duration of each interview/year)</strong></td>
<td>Entrepreneur (1st interview: 92 minutes/2012; 2nd interview 54 minutes/2013)</td>
<td>Entrepreneur (1st interview: 95 minutes/2012; 2nd interview 46 minutes/2013)</td>
<td>Entrepreneur (1st interview: 115 minutes/2012; 2nd interview 35 minutes/2013)</td>
<td>Entrepreneur (1st interview: 75 minutes/2012; 2nd interview 45 minutes/2013)</td>
<td>Entrepreneur (2 interviewees in a group interview: 123 minutes/2012)</td>
</tr>
<tr>
<td><strong>Business partner (1st interview: 30 minutes/2013)</strong></td>
<td>Business partner (1st interview: 35 minutes/2013)</td>
<td>Staff (1st interview: 32 minutes/2013)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subsequent contacts (number/year)</strong></td>
<td>E-mail (2/2013)</td>
<td>E-mail (1/2017)</td>
<td>E-mail (2/2017)</td>
<td>E-mail (2/2016)</td>
<td>E-mail (2/2013; 2/2015; 1/2016; 1/2017) Video conference calls with one entrepreneur (1/2015; 1/2017)</td>
</tr>
</tbody>
</table>
in advance to the interviewees (Miles & Huberman, 1994) (see Appendix 1). For each case, on-site interviews took place with the entrepreneurs and staff members. Each interview started with an explanation of the research, followed by the questionnaire. The initial interviews were supplemented with further contact by e-mail and video conferencing software (see Table 3).

Additional semi-structured interviews were conducted with other stakeholders for triangulation purposes (all between 2012 and 2013): two took place with the business managers of a business incubator where OIL, SUB and VIS had been incubated (integrated at the Federal University of Rio de Janeiro, Brazil); three were conducted with managers of two venture capital funds, which had invested in the firms; three interviews with executives of the Brazilian National Development Bank; and six more with the founders of other start-ups also incubated. In total, thirty interviews were conducted. All the interviews were recorded and transcribed. Stage 4 dealt with the secondary data collection (between 2012 and 2017). It overlapped with stage three to allow for an in-depth understanding of the primary data following the encounters with the interviewees (Eisenhardt, 1991). Table 4 identifies the sources used for the secondary data collection.

The analysis of the material was conducted using the standard procedures recommended for case study research (Eisenhardt, 1991; Halinen & Törnroos, 2005; McCutcheon & Meredith, 1993; Miles & Huberman, 1994; Perren & Ram, 2004). A deductive approach was followed whereby the researchers interpreted the patterns and coded the text segments (Strauss & Corbin, 1990). Similar codes were grouped and categorised (Fereday & Muir-Cochrane, 2006). The coded results were individually reconciled by each researcher. The differences in interpretations were discussed, and the coding was subsequently revised (Huberman & Miles, 2002; Sunduramurthy, Zheng, Musteen, Francis, & Rhyne, 2016). A cross-case analysis was conducted by pairing cases and adopting tabular displays to identify similarities and differences between them (see Tables 5 and 6) (Miles & Huberman, 1994). Replication logic was adopted whereby each case was investigated and compared as to whether or not it confirmed the new relations inferred from the other cases (Yin, 1984). The selection of the cases took into consideration the saturation threshold logic whereby additional cases would not provide substantial additional theoretical insights (Eisenhardt, 1991; Kalinic et al., 2014).

The comparative qualitative scale devised by Hafeez et al. (2006) and Shafiq, Lasrado, and Hafeez (2019) was utilised to classify the intensity of each social

Table 4. Sources Used for Secondary Data Collection for Each Case.

