The use of Internet and Web 2.0 technologies to develop export market opportunities in Portuguese SMEs

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Short Biography

Ana Bárbara Matos was born in Guimarães (Portugal) in 1993. She has a bachelor's degree in Communication Sciences: Journalism, Public Relations, Multimedia from the University of Porto (2011/2014). She held internships in three media organizations while completing her bachelor's degree. Aiming for an interdisciplinary higher education, in September 2015 she started the Master in International Business from Faculty of Economics of the University of Porto (Portugal) (2014/2016). Meanwhile, she has been working in the Marketing and Communications division of an e-commerce firm.

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Abstract

The facilitating effect of the Internet and complementary information and communication technologies on small- and medium-sized enterprises (SMEs) internationalization is now widely accepted. The literature suggests that the Internet positively influences firms' export activities because it provides them with new ways to communicate, to acquire knowledge, to develop their international business network and to improve the efficiency of international transactions and operations. Moreover, emerging Web 2.0 technologies are leading to even more complex international operations. The so-called e-business represents both challenges and opportunities for exporting firms. Given the lack of empirical research into this new paradigm, this research studies Portuguese entrepreneurial firms professional and business usage patterns of Internet and Web 2.0 technologies and their roles in the pursuit of export market opportunities. By using a mixed methodology of survey and multiple-case studies, this study is able to identify three ways in which exporting firms use the Internet: as a business tool, as a business enhancer or as a business driver. The empirical results suggest that Portuguese SMEs use the Internet mainly as a business tool, which is essential in the development of export opportunities. Still, using the Internet as a business enhancer and a business driver has a greater impact on firms' export performance. Regarding Web 2.0 technologies, while low usage was found in terms of crowdsourcing, social media has been embraced as a catalyst for export market opportunities development.

Keywords: Internet; Web 2.0; internationalization; exports; SMEs

Contents

Table Index

Figure Index

Graph Index

1. Introduction

It is a fact that in recent years important changes in the international business field have been occurring because of the impact of the rapid evolution of information and communication technologies (ICT). In particular, the facilitating effect of the Internet on firm internationalization is now well accepted (e.g. Bell and Loane, 2010; Glavas and Mathews, 2014; Hamill, 1997; Lituchy and Rail, 2000; Mathews and Healy, 2008).

The Internet's emergence and development provided firms with new ways to establish a global presence, conduct international business, access information, implement marketing and communication strategies, improve the efficiency of international transactions and operations, as well as develop and sustain relationships with clients and partners (Bell and Loane, 2010; Fletcher, Bell and McNaughton, 2004; Glavas and Mathews, 2014; Loane, 2006; OECD, 2001). Since the Internet offers direct and immediate foreign-market entry through electronic exchanges and transactions (the so-called e-commerce), firms are given the opportunity to exploit new forms of international business. Nowadays, firms can migrate from a marketplace to the marketspace (Rayport and Sviokla, 1994), i.e., an online space for entrepreneurial activities and commerce that take place through digital technologies and are accessible from any place in the world.

The benefits of using the Internet are accessible to firms of all sizes. In fact, the Internet holds particular appeal for small- and medium-sized enterprises (SMEs) (Glavas and Mathews, 2014; Hamill, Tagg, Stevenson and Vescovi, 2010) as it diminishes the advantages large multinational enterprises have over small businesses (Lituchy and Rail, 2000) and it provides a mean to decrease liability of foreignness and resource scarcity, enabling entrepreneurs to exploit speedily new international opportunities (Arenius, Sasi and Gabrielsson, 2005). Previous studies indicate that the Internet supports the international expansion and growth of exporters (Bianchi and Mathews, 2015; Loane, 2006; Lu and Julian, 2007; Sinkovics, Sinkovics and Jean, 2013).

Additionally, the past decade has witnessed important advances in the World Wide Web (WWW) that represent a paradigm shift as well as even higher levels of management complexity associated with Internet-enabled internationalization. Such developments have become known as Web 2.0 and they are transforming social and business relationships and practices (Bell and Loane, 2010). Web 2.0 technologies have brought about phenomena such as co-creation, open innovation, crowdsourcing, user generated

content and social media. These new practices emphasize the role of the consumer (Tapscott, 2008) and they have profound consequences for international marketing strategy (Berthon, Pitt, Plangger and Shapiro, 2012). In view of this, "internetization" emerged as a new concept to refer to the post-Internet internationalization (Etemad, Wilkinson and Dana, 2010).

The impact of the Internet on the international expansion of SMEs has been receiving increasing attention in the literature (Loane, Bell and Deans, 2007). However, most research is largely exploratory and investigates the link between Internet adoption and internationalization from a conceptual view point, so there is a lack of empirical research into the effect of the Internet and the Web 2.0 on firms' internationalization processes and export performance (Bianchi and Mathews, 2015; Etemad *et al.*, 2010; Hamill *et al.*, 2010; Reuber and Fischer, 2011; Sinkovics *et al.*, 2013).

In order to settle this issue, "Roots and Wings: Glocalized Networks and Mobile Media Entrepreneurship in Austin and Lisbon" was financially supported by the UT Austin Portugal Program, focusing on how entrepreneurs in the mobile media industries leverage digital technologies and glocalized networks for starting up, developing and internationalizing their businesses. This dissertation benefits from the opportunity to learn about the methodology used within this project and we decide to contribute to the body of knowledge by studying Portuguese entrepreneurial firms' usage of digital technologies and their roles in their export business.

According to the Global Entrepreneurship Monitor (2013), the Portuguese entrepreneurial environment has been developing consistently in the past few years. Hence, we found it interesting to focus on this small and open economy in order to understand how Internet and Web 2.0 technologies may influence (or not influence) new ventures export market expansion. Therefore, this dissertation aims to answer an important research question: how do Portuguese entrepreneurial firms use Internet and Web 2.0 technologies to develop export market opportunities?

For the above reasons, and because of authors' background knowledge on the entrepreneurial environment, this research focuses on new Portuguese small- and medium-sized exporting firms. To answer the research question, this study employs a mixed-method research design, which combines both quantitative and qualitative data collection and analysis. The quantitative approach involves survey data collection and

statistical analysis consisting of descriptive and association statistics and non-parametric tests. The qualitative approach takes the form of multiple-case studies of a representative sample and encompasses interviews and secondary data analysis.

It is believed that this approach can provide a better understanding of the way Portuguese entrepreneurial firms pursue export opportunities using Internet and Web 2.0 tools. In this way, we seek to contribute to the extant literature by providing more evidence on the subject. Furthermore, since there is an absence of empirical studies on Internet-enabled internationalization in Portugal, we expect to provide entrepreneurs and policymakers with useful information and recommendations.

This dissertation consists of five main chapters. Following this introduction, Chapter 2 presents a critical synthesis of the literature on internationalization, export performance, Internet and Web 2.0 and their links and introduces the reference model and the hypothesis. Chapter 3 describes the research methods and instruments employed to answer the research question. The results are described and analyzed in Chapter 4. Finally, Chapter 5 reports the research conclusions, implications and limitations and provides some suggestions for future research.

2. Theoretical Background

In the past few years, an increasing number of studies have been focusing on the role of the Internet and Web 2.0 technologies on firms' internationalization (Bianchi and Mathews, 2015). Despite the lack of empirical research on Internet-generated internationalization, these have been suggested as strategic, efficient resources for international growth and expansion (Loane, 2006; Mathews and Healy, 2008).

In this chapter, we present a critical synthesis of the literature on internationalization (Section 2.1), Internet and Web 2.0 (Section 2.2), as well as their connection (Section 2.3). Towards a broad conceptualization of internationalization, we analyze the Uppsala Model, the International Network Theory and the International Entrepreneurship approach. The latter is given more emphasis because it is the one that best suits the stated research goal. Then, we review the literature on the Internet and the Web 2.0 and how they are used to leverage firms' international activities. Additionally, we provide a brief review of the literature on export performance (Section 2.4) and introduce our reference model and hypothesis (Section 2.5).

2.1. Internationalization Theories

There is an important amount of literature on international expansion of firms. However, as suggested by Hamill (1997), the Internet establishes a new, different environment for international business and presents a challenge to the traditional internationalization theories, resulting in the need to review some tenets of the literature and develop new approaches.

The Internet has a profound effect on international business, in such a way that post-Internet internationalization has been named "internetization" (Etemad *et al.*, 2010). Nonetheless, much confusion remains about which internationalization theory depicts the firms' internationalization process in the Internet era. Researchers have been proposing theoretical explanations based on mainstream theories such as the Uppsala Model (Hamill, 1997), the International Network approach (Mathews and Healy, 2008; Overby and Min, 2001) or the International Entrepreneurship view (Glavas and Mathews, 2014; Reuber and Fischer, 2011).

Given that, to have a broad conceptualization of internationalization, we analyze the Uppsala Model because this is one of the most influential and cited theories in the field and it was previously commonly accepted. Given the importance of networks to Internet-enabled entrepreneurial firms, this thesis naturally introduces the network perspective in the conceptualization of internationalization. Then we present concepts regarding entrepreneurship and we focus our attention on the International Entrepreneurship approach because it follows a holistic approach to conceptualization and investigation of internationalization, it is more up-to-date and it suits the research goal. Simultaneously, we evaluate each theory against the Internet effect on firms' internationalization process.

2.1.1. Uppsala Model

The Uppsala Model or internationalization theory (Johanson and Wiedersheimpaul, 1975) is one of the mainstream theories of internationalization and for years has been the dominant approach to describe firms' internationalization process. This model views internationalization as a learning process in which the firm increases its international presence in a stepwise manner (Johanson and Vahlne, 1990). The stages model emphasizes the role of knowledge, focuses on firm behavior and assumes psychic distance as a dominant concept, which is defined as "factors preventing or disturbing the flow of information between firm and market" (Johanson and Wiedersheimpaul, 1975, p. 308).

The establishment chain in firm internationalization consists of four stages: sporadic export activities, export via independent intermediaries, establishment of a foreign sales subsidiary, and a production subsidiary. The firm starts operating in foreign markets perceived as psychically near and as market knowledge increases, it ventures to countries with greater psychic distance (Johanson and Vahlne, 1990). Foreign market knowledge and incremental international commitment are assumed to reduce the liability of foreignness and to influence decisions regarding firm international trajectory (*idem*).

This stages model has received criticism in recent years for being too deterministic, ignoring the impact of exogenous variables and oversimplifying a complex process (Schweizer, Vahlne and Johanson, 2010). Additionally, this theory is not capable of explaining international phenomena such as the emergence of international new

ventures (INVs) (Arenius *et al.*, 2005; McDougall, Shane and Oviatt, 1994; Schweizer *et al.*, 2010).

An INV is defined as "a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries" (Oviatt and McDougall, 2005b, p. 31). These firms challenge the validity of the Uppsala Internationalization Model because they go abroad very quickly, skip the stages pattern and disregard the psychic distance concept (McDougall *et al.*, 1994).

Additionally, the Internet surpasses some fundamental tenets from the stages model such as the need for physical presence, the psychic distance perception of internationalizing firms (Yamin and Sinkovics, 2006) and the role of experiential knowledge (Petersen, Welch and Liesch, 2002). Empirical research indicate that the internationalization path of Internet-related firms is not consistent with the Uppsala Model predictions (Bennett, 1997; Crick and Spence, 2005; Yamin and Sinkovics, 2006).

In light of this criticism, Johanson and Vahlne (2009) updated the original model and extended it to incorporate a strong entrepreneurial view of internationalization and to consider the role of networks of relationships and opportunity development.

2.1.2. International Network Theory

The network theory defines internationalization as a process of network establishment and development with international business actors (Johanson and Mattsson, 1988). According to Johanson and Vahlne (1990), these business networks comprises of clients, clients' clients, suppliers, distributors, competitors and other stakeholders such as public institutions. Social and business networks provide entrepreneurs and firms with access to new information, knowledge and ideas which they would otherwise not be able to.

In the face of the increasing number of small and medium enterprises (SMEs) in international markets, the network theory has been receiving strong support. Previous studies indicate that network relationships are key internationalization facilitators, especially for SMEs with limited resources (Mort and Weerawardena, 2006) and they help to reduce the risks of early internationalization (Knight and Liesch, 2015).

The important role of networks in firm internationalization is justified on several grounds. International ties help to sharpen entrepreneurs' international vision and management openness and to develop new organizational capabilities (Oviatt and McDougall, 2005a). The fact that these business relationships provide firms with knowledge about markets, clients, competition, financing and distribution channels helps internationalizing SMEs to accelerate the learning process (Eriksson, Johanson, Majkgard and Sharma, 1997; Knight and Liesch, 2015) and it influences timing, mode of entry and choice of international markets (Arenius, 2005; Johanson and Mattsson, 1988).

Being embedded in an institutional and social web provides firms with valuable resources that enable opportunity recognition and facilitate the development of knowledge-intensive products and firms' international business (Mort and Weerawardena, 2006).

The Internet has transformed the way firms and entrepreneurs communicate. Nowadays, more than ever, network interactions are a central part of the international business. Given Internet-enabled immediate access to customers and business partners around the world, firms can take advantage of "information dissemination, acquisition and sharing which could lead to, respectively, enhanced internationalization, knowledge and social capital" (Prashantham, 2005, p. 37).

Moreover, with recent advances in the Internet, customers and supply chain partners can participate in the process of developing products and services. As Petersen *et al.* (2002, p. 208) point out, "the Internet is a public and potentially all-embracing, global network. With full utilization of its network externalities, the Internet's searching properties are immense".

Authors such as Mathews and Healy (2008) consider that a contemporary international network theory would be the most suitable theoretical explanation of Internet-enabled internationalization. Although we consider it an essential part of the overall internationalization process, we recognize the importance of other firm-level resources and environmental factors. So, we find it important to adopt a holistic approach to consider all the aspects of firms' international activities in the Internet era.

2.1.3. International Entrepreneurship Approach

International Entrepreneurship (IE) is the outcome of the integration of two research areas: internationalization and entrepreneurship. Several authors consider that the two streams share common themes and their integration is a logical one (Jones and Coviello, 2005; Schweizer *et al.*, 2010). IE is a young, growing, multi-theoretical field that has been capturing the attention of researchers over the last two decades, especially those examining the factors driving SMEs internationalization (Mort and Weerawardena, 2006).

There have been various approaches to defining entrepreneurship. Here we will use a notion developed by Kirzner (1997), who views entrepreneurship as a discovery process in which entrepreneurs discover opportunities to make profit by exploiting market disequilibria arising from the incompleteness of market information. Entrepreneurial opportunities are defined as "situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends or means–ends relationships" (Eckhardt and Shane, 2003, p. 336).

Although studies of opportunity process usually fall within the scope of entrepreneurship, several authors place "opportunity" as the core process in internationalization and they reconceptualize internationalization as an entrepreneurial process (see Jones and Coviello, 2005; Oviatt and McDougall, 2005a; Schweizer *et al.*, 2010), according to the IE theory, which is defined as "the discovery, enactment, evaluation, and exploitation of opportunities – across national borders – to create future goods and services" (Oviatt and McDougall, 2005a, p. 540).

The process of opportunity discovery and exploitation depends on the ability to recognize opportunities which emphasizes the role of the entrepreneur on firms' internationalization decisions and strategies (Kirzner, 1997). Internationalization studies have been highlighting the role of international entrepreneurs of SMEs (Glavas and Mathews, 2014), suggesting a relationship between the background of the entrepreneurs and their firms' international development (Ghannad and Andersson, 2012). Scholars have been highlighting the importance of the characteristics of the entrepreneurial manager such as his/her international orientation, previous business experience and global networks in the opportunity identification and exploitation (Filatotchev, Liu, Buck and Wright, 2009).

Accordingly, Ghannad and Andersson (2012) suggest that it is possible to distinguish three types of entrepreneurs within the process of firms' internationalization. The managerial entrepreneur has high leadership and a desire for rapid growth and financial returns. As a moderate risk-taker, this person is excellent in exploiting opportunities. The R&D entrepreneur is concerned with product development, not so much with business development, so these individuals are high-risk-takers and perceive exporting as an imposition. The firm is expected to have an irregular internationalization pattern, with both successes and failures. Finally, the sociable entrepreneur seeks to develop foreign market with the aim of meeting new people. This type of entrepreneur is considered a moderate to high-risk taker and relies on network relationships, which affect firms' internationalization path and speed.

Researchers also consider the international entrepreneur as an important promotor of Internet-based internationalization (Berry and Brock, 2004; Glavas and Mathews, 2014; Loane, 2006; Loane and Bell, 2006; Loane, McNaughton and Bell, 2004; Mostafa, Wheeler and Jones, 2005).

Despite the great number of firms from a wide range of sectors that are using the Internet tools to develop international opportunities and the fact that information and communication technologies (ICT) have been identified as enablers of IE, there is still few IE studies that explore the importance of the Internet (Etemad *et al.*, 2010; Glavas and Mathews, 2014; Loane and Bell, 2006; Reuber and Fischer, 2011).

For a broad landscape of Internet-generated internationalization we should integrate multiple theories (namely the resource and knowledge-based views and the network theory) and firm-specific and environmental factors, such as the role of the entrepreneur, the used technologies, the institutional framework and the forces of competition. In view of this, several internationalization scholars suggest the need for a holistic approach to the internationalization process (Crick and Spence, 2005; Jones, 1999). We also recognize the importance of adopting a holistic view and to complement internationalization and entrepreneurship theories in our study. We consider that the opportunity-based paradigm of internationalization complements and connects these theories and suits our research goal.

2.2. Internet and Web 2.0

It is well known that ICT are important enablers of IE (Reuber and Fischer, 2011). An important aspect of recent ICT advances is the Internet and the Web 2.0. Although these technologies encompass economic, social, and technology effects, here we focus on international business aspects, particularly we explore the influence of Internet-related phenomena on firms' internationalization process and export activities.

2.2.1. Internet

Firms first started to use the Internet for presenting their corporate image using simple and static websites. However, they quickly began to explore the potential of online environment and used it for business and commerce (Berthon *et al.*, 2012). Previous researches find various factors affecting Internet adoption and e-business development by firms: perceived benefits, external pressure, organizational readiness (Mehrtens, Cragg and Mills, 2001; Poon and Swatman, 1999), clients' influences and the managers' entrepreneurial orientation (Fillis and Wagner, 2005).

Nowadays, it is acknowledged that the emergence of the Internet provides firms with new ways to generate new businesses, communicate, develop business networks, exchange information, manage teams and develop marketing strategies with lower costs (Bell and Loane, 2010; OECD, 2001; Weill and Vitale, 2001). Therefore, the use of the Internet facilitates business internationalization (Etemad *et al.*, 2010; Fletcher *et al.*, 2004; Glavas and Mathews, 2014; Loane *et al.*, 2004; Petersen *et al.*, 2002).

The Internet is accessible to firms of all sizes and it is particularly appealing for SMEs that usually face limitations in terms of human and financial resources, as it offers the potential to decrease liability of foreignness, newness and smallness, the advantages of multinational enterprises (Lituchy and Rail, 2000) and to reduce barriers associated to international business (Arenius *et al.*, 2005). Thanks to the Internet, firms can take advantage of global web presence and direct and instantaneous foreign-market entry to exploit new international opportunities in a speedy manner (Hamill, 1997; Hamill *et al.*, 2010; Loane, 2006; Mathews and Healy, 2008).

In order to summarize the advantages of the Internet that figure in the extant literature and to understand the way in which these can help SMEs to overcome the internationalization barriers commonly experienced, we present an inventory based on

the pioneering work of Hamill (1997) (see Table 1). The main obstacles experienced by SMEs when internationalizing are grouped into four categories: psychological barriers refer to the entrepreneur or manager's perceptions about the benefits, costs and risks of internationalizing; operational barriers concern the difficulties SMEs face in international operations; organizational barriers arise from SMEs lack of resources and international business experience; finally, product/ market barriers refer to the foreign market selection decision and the firm's product or service development and/or adaptation.

Table 1: Internet business use to overcome barriers to SMEs internationalization

Bar-riers	Internet's potential benefits	Studies
Psychological	Increased international orientation, confidence and commitment	Hamill (1997), Poon and Swatman (1999), Berry and Brock (2004)
	Reduced uncertainty associated with international business	Petersen *et al*. (2002)
	Reduced psychic distance perception	Yamin and Sinkovics (2006), Bennett (1997), Sinkovics *et al*. (2013)
Operational	Direct foreign-market entry	Morgan-Thomas and Bridgewater (2004), Bell and Loane (2010), Glavas and Mathews (2014), Bianchi and Mathews (2015), Bennett (1997)
	Improved efficiency of international market transactions	OCDE (2001), Petersen *et al.* (2002), Bianchi and Mathews (2015), Glavas and Mathews (2014), Lal (2004)
	Reduced international business operating costs and increased efficiency in international operations	Bell and Loane (2010), Fletcher *et al*. (2004), Glavas and Mathews (2014), Mathews and Healey (2008), Lu and Julian (2007), Berry and Brock (2004), Lal (2004), Prasad *et al.* (2001), Sinkovics *et al*. (2013), Loane *et al*. (2004)
	Management and rationalization of supply chain	OCDE (2001), Overby and Min (2001), Ho, Au and Newton (2003)
	Greater opportunities for price standardization	Bell and Loane (2010), Hamill (1997)
	Online export assistance and simplified export processes	Hamill (1997), Poon and Swatman (1999)
Organizational	New ways to generate business model and conduct business	Bell and Loane (2010), Glavas and Mathews (2014), Loane *et al*. (2004)
	Reduced liability of foreignness, smallness and newness and reduced importance of resource scarcity	Arenius *et al.* (2005), Loane *et al*. (2004), Berry and Brock (2004), Prasad *et al*. (2001)
	Reduced advantage of multinational enterprises	Lituchy and Rail (2000), Loane (2006)

	Reduced importance of economies of scale	Quelch and Kein (1996), Bell and Loane (2010), Loane *et al*. (2004), Hamill (1997)
	New ways to access financial resources	Bell and Loane (2010)
	New forms of organization and new ways to coordinate activities and manage teams, resources and production	OCDE (2001), Bell and Loane (2010), Baskerville and Smithson (1995), Fletcher *et al*. (2004)
	Easy, inexpensive and immediate access to information and improved knowledge of international markets	Hamill (1997), Loane *et al*. (2004), Loane (2006), Arenius *et al*. (2005), Petersen *et al*. (2002), Mathews and Healey (2008), Moen *et al*. (2008), Prashantham (2005), Glavas and Mathews (2014), Nguyen and Barrett (2006), Bianchi and Mathews (2015), Loane *et al*. (2007), Bell and Loane (2010), Lu and Julian (2007), Berry and Brock (2004), Lal (2004)
	Development of business networks	Bell and Loane (2010), Baskerville and Smithson (1995), Moen *et al*. (2008), Bianchi and Mathews (2015), Petersen *et al*. (2002), Mathews and Healey (2008), Hamill (1997), OCDE (2001), Lu and Julian (2007), Berry and Brock (2004), Loane *et al*. (2004)
	Increased ability to respond speedily and flexibly to new international opportunities	Petersen *et al*. (2002), Glavas and Mathews (2014), Arenius *et al*. (2005), Reuber and Fischer (2011), Mathews and Healy (2008), Bianchi and Mathews (2015)
Product/ market	Foreign market selection decision made easier (by online international market research)	Hamill (1997), Bianchi and Mathews (2015), Berry and Brock (2004)
	Enhanced product development processes and R&D activities (through Internet-enabled collaborative activity)	Loane (2006), Loane *et al*. (2007), Prasad et al. (2001)
	Improved knowledge of competition, partners and customers (new channels for customer feedback and behavior tracking)	Glavas and Mathews (2014), Moen *et al*. (2003), Loane *et al*. (2007), Hamill (1997), Bell and Loane (2010)
	Increased contact between producers and end-users and reduced dependence on traditional intermediary relationships	Hamill (1997), Bell and Loane (2010), Ho *et al*. (2003)
	Improved communication and interactions with customers and stakeholders all over the world	Bell and Loane (2010), Mathews and Healey (2008), Glavas and Mathews (2014), Bianchi and Mathews (2015), Berry and Brock (2004), Bennett (1997), Prasad *et al*. (2001)
	Potential to reach a vast online population and adoption of global niche rather than country centered strategies	Hamill (1997), Bennett (1997), Lal (2004), Prasad *et al*. (2001), Sinkovics *et al*. (2013), Loane *et al*. (2004)
	Awareness about market trends, innovations and technology and technical developments	Bell and Loane (2010), Hamill (1997)

	Lower marketing communication costs and improved coordination of communication channels	Bell and Loane (2010), Loane (2006), Hamill (1997), Loane *et al*. (2004), Loane *et al*. (2007), Lu and Julian (2007), Bennett (1997), Prasad *et al.* (2001)
	Improved customer service and after-sales support	Bianchi and Mathews (2015)
	Identification of new customers and potential partners	Bell and Loane (2010)

Source: own adaptation from Hamill (1997)

As it can be seen, the exchange and collection of information and knowledge and the development of business network relationships are often highlighted as essential advantages of the use of the Internet for business purposes.

Knowledge of foreign markets has been much emphasized on internationalization theories (see Johanson and Vahlne, 2009; Johanson and Wiedersheimpaul, 1975), in fact some studies have found that greater knowledge intensity enhances international growth (Arenius *et al.*, 2005; Autio, Sapienza and Almeida, 2000). According to Mathews and Healy (2008, p. 5), "the Internet has diluted the once asymmetry of information traditionally experienced by SMEs in the internationalization process". In this respect, it minimizes the need for learning-by-doing, reducing search and learning costs and the uncertainty associated with international business (Petersen *et al.*, 2002). Furthermore, some researches suggest that internationalizing firms should promote Internet-based knowledge internalization as a means to reduce their lack of international experience and international market knowledge (Arenius *et al.*, 2005; Nguyen and Barrett, 2006).

Internet and allied ICT help to underpin business networks (Baskerville and Smithson, 1995; Moen, Madsen and Aspelund, 2008), enabling the exchange of valuable knowledge resources (such as know-how or technological and technical skills), which could lead to enhanced internationalization (Prashantham, 2005). Therefore, Internet usage increases SMEs ability to respond flexibly and speedily to new international opportunities (Glavas and Mathews, 2014; Petersen *et al.*, 2002).

Business conducted via the Internet is called e-business (electronic business) and comprises various activities, such as online marketing and communication, e-commerce (electronic commerce), customer relationship management, supply chain management, knowledge management (Raymond and Bergeron, 2008). Among these e-business

activities, the literature has been paying special attention to e-commerce (EC) (Etemad *et al.*, 2010).

The Internet and ICT have made possible the emergence of EC due to "electronically mediated exchanges and transactions with customers or other key stakeholders in the value chain" (Bell and Loane, 2010, p. 215). Grandon and Pearson (2004) suggest that EC adoption depends on perceived advantages and ease of use, organizational readiness and external pressure. Al-Qirim (2007) also emphasizes the importance of the CEO's innovativeness and the EC technology cost. Previous studies indicate that EC presents benefits for SMEs to a greater extent than large companies (Daniel and Grimshaw, 2002).

The development of sales via the Internet has led to the virtualization of supply chains (Ho, Au and Newton, 2003) and, along with the emergence of global supply chains, is transforming the distribution of goods and services, firms' work practices, supply chain relationships and, ultimately, international supply chain management (Ho *et al.*, 2003; Overby and Min, 2001).

Some studies show that the Internet supports the international expansion of exporting firms (Bianchi and Mathews, 2015; Loane, 2006; Mathews and Healy, 2008) their international market growth (Lu and Julian, 2007), as well as their export performance (Prasad, Ramamurthy and Naidu, 2001). However, it is not yet clear how that happens. According to Bianchi and Mathews (2015), the fact that the Internet can be used as a knowledge and resources acquisition tool provides firms with access to export information, which impacts the development of business networks and, ultimately, export market growth. Sinkovics *et al.* (2013) consider two patterns of Internet use among exporters: the Internet as an alternative to a physical presence and as a sales channel. Their findings suggest that having online sales channels enhances SMEs export performance, but using the Internet as an alternative to a physical presence does not mean greater export performance.

Arenius *et al.* (2005) also argue that Internet-based sales channels can be used as the main export channel or combined with conventional channels. Morgan-Thomas and Bridgewater (2004) and Morgan-Thomas (2009) suggest that firms which already exported are more likely to use the Internet successfully to enhance the existing export channels. Accordingly, Berry and Brock (2004) argue that complementing operations in

both the marketplace and the marketspace is the most reliable strategy for internationalizing firms.

Some studies suggest that the Internet is mainly used for communication and marketing purposes, market information collection, post sales service and support activities and not so much for transactional purposes and supply chain management (Loane *et al.*, 2007; Moen, Endresen and Gavlen, 2003). So, the Internet may play a complementary, supportive role in firms' export activity (Sinkovics *et al.*, 2013).