<table>
<thead>
<tr>
<th>Source</th>
<th>HRM</th>
<th>INT</th>
<th>OIL</th>
<th>SUB</th>
<th>VIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Balance sheets, P&amp;L</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Market-analysis</td>
<td>×</td>
<td>×</td>
<td>–</td>
<td>–</td>
<td>×</td>
</tr>
<tr>
<td>R&amp;D reports</td>
<td>–</td>
<td>–</td>
<td>×</td>
<td>×</td>
<td>–</td>
</tr>
<tr>
<td>Business Plans</td>
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Assessing the Impact of Social Forces in International Opportunity Recognition

force (institutions, cognition and networks). This allowed for a better understanding of the case-based information in the light of the study’s theoretical foundations, while also ensuring a better comparability between the different cases (Andersson & Wictor, 2003; Dimitratos et al., 2014; Ojala, 2009). The comparative qualitative scale is as follows: nil (if non-existent), * (some presence), ** (moderate presence), *** (moderately high presence), **** (high presence) and ***** (very high presence).

PRESENTATION OF THE RESULTS

This section presents the results regarding each of the five cases. The results of each case are presented, followed by a cross-case comparison (Tables 5 and 6). The names of the cases are fictional to ensure anonymity.

Case 1: HRM

HRM was founded in 1999, by two students of postgraduate software systems engineering from the Federal University of Rio de Janeiro and the University of São Paulo. They had previous experience working in technical roles for Brazilian IT firms. During their postgraduate studies, they initiated an exchange of ideas that led to the decision to start a business to support the digitalisation of processes related to managing human resources. The customers targeted were large corporations such as banks, insurance and retailers, that were experiencing significant volumes of paperwork related to recruiting and managing human resources. Consequently, this significantly impacted on and reduced efficiency.

At the start, the firm acquired a growing base of customers in Brazil. This included leading Spanish multinationals entering the country (telecommunications and banking sector). The philosophy leading the firm was to learn from the relationships established with its customers:

The team, small at the time, developed its main product counting on the engagement of all and frank discussions with customers … there was born the strong concept of partnership with clients and a deep understanding of their needs …. (Founder A)

Subsequently, the founders identified an opportunity to deploy their technology into the Spanish market by liaising with executives from their multinational Spanish customers. They also relied on these networks to identify and select a suitable business partner to enter the market. The entry into Spain was initiated via a contractual arrangement with a sales agent in 2002, which led to the creation of a joint venture in 2006. As per one founder’s words:

We required a local partner to share the financial risks and bring to the firm its own portfolio of customers in order to accelerate the market entry … besides, to enter the Spanish market as well as Europe in general, we had to be in Spain as no one would take us seriously if we tried to conduct the business from here [Brazil]. (Founder B)

In 2006, the firm went on to make FDI in the country, strengthening the partnership with the sales agent by establishing a joint venture.
Table 5. Dominant Social Forces at Each Stage.

<table>
<thead>
<tr>
<th>Case</th>
<th>Domestic Market Entry</th>
<th>International Market Entry</th>
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<tbody>
<tr>
<td>HRM</td>
<td>The opportunity to initiate the business was fostered by the exchange of ideas among the founders while pursuing their postgraduate studies at an HEI (high presence of cognition)</td>
<td>The opportunity to internationalise into Spain was unveiled by exchanging information with multinational customers from Spain (high presence of business networks)</td>
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<tr>
<td></td>
<td></td>
<td>The entrepreneurs have accumulated non-experiential knowledge on foreign markets (moderately high presence of cognition) as a consequence of having established working relationships with leading multinationals entering Brazil, and Brazilian multinational venturing abroad (high presence of networks). This led them to identify opportunities to enter foreign markets. However, they were unsure of what markets to enter and to overcome that difficulty they sought assistance by participating in a training programme in the US which they found through networking. The participation in the programme was possible due to the joint funding of Brazilian and North American HEI (hence, institutional support was high). Owing to the training received they have identified the US as the preferred market to enter.</td>
</tr>
<tr>
<td>INT</td>
<td>The opportunity to start the business was envisaged by one of the founders who had work experience in managing IT projects for a Brazilian media group (high presence of cognition). The technology was subsequently validated with a proof-of-concept project with his former employer, upon which the firm entered the market (very high presence of networks)</td>
<td>The recognition of the opportunity to internationalise the business was recognised from the very start of the academic research that led to starting the business (moderately high presence of cognition). However, the entrepreneurs were unsure of what geographic markets in which to enter. They were assisted in making this decision by participating in a training programme conducted by a North American HEI, which they identified through networking (high presence of networks). The participation in the programme was funded by grants received in Brazil (hence, institutional support was high). Subsequently, they have identified as priority markets in which to enter Europe, starting with Portugal.</td>
</tr>
<tr>
<td>OIL</td>
<td>The research that led to the development of the technology was made possible by the funding and support obtained from HEI and industry collaborations. The entrepreneurs have accrued non-experiential knowledge and experiential knowledge by piloting and launching the technology on the market before starting the firm, benefiting from the partnership with HEI and industry (hence, very high presence of institutional support, and moderately high presence of networks)</td>
<td></td>
</tr>
</tbody>
</table>
The research that led to the development of the technology was funded by the Brazilian Army (which maintains the Military Institute of Engineering). After having conducted a proof of concept with the Brazilian Army, the entrepreneurs identified the market segment, which was the oil industry (very high presence of institutional support). The entrepreneurs have accrued non-experiential knowledge and experiential knowledge by piloting and launching the technology on the market before starting the firm (hence, high presence of cognition).