Despite the great business opportunities, still there is international business risk in the online environment (Pezderka and Sinkovics, 2011). Apart from the inherent risk involved in internationalization that is still very relevant, firms must consider operational risks and online media risks, such as logistical inefficiencies, intellectual property protection, technological reliability issues and implications of increased visibility (Pezderka and Sinkovics, 2011). Moreover, SMEs become exposed to increased global competition (Lituchy and Rail, 2000).

2.2.2. Web 2.0

Early in 1997, Hamill predicted that the exponential development of the Internet would revolutionize international business practices. It factually happened and it is happening again. The last decade witnessed critical advances in the World Wide Web (WWW), prompting the emergence of the Web 2.0, which is described as "a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet – a more mature, distinctive medium characterized by user participation, openness, and network effects" (O'Reilly and Musser, 2007, p. 5).

Web 2.0 technologies are oriented for data and content, relying on easy to build and use software, as well as on a widely distributed architecture of participation that promotes open-innovation and encourages users to collaborate. These emerging technologies are accessible to everyone, anywhere, at any time and they are transforming the interactions between individuals, institutions and firms, leading to new ways of doing business and enabling international practices even more complex (Bell and Loane, 2010). In short, Web 2.0 presents two main implications for international business: the phenomenon of co-creation and the emergence of social media (Berthon *et al.*, 2012).

As originally explained by Chesbrough (2003, pp. 36-37), "in this new model of open innovation, firms commercialize external (as well as internal) ideas by deploying outside (as well as in-house) pathways to the market". This means that firms have porous boundaries, facilitating innovation and ideas flows between firms and the surrounding environment (*idem*). Practices such as mass collaboration and co-creation (i.e. involvement of customers, partners and external experts in product-development) are changing firms' work organization and value creation, and they are contributing to the emergence of INVs.

Web 2.0 technologies allow the exploitation of external resources to overcome resource and knowledge deficits and many firms are taking advantage of these technologies by becoming more open and flexible. For instance, they are using information markets, collaborative software, crowd wisdom, wikis, blogs and other Internet-based tools to gather knowledge (Bonabeau, 2009), which affects knowledge management in organizations (Levy, 2009). Some firms go even further and adopt an open-innovation and close collaboration strategy. That means they are taking advantage of collective intelligence (Bonabeau, 2009) in product-development processes.

In this regard, Howe (2006) introduces the term "crowdsourcing" to define "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" (*idem*, p. 5). It is an emerging, Web-enabled, distributed problem-solving model (Brabham, 2008) in which many co-creators, often amateur, undertake tasks that used to be restricted to a few specialists. Since co-creators may be located in different countries, new ideas, innovations and opportunities are produced via international networks. So, as well as the WWW, crowdsourcing is intrinsically international. Despite that these individuals may receive a compensation, the outcome of an exercise of collective intelligence becomes the property of the firm who explores it (*idem*).

On one hand, the crowdsourcing model can have a positive impact on firms since it is capable of aggregating talent, reducing the costs and time needed to solve problems or develop new products (*idem*) and offering customer-driven innovation that may be converted into new business opportunities. On the other hand, according to Tapscott (2008), in the near future, crowdsourcing will become widespread, which will emphasize

the power shift from firms to customers and the challenge to engage successfully with this new "Net generation" (*idem*).

Prahalad and Ramaswamy (2000) also underline the increasingly important role of the customers, who have become both co-creators and knowledgeable consumers of value, which requires firms to be flexible to actively interact with a demanding, changing and varied customer base via multiple online channels.

Recent studies show that organizational communication management is changing in view of this new Web 2.0 environment (Hamill *et al.*, 2010; Kaplan and Haenlein, 2010; Kietzmann, Hermkens, McCarthy and Silvestre, 2011). According to Christensen, Firat and Cornelissen (2009), considering today's multi-channel, fragmented and confusing communication, firms may be led to manage the content and channels of communications in an integrated way in order to better control the many sources of information about a product, service or firm itself, to efficiently use media budgets and to communicate in a coherent and precise manner with clients and stakeholders. Integrated communications are needed more than ever, but at the same time they are likely to fail and be counter-productive because customers no longer have a passive role as receivers of marketing communication (Christensen *et al.*, 2009; Lituchy and Rail, 2000). Instead, communications are likely to be more successful if marketers and communication professionals keep bi-directional conversations with consumers (Hamill *et al.*, 2010).

Web 2.0 is the platform for social media and user generated content, two related phenomena. Social media is defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content" (Kaplan and Haenlein, 2010, p. 61). This last one refers to "the various forms of media content that are publicly available and created by end-users" (*ibidem*).

These phenomena allow firms to interact with consumers and stakeholders all over the world in a direct, immediate, low-cost manner, reaching or creating a large international community for their products or services and obtaining direct feedbacks (Kaplan and Haenlein, 2010; Kietzmann *et al.*, 2011). Nonetheless, firms are losing control over the information about them that is available online, which can significantly impact firms' reputation and performance (Kietzmann *et al.*, 2011). The collective knowledge, social networking feedback and reviews may have more impact on customer

purchasing decision than brand messages, which underlines the concept of e-word-of-mouth (e-WOM) (Hamill *et al.*, 2010; Moen *et al.*, 2003).

Web 2.0 denotes a paradigm shift and firms face a new, dynamic, international environment and they should not ignore opportunities and threats created by Web 2.0 and social media (Berthon *et al.*, 2012). These developments are relevant for firms of all sizes, but especially for SMEs (Hamill *et al.*, 2010; Kaplan and Haenlein, 2010), representing challenging implications for international marketing strategies.

2.3. Internetization

Scholars have been studying the impact of the Internet on firms' internationalization, mainly highlighting its positive effect (Glavas and Mathews, 2014). Bell and Loane (2010) produce a synthesis about the literature on the effect of the Internet on firms' internationalization and describe an evolution in the way researchers have approached this phenomena. Initially, they considered the Internet a facilitator that provided entrepreneurs and firms with information on international markets and the ability to communicate with stakeholders more effectively. Then researchers saw the Internet as an enabler that allowed firms to perform online transactions and develop new business models. In recent studies, in addition to the previous capabilities, "the Internet is seen as a creator or driver of innovative international opportunities" (*idem*, p. 218) that is able to involve customers and partners in product-development efforts and value creation processes in companies.

Buttriss and Wilkinson (2003) introduce the term "internetalization", which is defined as "the process of a firm committing resources to Internet commerce and Internet mediated transactions; including communication and coordination of internal and external relations" (*idem*, p. 1).

Thanks to its communicational and transactional capabilities, the Internet can be used as a medium for capturing and developing new international opportunities (Mathews and Healy, 2008). This fact leads to the emergence of a new concept: "internetization", which refers to the "process of increasing adoption, diffusion, and deployment of Internet-based technologies and processes that increasingly serve as the back bone of internationalization, especially in the innovative entrepreneurial firms" (Etemad *et al.*, 2010, p. 319).

Nowadays, firms that intend to engage in internationalization need to develop Internet capabilities (Glavas and Mathews, 2014). Reuber and Fischer (2011) analyze the literature on Internet-related IE and identify three factors which underpin the pursuit of international opportunities: "online reputation, online technological capabilities and online brand communities" (*idem*, p. 672).

The literature suggests that, whether used as a supportive tool or as a core capability, the Internet provides SMEs with the chance to improve their international activities and explore international opportunities from inception (Loane *et al.*, 2004), enhancing their export market growth and international expansion (Bianchi and Mathews, 2015; Lu and Julian, 2007; Petersen *et al.*, 2002; Quelch and Klein, 1996). Still, Lal (2004) state that using more advanced e-business tools is associated to a better international performance. So, further investigation and empirical validation is needed. Moreover, studies on the impact of Web 2.0 technologies usage on SMEs internationalization are still lacking (Bell and Loane, 2010).

2.4. Export Performance

Internationalization is a broad and all-encompassing concept that integrates various foreign market entry modes such as exporting, international collaboration and foreign direct investment (FDI). In this study, authors have decided to focus on exports for several reasons. First, this research thesis target population is SMEs in early stages of internationalization, which theoretically face both resource constraints and external barriers and so tend to rely more often on forms of internationalization that require less commitment, such as exporting activities (Johanson and Vahlne, 1977). Second, previous related studies (see Bennett, 1997; Bianchi and Mathews, 2015; Lu and Julian, 2007; Morgan-Thomas and Bridgewater, 2004; Petersen *et al.*, 2002) also focus on exporting firms. Third, although the used database contains information on exporting and importing firms and firms with a foreign subsidiary, the total number of exporting firms is much larger than the total number of companies with a foreign subsidiary. As such, we focus on exporting firms, by studying their export performance.

Export performance is a subject that has been receiving increased attention in literature. Although there is a general consensus regarding export performance determinants, still there is much confusion about how to conceptualize and measure

export performance (Sousa, 2004; Zou and Stan, 1998), which is the most important for this research.

Here we adopt the definition of Cavusgil and Zou (1994) about export performance as the degree to which a firm achieves its economic and strategic objectives when exporting a product in a foreign market through the execution of its export marketing strategy. With regard to export performance measurement, the dominant literature (see Katsikeas, Leonidou and Morgan, 2000; Sousa, 2004) seems to agree on three main groups of measures: economic, noneconomic and generic measures.

The first group encompasses economic measures (Katsikeas *et al.*, 2000) that are also called objective measures (Sousa, 2004) and financial measures (Zou and Stan, 1998). It includes measures of the export sales or profits volume, the export sales or profits growth, as well as the export intensity, among others. According to Sousa (2004) and Katsikeas *et al.* (2000) researches, export intensity is the most used measure to assess export performance.

The second group comprises noneconomic measures (Katsikeas *et al.*, 2000), also called subjective measures (Sousa, 2004), such as market diversification, export market expansion and new products exported. According to Katsikeas *et al*. (2000), the number of export markets is the most widely used noneconomic measure. Subjective measures also include indicators from the previous group that are assessed by using point scales rather than absolute measures. Using subjective measures is believed to encourage more managers to answer given that there is no need to provide objective financial data that they might not be able or willing to share (Sousa, 2004).

Finally, the third group refers to generic measures (Katsikeas *et al*., 2000), also called general measures (Sousa, 2004) and non-financial measures (Zou and Stan, 1998) and considers the perceptual performance. It encompasses measures such as the managers' perceived success, their satisfaction with the firm's export performance, meeting expectations, and strategic export performance. Cavusgil and Zou (1994) emphasize the importance of using perceptual measures of export success in order to consider not only firm's economic but also strategic objectives, which according to their definition are equally important.

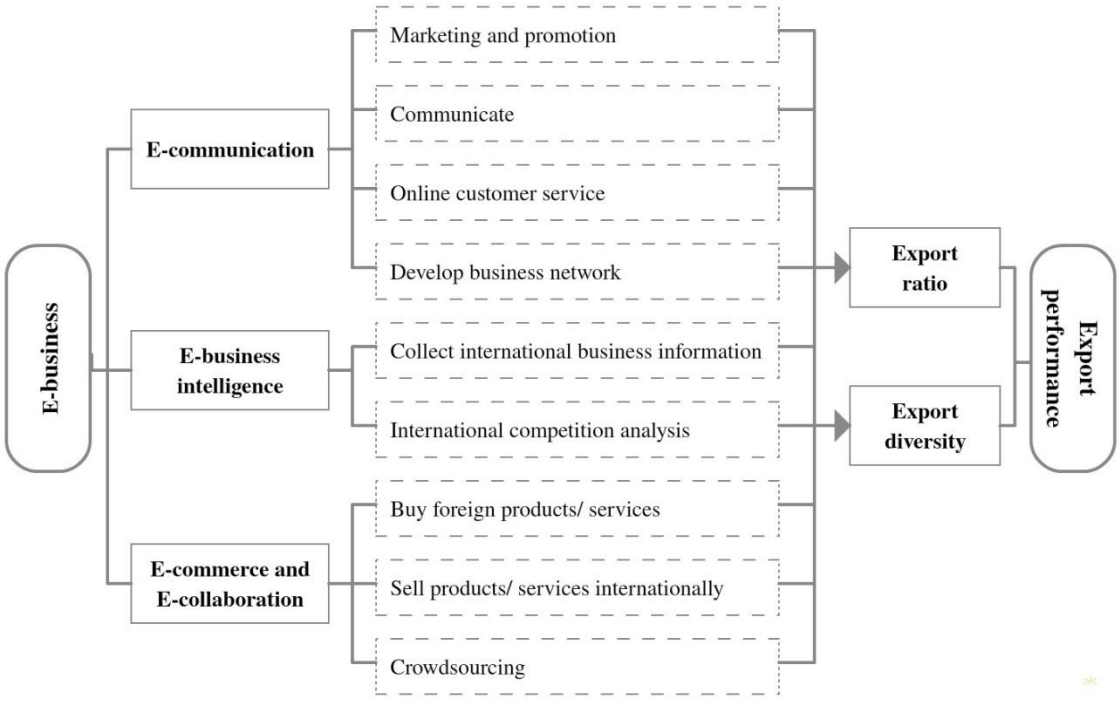
Economic, noneconomic and generic measures are all relevant and have a complementary nature, so for that reason, their combination allows a more complete and reliable export performance assessment (Sousa, 2004).

2.5. Reference Model and Hypothesis

Given the research question and based on the previous literature review, a reference model of how e-business influences firms' export performance is proposed in Figure 1.

This reference framework was developed based on Raymond, Bergeron and Blili (2005) original work about the determinants and effects of e-business (EB) assimilation on SMEs growth and internationalization. In this research, it is not our goal to study the determinants of EB assimilation but rather focus on the effects of EB on SMEs export performance. Thus, what interest us most in Raymond *et al.* (2005) work is their approach to EB assimilation.

Figure 1: Reference model



Source: own adaptation from Raymond, Bergeron and Blili (2005, p. 109)

Raymond *et al.* (2005, p. 108) conceptualize EB assimilation as "the variety of business functions or activities that are supported by the organization's use of the Internet and the Web". So, EB assimilation is operationalized in a number of business activities for which the Internet and the Web can be used.