The entrepreneurs have accumulated considerable non-experiential knowledge of foreign markets as a consequence of having participated in training activities at the business incubator of São Paulo’s University and collaborating with venture capitalists.

The opportunity to enter the US was unveiled by these working relationships, which also contributed to accrue entrepreneur’s non-experiential knowledge of the North American market (high presence of networks and moderately high presence of cognition).

The opportunity to enter a foreign market (Italy) was identified by a new partner who had joined the firm and was studying and working abroad. The founders decided to explore the new partner’s networks to test whether or not these could be converted into business deals (high presence of networks).

Subsequent opportunities to internationalise towards new markets in Europe and Latin America (exports) were unveiled by networking with subsidiaries of multinational firms operating in Brazil as well as Brazilian multinationals internationalising (high presence of networks), while also benefiting from the support and training provided by the business incubator (moderately high presence of institutional support).

Learning from these interactions while also exploring their specific knowledge in operations research, they have identified a gap (moderately high presence of cognition).

The opportunity to enter the market was recognised by the entrepreneurs during their postgraduate studies at the Federal University of Rio de Janeiro while establishing contacts with a couple of firms to support their coursework activities (high presence of networks).

Subsequent opportunities to internationalise towards new markets in Europe and Latin America (exports) were unveiled by networking with subsidiaries of multinational firms operating in Brazil as well as Brazilian multinationals internationalising (high presence of networks), while also benefiting from the support and training provided by the business incubator (moderately high presence of institutional support).
INT was created in 2009, by four postgraduate systems engineering students from a private University in Rio de Janeiro. One of its founders had initially worked for a prominent media group in Brazil in IT project-management. He then started to develop a software to solve a problem faced by his employer related to the analysis of large volumes of data related to its online audiences. Recognising the potential to apply this solution to other businesses, the entrepreneur then resigned from his job to initiate a business and further explore the opportunity. At the time, the entrepreneur had agreed with his former employer that he would use the firm to validate the technology once it had been perfected. This agreement was of strategic importance for INT as it would contribute to test the functionality of the software as well as better identify other potential business targets that could benefit from it. Moreover, showcasing it would prove crucial to gaining faster recognition within the market.

To begin with, the entrepreneur invited his former university colleagues to initiate the venture, who also resigned from their former positions. After one year of work, they were in a position to initiate the proof of concept project with the partner firm. Owing to their positive results, they quickly gained attention from leading Brazilian multinationals as well as prominent multinationals entering Brazil (bank and retail sector).

Subsequent to exploring these contacts, they identified a global need for the technology and were therefore keen to explore further opportunities to internationalise. To this end, they revised their business plan to focus on growth and sought financial investment from venture capitalists: ‘… the only constraint that we have is whether we have the internal capacity to scale up and meet the demand, as the global market is growing exponentially …’ (Founder C). In 2013, they attracted investment from venture capitalists.

However, the entrepreneurs were unsure of which foreign markets to target. Benefiting from their networks, they searched for additional support and applied to participate in a training programme in 2015. This was jointly established and funded by HEI in the US and Brazil. This project was crucial to identify opportunities in foreign markets: ‘… they have helped us to create a go-to-market plan which was very well done, with a thorough market analysis and a well-structured plan of actions’ (Founder C). The implementation of INT’s internationalisation plan started in 2015, and aimed at diversifying their customer base by entering the oil and gas sector in the US.
**Case 3: OIL**

OIL was created in 2010, by two postgraduate ocean engineering students at the Federal University of Rio de Janeiro. OIL’s patented technology is software, which analyses the origin of oil exudates in the seabed. The development of the technology was funded by the HEI in which they studied partnered with a leading oil and gas Brazilian firm, between 2005 and 2010.

As founder D noted:

> We have been working with them [referring to the partner] since we started. The proof of concept was done … before the company started, and from then onward we worked with them on several projects.

At the time when the company was started, the founders had no business and management experience. They sought assistance from the University’s business incubator to bridge their skills gap, where they remained until 2012.

As a consequence of serving a particular market niche, OIL’s founders have perceived from the very beginning that their market was global:

> Internationalization is a subject that has always existed even before the company was created … which is justified by the nature of the services we provide … as we work with remote technology, there has always been this desire and understanding to apply the solution anywhere in the world …. (Founder D)

As noted:

> Until 2020 Brazil is going to install 444 new offshore rigs for the exploration of oil and globally this number is 2,5 thousand … we cannot afford to stay out of the global market. (Founder E)

Despite having identified the potential to grow the business internationally, they realised that they had insufficient knowledge and experience of international markets. They sought for further support to decide which markets to expand into through networking and they identified and applied for a training programme aimed at accelerating the growth of technology start-ups at a HEI in the US in 2014. The costs of the programme were funded by Brazilian public grants. Benefiting from this training, an internationalisation plan was drafted and in 2017, the firm targeted Portugal as a doorway to the European market.

**Case 4: SUB**

SUB was created in 2007, by two postgraduate engineering students from the Military Institute of Engineering in São Paulo which is maintained by the Brazilian Army. SUB’s patented technology consists of using drones to monitor the integrity of underwater equipment. This was initially conceived with the purpose of monitoring ships’ hulls and storage tanks. The first working prototype was tested by the Brazilian Army, subsequent to which the founders identified a more promising market sector to enter: the oil industry which required underwater monitoring of the risers.
Founder F had prior experience in starting up businesses, although of a non-technological nature:

[...] one thing is to deploy innovative technology in a controlled environment … the other, which is completely different, is to roll out the technology to the unknown market and have customers who will not tolerate faults, delays and mistakes ….

Therefore, a decision was made to enter the business incubator at São Paulo’s University to seek support.

Benefiting from the incubator’s support, the entrepreneurs accrued knowledge on scaling up a technology-based business. Through this process, they made a decision to obtain additional funds by raising finance from venture capitalists. SUB obtained seed investment from a public-backed venture capital fund in 2008. A fund manager commented:

[...] beyond the financial contributions for the business they [the founders] lack skills in business planning and development … with our support, they will be better able to mitigate the adversities of entering this highly competitive market.

The founders have benefited from liaising with the fund’s executives and identified an opportunity to expand towards the US, specifically targeting the oil and gas industry in the Gulf of Mexico. Subsequently, the business plan was revised and in 2011, an internationalisation plan was drafted towards entering that market. They needed additional funds to meet these new objectives, which they received in 2012, from an investor in the US, leading to opening a joint-venture in Houston.

Case 5: VIS

VIS was created in 2002, by five postgraduate systems engineering students from the Federal University of Rio de Janeiro. The opportunity to start the business was recognised when the founders had to conduct coursework-related activities by liaising with businesses which were co-located at Rio’s Technology Park. Owing to the collaborative work initiated by these relationships, the entrepreneurs learned that the different businesses faced a pattern of challenges. This related to the optimisation of internal production processes, logistics and the need to reduce costs while ensuring higher flexibility. They perceived an opportunity to address this gap by employing what they had learned in their postgraduate studies, primarily on mathematical methods and algorithms from operations research. VIS’s business was thus established to consult on the optimisation of operations and industrial processes.