These business functions are grouped into three levels of business adoption: (1) e-communication, (2) e-business intelligence and (3) e-commerce and e-collaboration. This allow us to assess the extent to which EB is assimilated by the SME: e-business assimilation is more extensive when the firm uses the Internet for more functions. Moreover, using Internet for internal communication via e-mail is much different from, for instance, using Internet for co-creation activities.

a) E-communication

The first level of business functions that can be supported by the use of the Internet encompasses communicational and informational functions (Raymond and Bergeron, 2008; Raymond *et al.*, 2005). Based on the literature and on Raymond *et al.* (2005) original model, in this research study, e-communication is measured by using four Internet uses: marketing and promotion; communicate; online customer service; develop business network.

b) E-business Intelligence

The second group refers to business intelligence functions, i.e. Internet use for competitive intelligence development (Raymond and Bergeron, 2008; Raymond *et al.*, 2005). Based on the literature review and the original model, e-business intelligence is measured by using two possible Internet uses: collect international business information and international competition analysis.

c) E-commerce and E-collaboration

The last level of business activities for which the Internet can be used refers to transactional and collaborative functions. Based on the literature review and the original model, three Internet uses are considered to measure this variable: buy foreign products/ services; sell products/ services internationally; crowdsourcing.

d) Export Performance

According to the literature review on export performance presented in Section 2.4 and considering this research goals, authors have decided to use subjective and generic measures to encourage managers to respond. We use two measures of export performance: export intensity and export diversity.

Export intensity (export-to-total sales ratio), the most used export performance proxy, is considered in this study not as an objective but as a subjective measure. Since the number of export countries is the noneconomic measure most often used, we also use export diversity as a measure.

We also consider these two measures appropriate because they have been used in previous studies on Internet and IE, providing interesting results. While Arenius *et al.* (2005) argue that using the Internet can increase both international intensity and diversity, Preece, Miles and Baetz (1999) found that different IE variables have different effects on firms' international intensity and diversity. It is believed that this approach may lead us to draw some interesting conclusions.

Therefore, the proposed reference model suggests that the extent that e-business is assimilated by the SME can significantly affect the firm's export performance. This evidence allows us to understand which Internet business functions are connected to greater export ratio and diversity.

So, authors formulate a research hypothesis for each Internet business function impact on firms' export performance. These are subdivided into hypothesis regarding the two export performance indicators: export ratio and diversity.

H1 - The greater the use of the Internet for marketing and promotional purposes, the greater the firms' export performance.

H1a - The greater the use of the Internet for marketing and promotional purposes, the greater the firms' export ratio.

H1b - The greater the use of the Internet for marketing and promotional purposes, the greater the firms' export diversity.

Firms' online presence evolved from simple websites that served as online presentations (Berthon *et al.*, 2012) to multi-channel, complex presences on the Internet

(Christensen *et al.* (2009). Internet and Web 2.0 tools enable increased international visibility, lower marketing and promotion costs and a more efficient management of communication channels (Bell and Loane, 2010; Loane, 2006). It is expected, as a result, to positively influence buyers' future purchase intentions (Lu and Julian, 2007). Knowing that, we aim to understand if using the Internet for marketing and promotional purposes impacts firms' export performance.

H2 - The greater the use of the Internet for communication, the greater the firms' export performance.

H2a - The greater the use of the Internet for communication, the greater the firms' export ratio.

H2b - The greater the use of the Internet for communication, the greater the firms' export diversity.

The Internet is a communication medium that allows firms to communicate with customers, suppliers, distributors and other stakeholders all over the world in an interactive, real-time and cost-effective manner, facilitating international business management (Bell and Loane, 2010; Glavas and Mathews, 2014; Mathews and Healy, 2008). Given that maintaining internal and external communications is considered a key aspect for successful exports (Lu and Julian, 2007), we aim to test if the use of the Internet for communication impacts firms' export ratio and diversity.

H3 - The greater the use of the Internet for online customer service, the greater the firms' export performance.

H3a - The greater the use of the Internet for online customer service, the greater the firms' export ratio.

H3b - The greater the use of the Internet for online customer service, the greater the firms' export diversity.

The ability to interact with customers in a real-time manner allows firms to provide an improved customer service and after-sales service (Bianchi and Mathews, 2015). Not only this is expected to result in clients' satisfaction but it can also result in positive reviews or feedbacks that may stimulate a positive e-WOM and influence potential

consumers. As such, it is our goal to determine if the use of the Internet for online customer service impacts firms' export performance.

H4 - The greater the use of the Internet for business network development, the greater the firms' export performance.

H4a - The greater the use of the Internet for business network development, the greater the firms' export ratio.

H4b - The greater the use of the Internet for business network development, the greater the firms' export diversity.

The literature emphasizes the development of network relationships as an essential advantage of the firms' use of the Internet because the network relationships enable the exchange of information and knowledge, which may lead to enhanced internationalization (Prashantham, 2005). Thus, we aim to determine if the use of the Internet for networking purposes impacts firms' export performance.

H5 - The greater the use of the Internet for international business information, the greater the firms' export performance.

H5a - The greater the use of the Internet for international business information, the greater the firms' export ratio.

H5b - The greater the use of the Internet for international business information, the greater the firms' export diversity.

As mentioned above, the collection and exchange of information and knowledge are often highlighted as important advantages of Internet business usage because it allows firms to overcome the lack of international experience and foreign market knowledge, as well as the uncertainty in international business (Arenius *et al.*, 2005; Nguyen and Barrett, 2006; Petersen *et al.*, 2002). Therefore, we intend to assess if greater use of the Internet for international business information is related to greater export performance.

H6 - The greater the use of the Internet for international competition analysis, the greater the firms' export performance.

H6a - The greater the use of the Internet for international competition analysis, the greater the firms' export ratio.

H6b - The greater the use of the Internet for international competition analysis, the greater the firms' export diversity.

Competitive intelligence development requires competition analysis, which is also made easier by the Internet (Glavas and Mathews, 2014). Therefore, we find it interesting to understand if the use of the Internet for international competition analysis has a positive impact on firms' export performance.

H7 - The greater the use of the Internet for buying foreign products/ services, the greater the firms' export performance.

H7a - The greater the use of the Internet for buying foreign products/ services, the greater the firms' export ratio.

H7b - The greater the use of the Internet for buying foreign products/ services, the greater the firms' export diversity.

One of the notable features of the Internet is its transactional function, i.e., the ability to buy and sell online. Internet has the potential to improve the efficiency of international transactions (Glavas and Mathews, 2014). Today, firms (as well as consumers) are able to search for products and services online, to compare features, prices and clients' reviews, ensuring more efficient purchases. Moreover, the Internet provides a reduced dependence on traditional intermediary relationships because it facilitates the match between buyers and sellers (Hamill, 1997), which can reduce the transaction costs. Therefore, we aim to determine if buying foreign products/ services online has a positive impact on firms' export ratio and diversity.

H8 - The greater the use of the Internet for selling products/ services internationally, the greater the firms' export performance.

H8a - The greater the use of the Internet for selling products/ services internationally, the greater the firms' export ratio.

H8b - The greater the use of the Internet for selling products/ services internationally, the greater the firms' export diversity.

The Internet can provide a direct, virtual channel to export markets through EC. Firms that sell online can reach more potential foreign customers and sell their products and/or services in a cost-effective and efficient way. On one hand, the access to an

enormous online population means more potential customers; on the other hand, as the Internet reduces entry-costs, firms are more likely to serve more foreign markets. This leads us to believe that this may be the Internet business function that has a greater impact on firms' export ratio and diversity. This hypothesis is consistent with the findings of Sinkovics *et al.* (2013), who report that entrepreneurial firms that use the Internet as a sales channel can enhance their export performance.

H9 - The greater the use of the Internet for crowdsourcing activities, the greater the firms' export performance.

H9a - The greater the use of the Internet for crowdsourcing activities, the greater the firms' export ratio.

H9b - The greater the use of the Internet for crowdsourcing activities, the greater the firms' export diversity.

As mentioned before, Web 2.0 requires firms to become more open and collaborative with clients, business partners and external experts, engaging them in product-development. It is thought that crowdsourcing activities may lead to more efficient, lower-cost and faster product and service development (Brabham, 2008) which may be translated into new business opportunities. As such, we find it interesting to understand if the use of the Internet for crowdsourcing activities has a positive impact on firms' export performance.

3. Methodology

Aiming to study Portuguese entrepreneurial firms' professional and business usage patterns of Internet and Web 2.0 technologies and their role in export marketing, mixed methods were employed.

First, data were collected via an e-mail survey of Portuguese exporters from a cross-section of industries and the results were examined using quantitative data analysis techniques (more precisely, descriptive and association statistics and non-parametric tests). Then, a representative sample of six firms was selected for interviews and further investigation.

In this chapter, we start by making a brief review of previous studies' methodologies (Section 3.1) and an introduction to the research methods and instruments used in this study (Section 3.2). Given our research question (Section 3.3), we describe the adopted procedures (Section 3.4), as well as our population and sampling (Section 3.5).

3.1. Previous Studies' Methodologies

We began our literature review by exploring studies related to international and export activities and Internet and Web 2.0 in order to have a broad view of each topic. However, our goal is to relate them, so we limit our focus to researches on exports and international activities in the context of the Internet (which encompasses Web 2.0, e-business, e-commerce, among other concepts).

There is an increasing number of studies devoted to the use of Internet and Web 2.0 technologies by internationalizing firms (Bianchi and Mathews, 2015). An important part of the existing literature consists of theoretical and conceptual papers that examine the impact of the Internet from a hypothetical viewpoint, proposing models and new directions for research in this field, (e.g. Alrawi, 2007; Barrutia and Echebarria, 2007; Berthon *et al.*, 2012; Buttriss and Wilkinson, 2003; Hamill, 1997; Overby and Min, 2001; Petersen *et al.*, 2002; Quelch and Klein, 1996; Reuber and Fischer, 2011).

In regard to empirical research, as can be seen from Table 2, many studies adopt exploratory research methods, mainly case studies of Internet-based firms and firms in high-tech sectors.

In the same way, there are papers that apply quantitative research methods to formally test research hypothesis. The questionnaire is the most used data collection method, with sample sizes varying from 51 to 635. Various analysis techniques are used (especially regression, factor and discriminant analysis and structural equation modeling) to analyze data from different sectors and industries.

Table 2: Previous studies' methodologies

Studies	Research methods	Key respondents	Sample	Response rate	Analysis methods	Country(ies)	Sector / Industry
Arenius, Sasi and Gabrielsson (2005)	Case study	International decision-makers	1	---	---	Finland	Software firm
Bell and Loane (2010)		---	5	---	---	Cross-country	Internet-based firms
Etemad, Wilkinson and Dana (2010)		---	1	---	---	---	Internet-based firm
Forsgren and Hagström (2007)		---	8	---	---	Sweden	Internet-based firms
Gabrielsson and Gabrielsson (2011)		---	35	---	---	Finland	High sector
Glavas and Mathews (2014)		Entrepreneurs	8	---	---	Australia	Travel and tourism
Loane, McNaughton and Bell (2004)		International decision-makers	8	---	Thematic analysis	Cross-country	Internet-based firms
Mathews and Healy (2008)		International decision-makers	12	---	---	Australia	Cross-sectoral
Moen, Endresen and Gavlen (2003)		---	6	---	---	Norway	Software firms
Yamin and Sinkovics (2006)		CEO	5	20%	---	United Kingdom	Engineering sector

Bennet (1997)	**Questionnaire**	---	358	37%	Factor analysis	United Kingdom	Cross-sectoral
Berry and Brock (2004)		Entrepreneurs	112	40%	Regression analysis	Germany	Technology-based firms
Bianchi and Mathews (2015)		International decision-makers	204	10%	Structural equation modeling	Chile	Cross-sectoral
Lal (2004)		CEO	51	75%	Regression analysis	India	Cross-sectoral
Lituchy and Rail (2000)		Owners/ CEO	114	28,6%	---	Canada and U.S.A.	Hospitality
Lu and Julian (2007)		---	133	42%	Factor + Discriminant analysis	Australia	Cross-sectoral
Moen, Madsen and Aspelund (2008)		---	635	---	Structural equation modeling	Denmark and Norway	Cross-sectoral
Morgan-Thomas and Bridgewater (2004)		---	705	24.9%	Factor + regression analysis	United Kingdom	Cross-sectoral
Morgan-Thomas (2009)		---	603	---	---	United Kingdom	Cross-sectoral
Mostafa, Wheeler and Jones (2005)		Owners/ SEO	158	29.8%	Factor + cluster analysis	United Kingdom	Manufacturing firms
Nguyen and Barrett (2006)		---	306	---	---	Vietnam	---
Prasad, Ramamurthy, and Naidu (2001)		Marketing and international decision-makers	381	19,1%	Factor analysis	U.S.A.	Manufacturing firms
Raymond, Bergeron and Blili (2005)		CEO	108	---	Structural equation modeling	Canada	Manufacturing firms
Sinkovics, Sinkovics and Jean (2013)		Marketing or export manager or CEO	115	11,5%	Structural equation modeling	United Kingdom	Cross-sectoral

Kotha, Rindova and Rothaermel (2001)	**Secondary sources**	---	86	---	Regression analysis	U.S.A.	Internet-based firms
Nieto and Fernández (2005)		---	---	---	Regression analysis	Spain	Manufacturing firms
Loane (2006)	**Secondary sources + Interviews**	Founder/ CEO	218 + 53	---	Thematic analysis	Cross-country	Internet-based firms

Source: own elaboration

3.2. Quantitative and Qualitative Methodology

In this section, we discuss the methodological techniques that are employed in this research study that combines quantitative and qualitative methods.

According to Yin (2009), in order to choose the most suitable research strategy, researchers should consider three conditions: the type of research question, the extent of control the investigator has over actual behavioral events and the contemporaneity of the event. Regarding research questions, based on the conventional categorization of "who, what, where, when, why and how" questions, Yin (2009) considers that "who", "what" and "where" questions are well addressed through quantitative analysis, while "how" and "why" questions are more likely to lead to the use of case studies. Given that our research question is a "how" question, the fact that authors do not have control over behavioral events and the novelty of the phenomenon under investigation, case study would be considered an adequate approach.

Still, upon the review of previous studies' methodologies, we can see that both quantitative and exploratory research methods contribute for the body of knowledge on international e-business. Each method provides an important insight into this phenomenon, however, given its complexity, the combined use of both quantitative and qualitative methodologies provides a broader and enriched understanding of the research problem (Creswell, 2009). Therefore, this study combines the advantages of both quantitative and multi-case approaches.

First of all, an online questionnaire was administered to a representative sample of Portuguese entrepreneurial firms. We started our analysis using descriptive statistics to each variable at a time (univariate analysis), using frequency tables and graphs. Then,

given our research question, the nature of variables and the sample's characteristics, association analysis and non-parametric hypothesis tests were used to explore and analyze the questionnaire results. Finally, we extracted a sample from the respondents for case study analysis and we carried out semi-structured interviews in order to obtain richer and deeper conclusions.