The founders had no business or managerial experience and decided to enter the University’s business incubator in 2003. Founder G commented:

Convincing the client to invest in five recent grads was a challenge … having the support of the incubator was fundamental to project an image of reliability and credibility towards customers ….

Initially, the firm focussed on growing in the domestic market. However, a new partner joined the firm in 2004, who was living and conducting postgraduate studies at an HEI in Milan (Italy). An opportunity was thus unveiled to provide services to a prominent fashion conglomerate. Further exporting opportunities
were then revealed by networking with prominent multinationals entering Brazil, while also benefiting from the training provided by the business incubator. One example was that the firm had successfully delivered a project to optimise the call centre operations for a multinational entering Brazil and with a presence throughout all Latin America. They were subsequently invited to provide services towards the creation of a *Shared Services Centre* for that firm across diverse countries in Latin American.

Subsequently, in 2010, the partners perceived a slowdown in the domestic market and led company-wide research towards making a competitive analysis to identify further opportunities for growth. The plan resulted in the opening of a new branch in São Paulo, then a subsidiary in the UK (2012) and subsequently in Russia and Australia (2013).

**Cross-Case Comparison of Results**

Table 5 summarises the previous results highlighting the dominant social forces at each stage; first, entering the domestic market and second, entering international markets.

In Table 6, the intensity of each force (institutions, cognition and networks) is classified using Hafeez *et al.* (2006) comparative qualitative scale.

**DISCUSSION**

The results contend that discrete social forces are not the determinants of the recognition of opportunities, but that their combined effect leads to this result. All cases evidence the importance of the entrepreneur’s *cognitive frames* (Politis, 2005; Zahra *et al.*, 2005). At the time the firms started in Brazil, all the entrepreneurs were engineers with specialised non-experiential knowledge acquired during their postgraduate studies (Buckley *et al.*, 2007; Hafeez & Abdelmeguid, 2003). SUB’s founders had received training from the business incubator before starting the firm (Hafeez & Abdelmeguid, 2003). In some cases, the entrepreneurs had accrued *experiential knowledge* during their postgraduate studies, as they had initiated, tested and developed working prototypes of the technology in cooperation with industry partners (OIL, SUB and INT) (Buckley *et al.*, 2007; Harms & Schiele, 2012; Politis, 2005). In some cases, these were patented (OIL and SUB); whereas others relied on prior working experience (HRM and INT). Networking with peers and other professionals also benefited the entrepreneurs with significant information on the markets and institutions, that is, non-experiential knowledge (INT, OIL, VIS and SUB) (Kalinic *et al.*, 2014). The institutional support in Brazil has facilitated the initiation of network relationships by linking the entrepreneurs to pivotal industry links that were used to test and develop their innovative business ideas (OIL and VIS) (Buckley *et al.*, 2007; Cassiolato & Vitorino, 2009; Cassiolato *et al.*, 2014; Kalotay & Sulstarova, 2010) SUB’s founders studied in an HEI managed by the *Brazilian Army*, which created vital connexions that allowed them to test and develop knowledge of both the product and the market (Di Gregorio *et al.*, 2008). The
development of patented technology, moreover, was possible during postgraduate study, by using the human and technical resources made available by HEI. Moreover, the proximity to HEI was crucial for entrepreneurs to be able to obtain support from investors (SUB) and grants (OIL) (Helmke & Levitsky, 2004; Oparaocha, 2015; Shirokova & McDougall-Covin, 2012). Subsequent to their entry into the domestic market, business networks supported the entrepreneurs to augment their knowledge of foreign markets (INT, OIL and SUB) (Eriksson et al., 2015; Kalinic et al., 2014; Yamakawa et al., 2013). This unveiled possibility to acquire specialised training by participating in international training programmes (INT and OIL) (Johanson & Vahlne, 2009), which determined the recognition of market opportunities abroad. With this regard, the availability of grants offered by public organisations was essential to finance the costs of the training programmes, at the time, the firms were resource-constrained (INT and OIL). OIL, VIS and SUB’s founders gained further training and support offered by the business incubators as well as by networking with their peers (Kiss & Danis, 2008; Yamakawa et al., 2013). SUB’s founders, moreover, were mentored by executives working for the venture capital fund which is assisted by public capital (Zahra et al., 2005).