3.2.1. Association Analysis

The goal of association analysis is to discover and quantify the relationship between two categorical variables. The data are organized in the form of a table, the so-called contingency table (cross-tabulation) and can be analyzed with the Pearson's chi-square test for independence that determines if two variables are statically independent or associated (Marôco, 2014). If a dependency is found, then other association tests such as Cramer's V and Goodman and Kruskal's gamma, among others, can be applied to test the strength of association between the variables.

a) Pearson's Chi-square Test

The Pearson's chi-square test for independence, also known as chi-square test of association is used to test if two variables are independent. It compares the observed and the expected frequencies to calculate the chi-square statistic and the p-value in order to make a decision regarding the null hypothesis (the two categorical variables are independent). If the p-value is small enough, then the null hypothesis is rejected (Marôco, 2014). In this study we use the standard significance level of 0,05 (α=0,05).

b) Cramer's V Test

The Cramer's V is a measure of association derived from the Pearson's chi-square. It is used to measure the level of association between one nominal with either another nominal variable or with an ordinal variable. The statistics range from 0 (no association between the variables) to 1 (perfect association) (Marôco, 2014).

c) Goodman and Kruskal's Gamma Test

The Goodman and Kruskal's gamma is a non-parametric test used to measure the strength and the direction of association between two ordinal variables on a scale between

-1 (perfect negative association) and +1 (perfect positive association). The closer the value is to 0, the stronger the association between the variables (Goodman and Kruskal, 1954).

3.2.2. Hypothesis Tests

The purpose of hypothesis testing is to determine if there is enough statistical evidence to accept or reject a hypothesis about a population parameter based on sample data. According to Marôco (2014), there are two types of hypothesis tests: parametric and non-parametric tests. Parametric tests usually have more power than non-parametric, but the first require a set of assumptions to be satisfied, specifically distribution normality and homogeneity of variances. Given that our data does not meet the assumptions for a parametric test, non-parametric tests were performed.

At first, researchers performed the Kruskal-Wallis hypothesis test. This is a non-parametric test used to assess whether there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable (Marôco, 2014).

However, the Jonckheere-Terpstra test was considered more appropriate because there is an *a priori* ordering of the population and in these cases, this test can be used to test if there is a linear trend in the data. Also known as Jonckheere trend test, this test does the same thing as the Kruskal–Wallis test but can also determine if there is a statistically significant trend between ordinal variables, so it provides more statistical power than the Kruskal–Wallis test. In other words, this non-parametric statistic tests for an ordered pattern to the medians of the groups compared (Field, 2009).

3.2.3. Multi-case Analysis

Yin (2009, p. 13) defines case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life contexts”. This research method aims to obtain a rich and encompassing understanding of the cases in all their complexity.

As pointed out by Yin (2009), a case study should be based on a well-grounded theory and a set of testable propositions. Its purpose is to obtain findings that support the original propositions and can be generalized to that theoretical base. Although case studies can involve a single or multiple cases, confidence about the wider validity of

conclusions is increased if findings apply to multiple cases. In other words, replication can enhance analytical generalization in case studies.

Yin (2009) and Eisenhardt (1989) stress the importance of defining the unit of analysis and the case studies' selection criteria. Cases may be selected because they extend emergent theory or because they fill theoretical categories. Qualitative researchers should also decide on the appropriate number of cases to explore within the study. Eisenhardt (1989) suggests limiting the number to the point where the incremental contribution of extra cases is only marginal.

Case studies usually combine multiple sources and data collection methods (Yin, 2009). In this study, we use data from the questionnaire, semi-structured interviews and firms' websites and social media pages.

3.3. Research Question

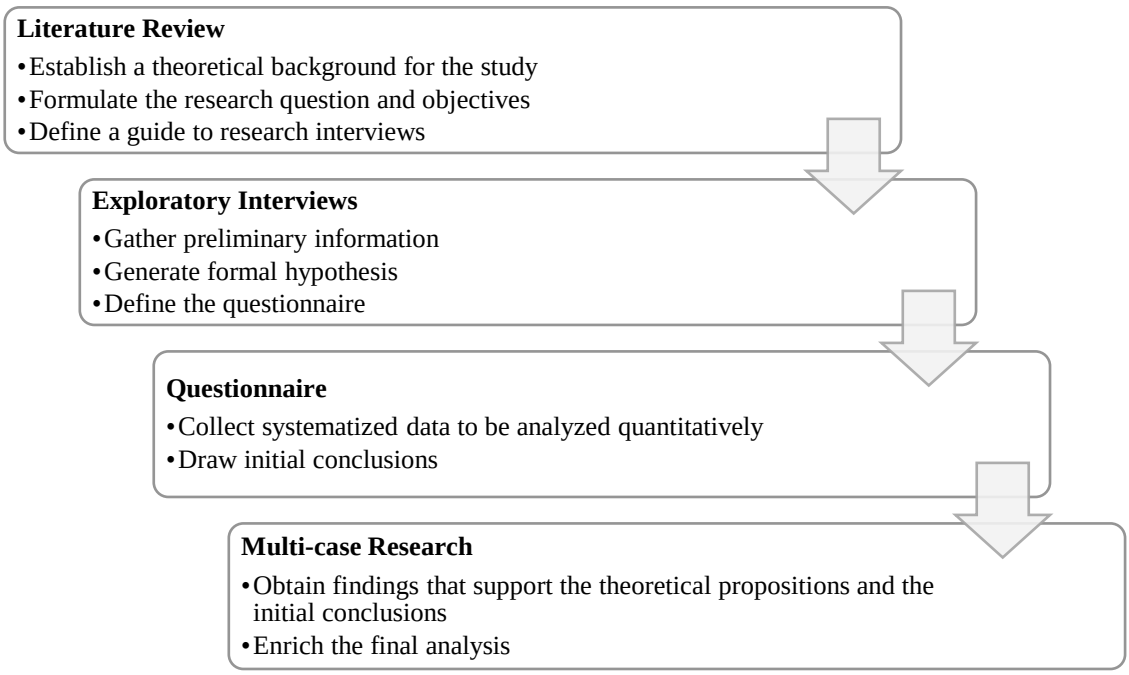
This dissertation aims to study links among Internet and Web 2.0 technologies and firm's export marketing in the Portuguese context. Specifically, this research study goal is to investigate Portuguese entrepreneurial firms' professional and business usage patterns of Internet and Web 2.0 technologies and their roles in their export strategy and performance. Hence, an important central research question was formulated: how do Portuguese entrepreneurial firms use Internet and Web 2.0 technologies to develop export market opportunities?

To assess this question, the authors base their research on the model developed by Raymond *et al.* (2005) that was introduced earlier in Section 2.5. Mixed methods research is applied, according to the procedures described in the next section.

3.4. Procedures

The various stages of the research process are presented in a compressed form in the flowchart below (Figure 2).

Figure 2: Research stages



Source: own elaboration

We started our research with a qualitative approach. Based on the previous literature review on internationalization, export activities, Internet and Web 2.0, e-business and their connection, we defined a guide to some semi-structured interviews to entrepreneurs (see Appendix 1). This exploratory phase of the investigation is particularly useful when studying a contemporary phenomenon in order to provide an insight, to gather preliminary information and to generate formal hypothesis (Schutt, 2011).

We conducted exploratory interviews with three Portuguese entrepreneurs: one from a communication agency, another one from an innovative translation company, and a fashion accessories retailer with its own brand. This exploratory qualitative approach helped in the definition of the research instruments used in data collection, both the questionnaire and the interviews' guideline.

a) Questionnaire

As can be seen from Table 2, survey questionnaire has been widely used in related studies. The purpose of a survey research is "to generalize from a sample to a population so that inferences can be made about some characteristic, attitude, or behavior of this population" (Creswell, 2009, p. 146). In this study, a cross-sectional questionnaire was

administered online during a period of time to a representative sample of Portuguese entrepreneurial firms. Key respondents were firms' entrepreneurs.

The questionnaire is a cost-effective research instrument that allows the collection of systematized data from a wide population that can be easily summarized and analyzed (Ghiglione and Matalon, 2005). However, it must be carefully designed, considering the research question, the variables in study, the intended analysis methods and the target population (Creswell, 2009).

This research questionnaire was designed for this study and it was based on components of several questionnaires used in previous related studies. The questionnaire items and sources are given in Appendix 2. Comprising four sections in total, this questionnaire has 21 questions divided into four modules: (1) firm's profile, (2) export activities, (3) e-business and (4) respondent's characteristics.

The first module of the questionnaire concerns firms' profile that is based on existing statistical classifications, mainly the NUTS system (Nomenclature of Territorial Units for Statistics) (INE, 2005) and the Portuguese Classification of Economic Activities (INE, 2007).

The second module is about firms' export activities. Previously validated scales are used to measure export performance, specifically "export ratio" (or "export intensity") and "export markets" (or "export diversity") are taken from Loane (2006), "speed to first export market" is adapted from Loane (2006), while the perceived "export market growth" and "importance of business network relationships" are derived from Bianchi (2015).

The third module includes questions to assess firms' use of the Internet for international business purposes. Respondents were asked to indicate in a four-item scale ("less often", "a few times a month", "a few times a week", "daily or more often") the degree to which their firm uses Internet tools for a set of business-related activities previously identified by the literature (mainly the work of Berry and Brock, 2004). A five-point Likert scale ranging from "strongly disagree" to "strongly agree" is used to assess respondents' level of agreement with a set of sentences regarding the contributions and the effects of the Internet on firms' export activities and performance (retrieved from Bennett, 1997; Berry and Brock, 2004; Bianchi and Mathews, 2015; Brock and Zhou, 2005). Participants were also asked to select the used digital devices and the used Internet

services in multiple response questions (some items are retrieved from Brock and Zhou, 2005 and Mostafa, Wheeler and Jones, 2005, some are added by the authors based on the literature). Finally, the instrument includes binary questions regarding ICT use for remotely accessing resources from the office and respondent's intention to devote more resources to online business in the future (retrieved from a questionnaire developed by the investigators of Roots&Wings project). The last section of the questionnaire refers to entrepreneur's profile.

The questionnaire was first written in English and then translated to Portuguese. The research instrument was subject to pilot testing with a convenient sample of ten people, including entrepreneurs, in order to determine the time needed to fill out the questionnaire, to ensure its validity, clarity and appropriateness. Following pre-testing, some questions were improved and the questionnaire format and the questions order were modified to make it more respondent-friendly and to maximize our response rate.

The validated questionnaire was converted to an online questionnaire by using Google Forms, an online survey tool. To maximize our response rate, the invitation e-mail that presented the research purpose and included the online survey link was carefully scheduled. The online questionnaire was first sent on March 9th, 2016 to 2096 firms, resulting in 93 responses. It was sent once again on March 23rd, 2016 and one last time on April 26th, 2016, resulting in a total 252 responses. All the respondents voluntarily accepted participating in this study, providing information that can only be used for statistical purposes.

Collected data were treated and analyzed using the IBM Statistical Package for the Social Sciences (SPSS) version 22 software in order to give statistic validation of the Internet's impact on firms' export marketing.

b) Case studies

We decided to select cases "which are likely to replicate or extend the emergent theory" (Eisenhardt, 1989, p. 537), according to theoretical sampling. Case studies' selection criteria were based on firms' export performance profiles (specifically export ratio and export diversity) and the extent to which they use Internet tools for business purposes.

Given the importance and advantages of using multiple data sources (Yin, 2009), apart from using questionnaire data and online information, interviews with the selected firms' entrepreneurs were conducted. Case studies interviews can include cross-case questions, questions about the individual case and questions that go beyond the case studies evidence, for instance concerning the literature (*idem*).

An interview guide was developed based on a previously validated interview from the Roots&Wings project, as well as on the earlier exploratory interview. The interview guideline is given in Appendix 4.

Apart from direct questions concerning firm's profile, the instrument included seven open questions about firm's export strategy, entrepreneur's experience and perception about the benefits and effects of the Internet on firm's export activities and performance. Therefore, "how" and "why" questions were predominant, as expected within a qualitative approach.

An invitation e-mail was sent on July 18th and 19th, 2016 to a sub-sample of 16 firms from the questionnaire sample. During July 20th and 28th, six interviews were conducted with firms' entrepreneurs via Skype and phone. After concluding the interviews and collecting data from these six case study firms, including extra cases would not add much relevant information and so the limit number of case studies was reached.

The final case studies sample comprise firms that use Internet tools to a lesser and greater extent and firms with low- and high-export performance, filling every export ratio group (1-10%; 11-50%; 51-90%; 91-100%), as well as two of the three export diversity groups (less than five export markets; between five and 25 but not more than 26).

3.5. Population and Sampling

This research dissertation target population is Portuguese entrepreneurial firms in early stages of internationalization. For the reasons explained below, this study covers Portuguese small- and medium-sized exporters with less than six years of age.

The entrepreneurial development in Portugal faces important structural challenges such as discouraging cultural and social norms and the lack of supportive governmental policies. However, advanced physical infrastructure and competent professional infrastructure, as well as the existence of numerous programs and initiatives to support

business creation are seen as effective entrepreneurship facilitating factors. According to the Global Entrepreneurship Monitor (2013), the Portuguese entrepreneurial environment has been developing consistently in the past few years. Therefore, we find it interesting to focus on this small, open economy with the infrastructure to support Internet-enabled businesses.

In this study, SMEs are defined according to the European Commission Recommendation of May 6th, 2003 and consist of enterprises which employ fewer than 250 people and have either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro. Based on the report of Statistics Portugal (INE, 2014), in 2012, near all of the Portuguese non-financial enterprises were SMEs (99.9%).

In order to guarantee that the sample is composed of entrepreneurial firms in early stages of internationalization and based on Zahra, Ireland and Hitt (2000) definition of new ventures, we focus on firms with less than six years from establishment which are already internationalized. According to Oviatt and McDougall (2005b) definition, these can be consider international new ventures (INVs). So, the unit of analysis will be the firm, as in other studies on the Internet and internationalization (e.g. Bianchi and Mathews, 2015; Moen et al., 2003; Morgan-Thomas and Bridgewater, 2004).

The selected database was SABI - Bureau van Dijk, which contains accounting and financial information about Portuguese companies. Although the used database contains information on exporting and importing firms and firms with a foreign subsidiary, the total number of exporting firms is much larger than the total number of companies with a foreign subsidiary. Given that, as in previous related studies (see Bennett, 1997; Bianchi and Mathews, 2015; Lu and Julian, 2007; Morgan-Thomas and Bridgewater, 2004; Petersen et al., 2002), we focus on exporting firms.