The case-based evidence emphasises the extent to which the entrepreneurs managed the social forces to support the identification of opportunities. They trusted the networks with stakeholders from HE and industry to test and develop the technology, thus assisting them with the recognition of opportunities and the formulation of market-entry strategies (Cassiolato et al., 2014; Cassiolato & Vitorino, 2009). Concerning the recognition of opportunities abroad, the entrepreneurs used their networks with multinational customers to obtain knowledge and information of foreign markets (INT, OIL and SUB) (Amal & Rocha Freitag Filho, 2010; Bai et al., 2017; Eriksson et al., 2015). Moreover, they also used these networks to identify international training programmes (INT and OIL) which would assist them in the recognition of opportunities in international markets. The international recognition of opportunities was also assisted by the institutional mechanisms at hand, such as training provided by the business incubators (OIL, VIS and SUB), funds from venture capitalists (SUB) and public grants (INT and OIL).

The results also suggest that the impact of social forces on the recognition of opportunities changes through time (Andersson & Evers, 2015; Baker et al., 2003; Jones et al., 2011; Zahra et al., 2005). At the stage of entry into the domestic market, HEI was important to support the research and collaborative networks to test the market (OIL, SUB and VIS). This affected how the entrepreneurs obtained non-experiential knowledge (Yasin & Hafeez, 2018) which was vital to understand the market and thereafter recognise opportunities. Subsequently, business incubators assisted entrepreneurs by providing training (OIL, SUB and VIS), public-backed venture capital funds to obtain mentoring (SUB) and public grants to subsidise attending international training programmes (OIL and INT). The networks developed by the entrepreneurs during their academic and professional careers supported the identification of opportunities to enter the market with a new product or service. For example,
INT’s founder maintained collaboration with his former employer to perfect the technology. OIL’s founders liaised extensively with an oil and gas player to develop and test the technology, whereas VIS liaised with local firms located at Rio’s Technology Park assisted by the business incubator. The importance of networks, however, was greater in aiding the recognition of international opportunities by helping the entrepreneurs to identify opportunities for international training (INT and OIL), access investors (SUB), new customers (HRM, OIL, SUB, VIS and INT) and business partners (HRM). As noted, at the start of these firms, the cognitive frames of the entrepreneurs – particularly based on their specialised knowledge – were determinant to recognise opportunities to initiate their businesses. However, their specific knowledge sets were not sufficient to help them to identify opportunities abroad. They had no experience in the internationalisation of a business; therefore, they compensated this lack of experiential knowledge with other resources at hand, such as the aforementioned networks and institutional mechanisms.

CONCLUSIONS

This research has highlighted the concomitant role of institutions, networks and entrepreneurs’ cognitive frames underpinning the recognition of business opportunities (Beckert, 2010) for new ventures in Brazilian technology. The case-based evidence suggests that the entrepreneurs’ cognitive frames (working experience, specialised knowledge in engineering, experience testing and deploying prototypes of technology) were vital to recognise opportunities in the Brazilian market (Baron & Ensley, 2006). This was particularly notable with regard to the entrepreneurs who had received institutional support from HEI (Buckley et al., 2007; Chittoor et al., 2008; Kalotay & Sulstarova, 2010; Luo & Tung, 2007). However, the professional networks outside academia were also important to accrue the entrepreneurs’ knowledge of the market (both experiential and non-experiential).

In relation to foreign markets, the recognition of opportunities was mostly determined by the entrepreneurs’ professional and business networks, for example, multinational firms entering Brazil and Brazilian firms venturing abroad (Ellis, 2011; Johanson & Vahlne, 2009; Mainela et al., 2018; Ozgen & Baron, 2007). The support obtained from these networks compensated the lack of internationalisation experience and knowledge of international markets that was common among all the founders (Eriksson et al., 2015). At the stage of international opportunity recognition, the influence of the institutions was prominent by their training and mentoring mechanisms (business incubators), as well as their capital (grants) (Di Gregorio et al., 2008). The entrepreneurs identified opportunities in markets where they had neither previously established connections, nor had any experience. Thus, they were reliant on the inputs received from their networks (Ellis, 2011; Johanson & Vahlne, 2009).