According to data collected from SABI on March 7th, 2016, there were a total of 6.488 Portuguese SMEs exporters with less than six years. The database provided us with access to the e-mail addresses of 2096 of those companies. We sent the online questionnaire via e-mail to all of them, however, there was 177 e-mail delivery failures and 38 companies answered informing either the company was already closed or was not an exporter. Given that, we excluded 215 companies from our initial sample. The

resulting sample consisted of 1881 firms. Nevertheless, it should be noted that this data is not completely reliable due to the database issues.

This simple random sampling-based survey resulted in a total of 252 replies, which corresponds to a response rate of 13,39%. This response rate is considered to be acceptable given the low response rates associated with business surveys (Frazer and Lawley, 2000). Nevertheless, we had to exclude 48 of them: five firms completed the questionnaire two times, so we excluded one of each; 22 companies had a foundation prior to the date we had defined, i.e., more than six years (one more time this happened due to the database issues); finally, 21 observations were deleted because of extensive missing data. Therefore, the final sample consists of 204 firms.

Regarding multi-case analysis, as mentioned before, a sub-sample of 16 firms was drawn from the questionnaire sample. Of these, six representative firms ended up being used as case studies.

Data collected from this sample was analyzed and used to conclude on the research question. The results are described and discussed in the following chapter.

4. Results

In this chapter we describe and analyze the questionnaire and the multi-case studies results. We start by describing the sample characteristics in Section 4.1. Section 4.2 covers the quantitative analysis, which comprises descriptive analysis (Subsection 4.2.1), multivariate analysis (Subsection 4.2.2) and hypothesis testing (Subsection 4.2.3). Section 4.3 describes the qualitative analysis of the multi-case studies. Finally, we discuss the research results in Section 4.4.

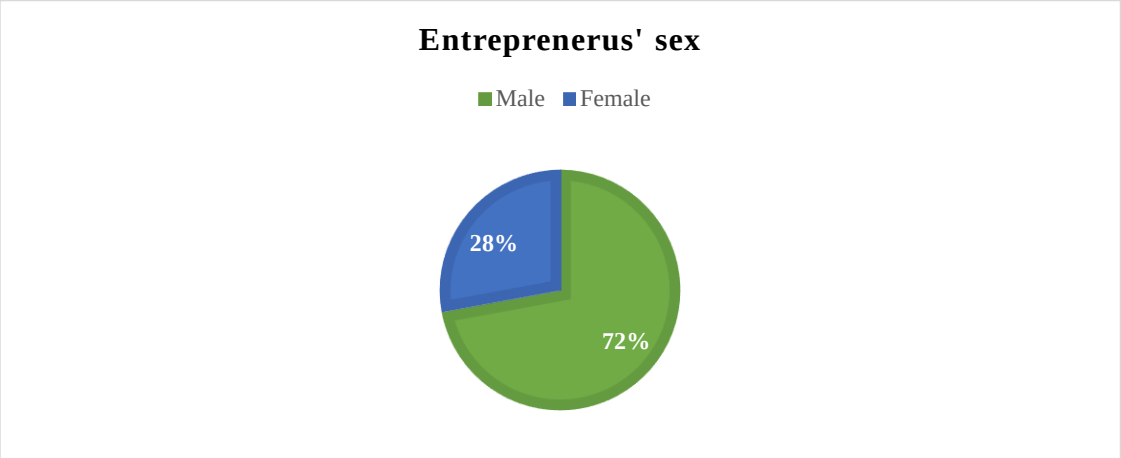
4.1. Sample Characteristics

This research's final sample consists of 204 firms and provides a representative cross-section view of the population. The sample characteristics are divided into (a) entrepreneurs' characteristics, (b) firms' characteristics and (c) firms' export activities.

a) Entrepreneurs' Characteristics

Questionnaire respondents are mainly chief executive officers (60,7%) or managing partners (22,5%) and all of them are firms' decision makers. Their average age is approximately 47 years old, with birth dates ranging from 1949 to 1993. In terms of gender, 72,1% of the respondents are male, while 27,9% are female (see Graph 1).

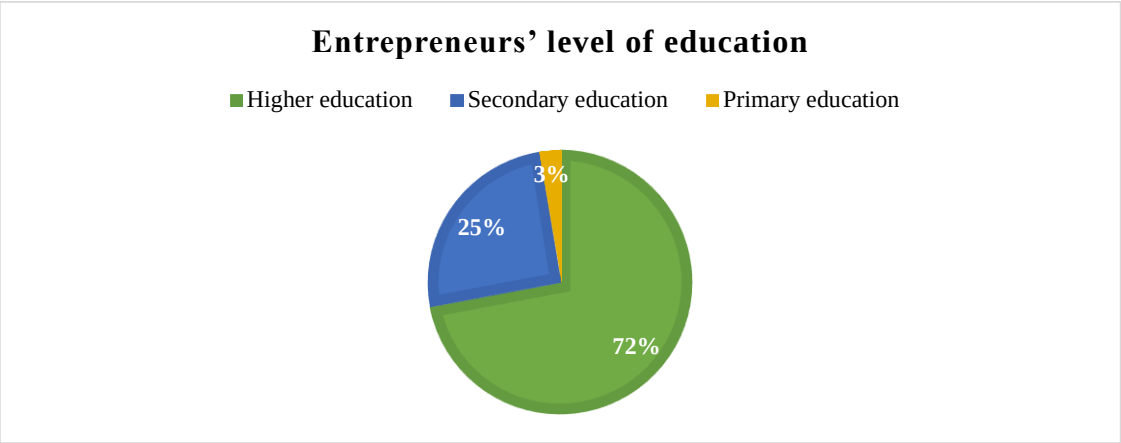
Graph 1: Sample's characteristics: entrepreneurs' sex



Source: own elaboration

The majority has higher education (72,1%), while 25,5% has secondary school education and the rest has primary education (2,5%) (see Graph 2).

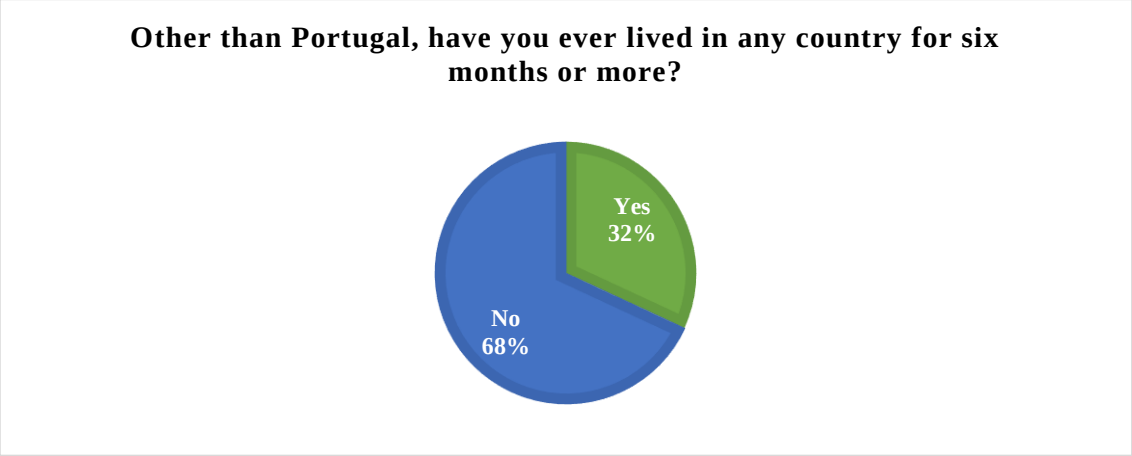
Graph 2: Sample's characteristics: entrepreneurs' level of education



Source: own elaboration

Most of the participants (68,1%) haven't lived in any other country apart from Portugal for six months or more (see Graph 3).

Graph 3: Sample's characteristics: entrepreneurs' experience in other countries

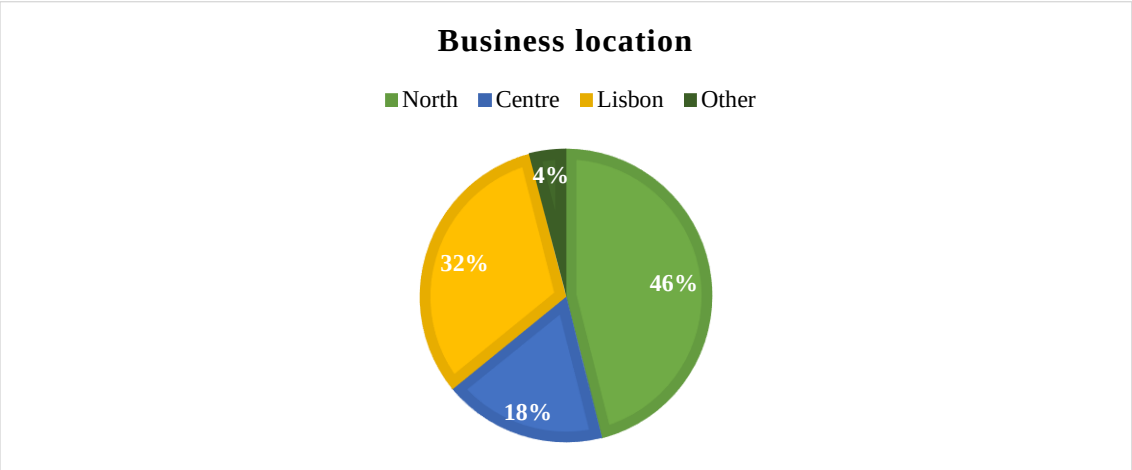


Source: own elaboration

b) Firms' Characteristics

This study's sample of 204 Portuguese exporting firms includes cases from all regions of the country except from Azores, with North (46,1%), Lisbon (31,9%) and Centre (18,1%) dominating (see Graph 4).

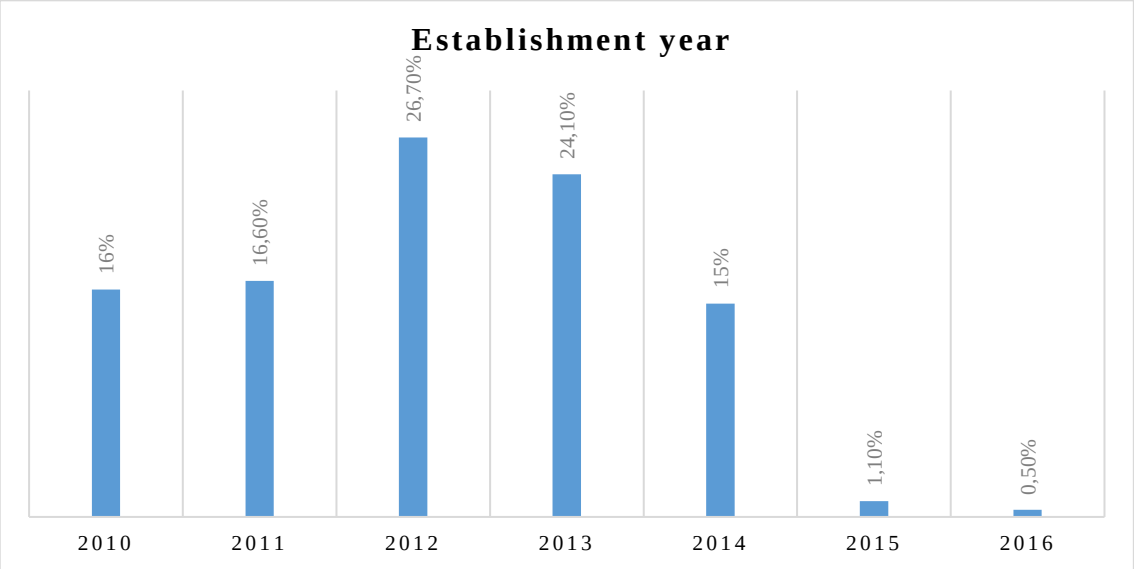
Graph 4: Sample's characteristics: business location



Source: own elaboration

Firms' establishment dates range from 2010 to 2016 and a large part of them was established in 2012 (26,7%) and in 2013 (24,1%) (see Graph 5).

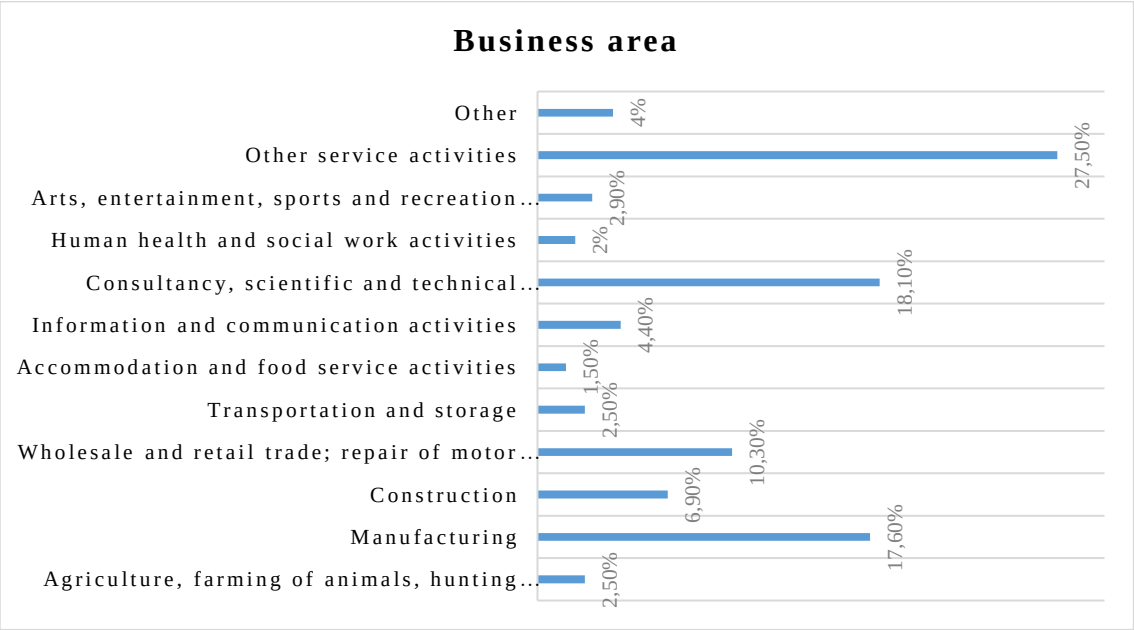
Graph 5: Sample's characteristics: firms' establishment year



Source: own elaboration

The sample covers a wide range of business areas, being the most significant Service Activities (27,5%), Consultancy, Scientific and Technical Activities (18,1%) and Manufacturing (17,6%) (see Graph 6).