Beyond acknowledging that the recognition of opportunities is systematically induced by individual and contextual factors (i.e. institutions and networks),
this research highlights how these social forces affect each other in shaping the phenomenon. HEI has shaped the networks to which the entrepreneurs had access, which they used to test the prototypes of technology. The partnerships between HEI in Brazil and the US allowed the entrepreneurs to participate in international training programmes, which they used not only to apprehend further knowledge of international markets but also to expand their professional ties, thus facilitating the recognition of opportunities abroad. The institutional support provided by Brazilian business incubators, public grants and mentoring by venture capitalists (assisted by public capital) was crucial in shaping the entrepreneurs’ cognitive frames regarding non-experiential knowledge about domestic and international markets. Moreover, the entrepreneurs’ cognitive frames were influenced by the professional and business networks they established after initiating their businesses in Brazil. Conversely, the development of cognitive frames regarding the understanding of international markets which the entrepreneurs obtained having initiated their businesses in Brazil, has impelled them to expand their ties abroad. They sought international partners such as sales agents, business partners and training providers to assist them in the identification of opportunities and the definition of market entry strategies. In this research, there is evidence that suggests entrepreneurs are engaging in virtual networks through participating in online entrepreneur specific communities-of-practices to share knowledge (Hafeez et al., 2018) and experiential learning (Hafeez et al., 2019). We also believe that alongside gaining essential knowledge of international markets, the development of requisite organisational capabilities (Alan Keoy, Hafeez, & Lenny Koh, 2007; Hafeez et al., 2002) and personal competencies (Hafeez & Essmail, 2007) are essential to becoming successful in new technology ventures.

This study has several limitations. The sample of firms could have been more diversified in terms of sectors of activity and geographies. A more significant sample of cases could be enlightening as to the specific mechanisms through which these forces impact on each other, as well as to the different weight of each force with respect to its contribution to the outcome. A comparative analysis of firms in different institutional settings (such as in other emerging economies) could help to highlight other variables influencing the outcome.

Nonetheless, this study paves the way for future research by confirming how the lens of social forces helps to understand the internationalisation decisions made by entrepreneurs from emerging economies. Future studies can specifically bring additional dimensions into the analysis to ascertain eventual relationships between the nature of opportunity recognition and the speed of internationalisation, as well as business performance.

Beyond academic literature, this study provides guidelines for practitioners and policy-makers for the development of international entrepreneurship. Entrepreneurship educators can better identify which training and skills entrepreneurs need to maximise their potential to recognise international opportunities. Public decision-makers should, therefore, incentivise support actions as well as the development of international networks to push entrepreneurs towards acquiring more knowledge and experience in international markets.
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APPENDIX 1

1. Profile of the interviewee.
   I. Name.
   II. Age.
   III. Professional qualification and function at the company.

2. Characterisation of the company.
   I. Company name.
   II. Company headquarters.
   III. The date of creation.
   IV. The sector of activity.
   V. The number of employees in the country of origin and abroad.
   VI. History of the company since its creation, motivation and profile of the entrepreneurs.
   VII. Sales portfolio and evolution, in the domestic market and abroad.
   VIII. Business sectors of the main customers.
   IX. Other key partners.

3. Competitive environment.
   I. Competitive strategy.
   II. The competitive differential of the company in relation to its competition.
   III. Evolution and future perspectives.

4. The activities of the company abroad.
   I. The date on which the process of internationalisation began.
   II. The initial motivation for the internationalisation of the company (primary and secondary).
   III. Key factors that determined the choice of certain markets to start internationalisation.
   IV. Name of external markets in which the company is present.
   V. Key factors that determined the choice of certain modes of entry in foreign markets.
   VI. Activities of the internationalised value chain.
   VII. Financing the internationalisation process.
   VIII. Evolution of the internationalisation process and future perspectives.

5. Particular aspects that have determined internationalisation, focussing on:
   I. Institutional factors.
   II. Characteristics and cognitive frameworks of the entrepreneurs.
   III. Social networks of the founders.
   IV. Organisational networks.