Graph 6: Sample's characteristics: business area



Source: own elaboration

Regarding the most important factor for being an effective competitor, respondents emphasize “Superior quality of the products or services” (42,6%), “Market knowledge” (12,3%), “Lower price” (12,3%) and “Serving a market niche missed by others” (8,8%) (see Graph 7).

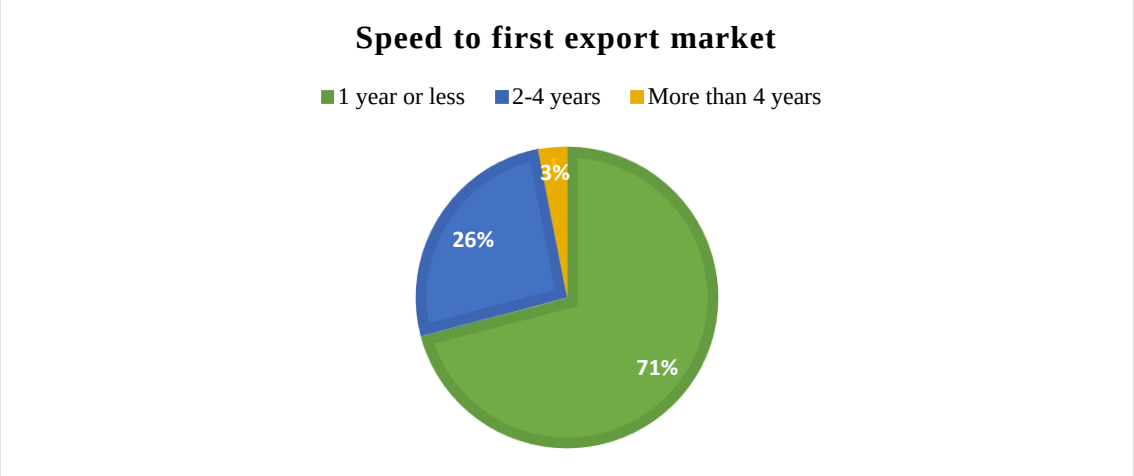
Graph 7: Sample's characteristics: firms’ competitive advantage

Source: own elaboration

c) Firms' Export Activities

With regard to export activities, the data indicate that most firms have started exporting within a year of formation (70,9%) or between 2 and 4 years (26,1%), while only six have started five years after company's establishment (3%) (see Graph 8).

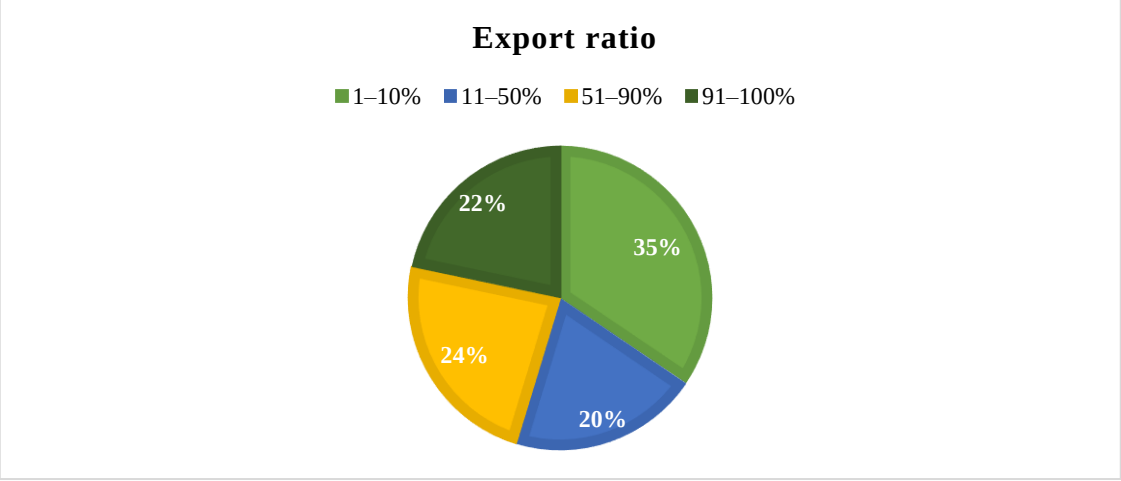
Graph 8: Sample's characteristics: speed to first export market



Source: own elaboration

For 34,5% of the firms, the value of exports is low in relation to the total sales (less than 10%); 20,2% have an export ratio of 11-50%; 23,6% have an export ratio of 51-90%; and for 21,7% exports represent more than 90% of total sales (see Graph 9).

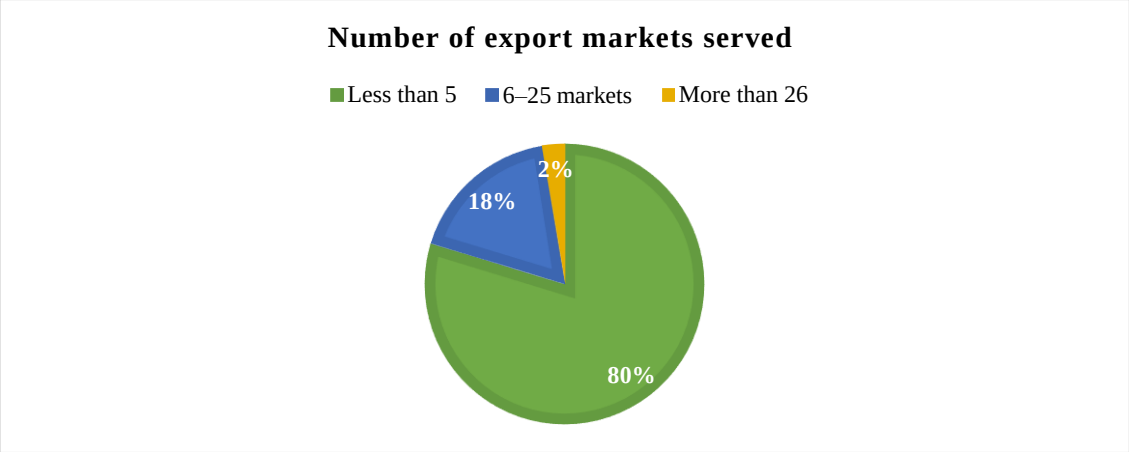
Graph 9: Sample's characteristics: export ratio



Source: own elaboration

In relation to the number of served markets, the great majority of the firms have less than five export markets (79,7%), while 17,8% serve between 6 and 25 markets and only 2,5% serve more than 25 countries (see Graph 10).

Graph 10: Sample's characteristics: number of export markets



Source: own elaboration

63,6% of respondents agree or strongly agree that their firms' export sales have been increasing. The vast majority (88,8%) agree or strongly agree that their social and business networks have an important role in their firm's export marketing.

4.2. Quantitative Analysis

This section covers the questionnaire results description and analysis, comprising descriptive analysis (Subsection 4.2.1), multivariate analysis (Subsection 4.2.2) and hypothesis testing (Subsection 4.2.3).

4.2.1. Descriptive Analysis

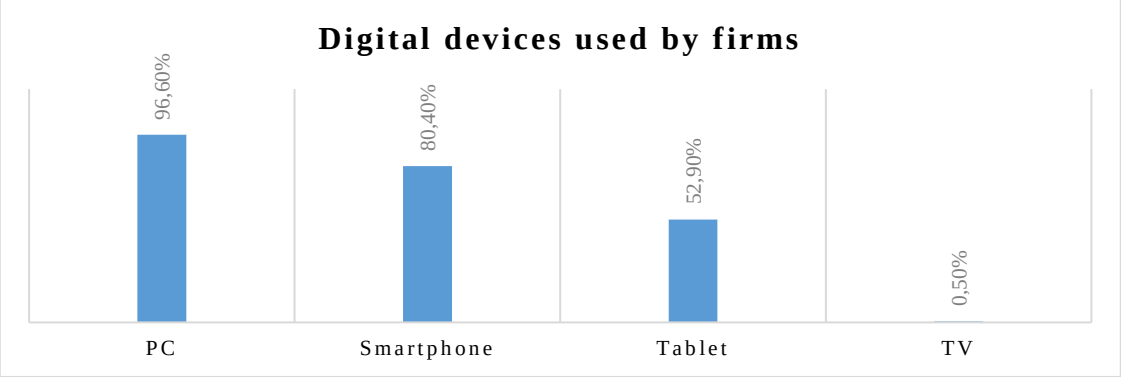
a) Business Use of the Internet

One of this research study goals is to understand how Portuguese entrepreneurial firms use information and communication technologies (ICT), especially Internet and Web 2.0 tools, for business purposes.

With regard to the digital devices that entrepreneurs use to access digital resources, 96,6% of respondents say they use the personal computer, while 80,4% report using the

smartphone and 52,9% use the tablet. One respondent also adds the television to the list of used devices (0,5%) (see Graph 11). This data tells us that, within our sample, the personal computer remains the more commonly used device but also indicates that mobile has a considerable percentage, which reflects the predictions of Kaplan and Haenlein (2010), who foresaw the growing importance of the mobile technologies.

Graph 11: Digital devices used by firms



Source: own elaboration

The questionnaire includes questions on the business activities for which Internet tools are most used. As can be seen in Table 3, the results show that the participants use Internet tools more frequently to communicate, to gather international business information and to manage firm's activities. On the other hand, Internet technologies are used less frequently to support crowdsourcing activities, to buy foreign products or services and to analyze international competition.

Table 3: Frequency of Internet use for business activities

		Less often	A few times a month	A few times a week	Daily or more often
How frequent do you use the Internet for…	1) Communicating (with employees, suppliers, distributors, etc.)	6.4%	13.7%	29.4%	50.5%
	2) Finding international business related information	13.7%	25.5%	32.8%	27.9%
	3) Manage team and coordinate company international activities	25.3%	17.7%	25.8%	31.3%
	4) Online customer service	23.4%	21.9%	25.9%	28.9%

	5) Advertising, marketing, and promotion	27.4%	21.4%	21.9%	29.4%
	6) Building professional business networks or communities	21.3%	30.7%	26.7%	21.3%
	7) Finding information about international suppliers, distributors, partners, etc.	22.8%	31.7%	30.2%	15.3%
	8) Product/ service development	29.5%	26%	28.5%	16%
	9) Selling products or services internationally	33.7%	28.7%	21.8%	15.8%
	10) International competition analysis	36.1%	31.2%	22.8%	9.9%
	11) Buying foreign products or services	39.3%	31.3%	23.9%	5.5%
	12) Crowdsourcing (ex.: wikis, blogs, collaborative software, etc.)	50.5%	21.2%	17.2%	11.1%

Source: own elaboration

Half of respondents (50,5%) say they use Internet tools daily or more often to communicate, for instance, with employees, suppliers, distributors, etc., and 29,4% do it a few times a week. A great part of the respondents say they use the Internet as a source of international business related information daily or more often (27,9%) or a few times a week (32,8%).

Results show that Internet technologies are also frequently used to manage team and to coordinate company international activities (57,1% say they do it a few times a week or more often), as well as to provide online customer service (54,7% do it a few times a week or more often). Regarding advertising, marketing and communication activities, while 51,2% of respondents use digital tools a few times a week or more often for that purpose, 48,8% do it a few times a week or less often.

With regard to the frequency of use of the Internet for building and maintaining professional business networks or communities, for searching for information about international suppliers, distributors, partners, etc. and for product or service development, respondents' answers are evenly distributed over the four possible responses.

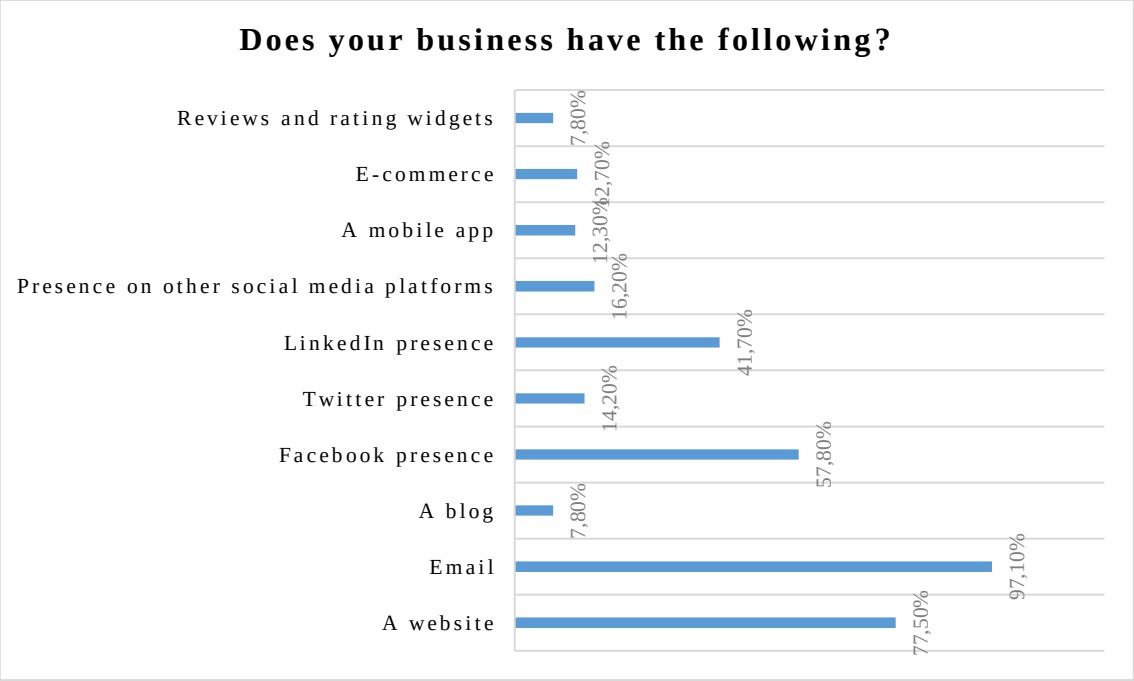
In relation to the business activities for which Internet tools are used less frequently, data shows that only 15,8% of respondents use the Internet every day for selling products or services internationally, while the majority (33,7%) rarely or never use e-commerce for international sales. More than two-thirds of respondents say they use the Internet a few times a week or less often for international competition analysis or for buying foreign products or services. Crowdsourcing activities are the ones for which Internet tools are

used less frequently (over 50% of respondents say they rarely use Internet tools for crowdsourcing and 21,2% do it only a few times a month).

This coincides with the results of previous studies (Loane *et al.*, 2007; Moen *et al.*, 2003) that suggest that firms use Internet mainly for communication and marketing purposes, market information collection, post sales service and not so much for online sales and transactions. However, contrary to what is stated by Loane *et al.* (2007), low usage is found in terms of competition analysis.

In order to access the extension of the firms' presence on the Internet, respondents are asked about which Internet services are used within their firms. As can be seen from Graph 12, the vast majority say their firm has an e-mail address (97,1%) and a website (77,5%). Following these services, the results indicate that firms from our sample also have a significant presence on social media websites, specifically on Facebook (57,8%), LinkedIn (41,7%), Twitter (14,2%) and other social media platforms (16,2%). Only 12,7% are present on e-commerce platforms and a mere 7,8% of respondents say their firm has a blog and reviews and rating widgets.

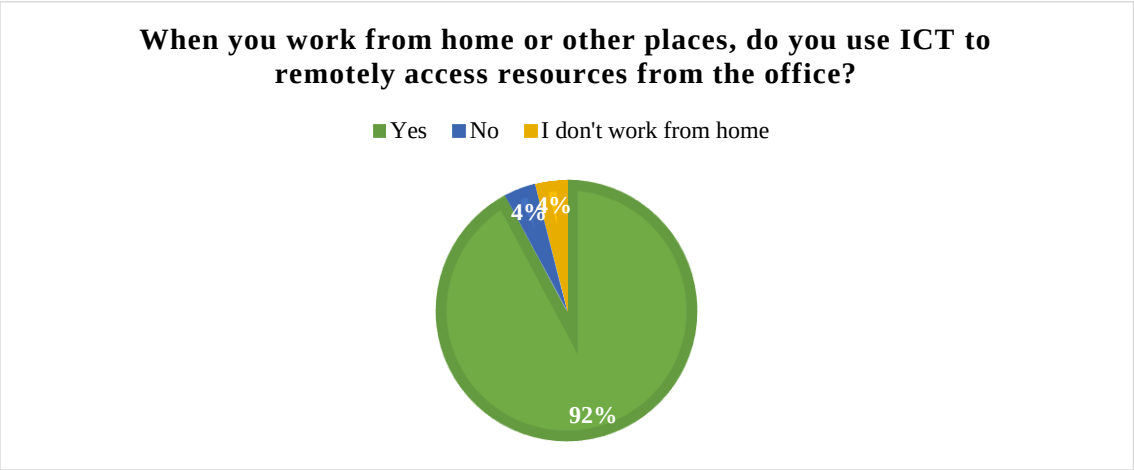
Graph 12: Internet services used by firms



Source: own elaboration

An overwhelming majority of respondents (92,2%) admitted using ICT for remotely accessing resources from the office when working from home or other places (see Graph 13). From this statistic we can conclude that the participants recognize and take advantage of the flexibility and mobility provided by ICT.

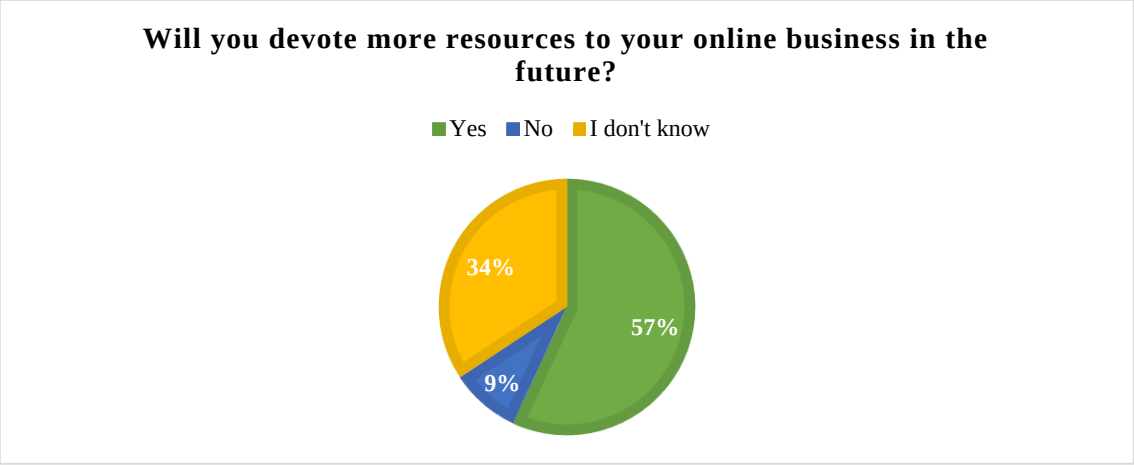
Graph 13: ICT use when working outside the office



Source: own elaboration

Questionnaire respondents are also asked if they intend to invest more resources to online business, 57% say yes, 34% do not know and 9% percent do not intend to do it, This may be interpreted as an indication that the majority of sample's entrepreneurs perceive the potential benefits from e-business and are willing to invest.

Graph 14: Intentions to invest in the online business



Source: own elaboration

b) Impact of the Internet on Business

In this study, we are interested in analyzing the perception of Portuguese entrepreneurs on the effect of using Internet and Web 2.0 tools on their companies' export marketing. This is important because the perceived benefits of Internet use is one important factor that affects e-business development by firms (Mehrtens *et al.*, 2001; Poon and Swatman, 1999).

As shown in Table 4, in a general way, respondents consider that using Internet technologies facilitates many international business related activities. Most notably, it helps to reach more potential foreign customers, to develop entrepreneurs' international business network and to overcome problems associated with the lack of knowledge about foreign markets. Although they agree that the Internet offers new international business opportunities and helps to overcome export barriers, respondents seem to be less convinced about the positive effect of the Internet on firms' export sales, profits and the number of foreign markets served.

Table 4: Entrepreneurs' perceived benefits of Internet use

	Level of agreement				
	Strongly Disagree	**Disagree**	**No opinion**	**Agree**	**Strongly Agree**
1) It makes it easier to overcome problems associated with a lack of knowledge about foreign markets	1.5%	2.5%	14.2%	65.2%	16.7%
2) It helps me to develop my international business network	0%	2%	15.2%	59.3%	23.5%
3) It generates international awareness of the business	0%	1%	18.7%	60.6%	19.7%
4) It helps us to reduce the costs associated with international marketing and communication	1%	3.4%	15.7%	62.3%	17.6%
5) It helps us to reach more potential foreign customers	0%	2.5%	14.8%	62.1%	20.7%
6) It helps us to manage my firm's international value chain	0.5%	4%	22.8%	55.4%	17.3%
7) It allows partners and clients participation in product/ service development process	0%	3.4%	19.2%	58.6%	18.7%

8) It has an important role on foreign market selection	2.9%	8.3%	24%	52%	12.7%
9) It helps us to reduce the financial costs associated with exporting	3.4%	10.3%	24.1%	46.3%	15.8%
10) It has significantly improved export sales	3.9%	13.3%	28.6%	40.4%	13.8%
11) It has significantly improved export profits	3.9%	14.2%	32.4%	35.8%	13.7%
12) It has significantly improved the number of foreign markets served	5%	13.5%	37.5%	33%	11%
13) It has significantly improved overall performance	2.5%	9.9%	25.7%	47.5%	14.4%
14) It helps to overcome export barriers	2.9%	4.9%	24.5%	52.5%	15.2%
15) It is an alternative to a physical presence	3.4%	9.3%	22.5%	46.6%	18.1%
16) It offers new international business opportunities	0%	2.5%	10.9%	64.7%	21.9%

Source: own elaboration

Questionnaire results show that the vast majority of respondents agree or strongly agree that using Internet tools makes it easier to overcome problems associated with the lack of knowledge about foreign markets (81,9%) and helps entrepreneurs to develop their international business network (82,8%). These data are very interesting because, as stated in the literature review, information and knowledge collection and the development of network relationships are often highlighted in the literature as essential benefits of the use of Internet for business purposes.

With regard to the international awareness of their businesses, 80,3% of respondents agree or strongly agree that the Internet generates more international awareness. Accordingly, most of the participants agree or strongly agree that the Internet helps to reduce the costs associated with international marketing and communication (79,9%) and that it helps to reach more potential foreign customers (82,8%).

Some 72,7% of respondents agree or strongly agree that the Internet is helpful when it comes to manage their firm's international value chain and 77,3% agree or strongly agree that the Internet is useful when it comes to partners and clients participation in

product/ service development process. Comparatively, the number of participants who disagree or strongly disagree is insignificant.

Almost two-thirds of respondents agree or strongly agree that the Internet has an important role on foreign market selection (64,7%) and that contributes to reduce the financial costs associated with exporting. Of the respondents, 24% has no opinion, about 9% disagrees and 3% strongly disagrees.

Regarding the effect of Internet use on firms' export performance, more than a half of respondents strongly agree (13,8%) or agree (40,4%) that the Internet has significantly improved their firms' export sales, 28,6% has no opinion. Similarly, 35,8% of respondents agree and 13,7% strongly agree that the Internet has significantly improved their firms' export profits and 32,4% has no opinion. In both cases, about 14% disagree and 3,9% strongly disagree. While 44% of respondents agree or strongly agree that the Internet has significantly improved the number of foreign markets served, 37,5% had no opinion, 13,5% disagree and 5% strongly disagree.

More significantly, the participant entrepreneurs agree (47,5%) or strongly agree (14,4%) that the Internet has improved the overall performance, 25,7% has no opinion and only 12,4% disagree or strongly disagree. While more than two third of respondents (67,7%) say they agree or strongly agree that Internet business usage helps to overcome export barriers, a mere 7,8% disagree or strongly disagree. Although to a lesser extent, the majority of respondents (64,7%) say they agree or strongly agree that the Internet is an alternative to a physical presence and 12,7% disagree or strongly disagree.

Finally, an overwhelming majority of respondents (86,6%) agree or strongly agree that the Internet offers new international business opportunities, while 10,9% do not agree nor disagree, a mere 2,5% disagree. In this respect, previous studies emphasize that not only Internet provides firms with new international market opportunities as it increases their ability to exploit those opportunities (Glavas and Mathews, 2014; Mathews and Healy, 2008; Petersen *et al.*, 2002).

4.2.2. Multivariate Analysis

We start our multivariate analysis by performing the Pearson's chi-square test for independence/ association to analyze the possible relationships between the variables. Thereafter, we employ association analysis, a technique introduced earlier in Chapter 3.

Specifically, we apply Goodman and Kruskal's gamma test in order to measure the strength and direction of association between the ordinal variables and Cramer's V test to measure the strength of association between nominal variables, as well as between nominal and ordinal variables. The most relevant statistical tests results are given in Appendix 3 and described below.

Regarding sample firms' characteristics, the Pearson's chi-square test for independence and the Cramer's V test show that there is no statistically significant association between the frequency of Internet use for the various business activities and the business location.

The same tests find no evidence of association between the frequency of Internet use for the majority of business activities and the business areas, except for the frequency of Internet use for two business activities: marketing and communication (Cramer's V Value = 0,378) and international competition analysis (Cramer's V Value = 0,328). Firms that operate in "Information and communication activities", "Other service activities" and "Wholesale and retail trade; repair of motor vehicles and motorcycles" are the ones that use Internet tools for marketing and communication more often, while firms dedicated to "Consultancy, scientific and technical activities" and "Construction" are the ones that do it less frequently. In relation to international competition analysis, "Other service activities", "Arts, entertainment, sports and recreation activities" and "Accommodation and food service activities" are the business areas in which firms use Internet more frequently for this purpose, while "Construction" and "Water collection, treatment and distribution; sewerage, waste management and remediation activities" are the ones that do it less frequently.

Similarly, there is no statistically significant association between the frequency of Internet use for the majority of business activities and sample firms' most important factor for business success, with the exception of three business activities: buying foreign products/ services (Cramer's V Value = 0,298), communicating (Cramer's V Value = 0,289) and crowdsourcing (Cramer's V Value = 0,331). Regarding the frequency of Internet use for buying foreign products/ services, firms in which having "New or advanced technology" is essential for business success are the ones that use Internet for this purpose more often, while firms that rely on "Technical or scientific expertise" and "More contemporary, attractive products" are the ones that shop online less frequently.

Firms that rely on “New or advanced technology” and “Marketing and Communication” are the ones that most use the Internet for communicating, while the firms that rely on “Technical or scientific expertise” do it less frequently. While sample firms in which using “New or advanced technology” and “Marketing and Communication” tools is essential for business success are the ones that most use Internet tools for crowdsourcing activities, the ones that rely on “Market knowledge” and “Presence on platforms with a broad reach” are the ones that do it less frequently.

In relation to entrepreneurs’ characteristics, the statistical tests show that there is no statistically significant association between the frequency of Internet use for the various business activities and the entrepreneurs’ sex, so both Males and Females equally use Internet tools for business purposes. Likewise, there is no statistically significant association between the frequency of Internet use for the various business activities and the fact that entrepreneurs have lived in any other countries other than Portugal or not.

The Pearson’s chi-square test for independence and the Goodman and Kruskal's gamma test show no statistically significant association between the frequency of Internet use for the various business activities and the entrepreneurs’ age.

With regard to entrepreneurs’ level of education, the Pearson’s chi-square test for independence show that there is no evidence of a relationship between the frequency of Internet use for the various business activities and the participant entrepreneurs’ level of education, except for selling products/ services internationally via Internet. However, the Goodman and Kruskal's gamma test show that there is a weak positive association between the entrepreneurs’ level of education and the frequency of Internet use for product/ service development (Gamma Value = 0,232) and online customer service (Gamma Value = 0,223) and a moderate positive association between the same variable and the frequency of Internet use for team and business management (Gamma Value = 0,263), for international business information collection (Gamma Value = 0,297) and for selling products/ services internationally via Internet (Gamma Value = 0,305). So, the frequency of Internet use for these business activities increases with the entrepreneur’s level of education.

Accordingly, the Pearson’s chi-square test for independence and the Cramer's V test show that there is no statistically significant association between the use of ICT to remotely access resources from the office when working from home or other places and

the entrepreneurs' sex and age, as well as the fact they have lived in any other countries other than Portugal or not. Once again, the same statistical tests show a statistically significant association between the use of ICT when working from home or other places and the entrepreneurs' level of education (Cramer's V Value = 0,241).

4.2.3. Hypothesis Testing

Apart from investigating Portuguese entrepreneurial firms' professional usage of Internet and Web 2.0 technologies, one of this research goals is to understand their roles on firms' export performance. Although we consider the entrepreneurs' perspective on the subject very important, we also want to statistically test the links among digital tools usage and export performance.

In order to do it, we base our work on the reference model previously introduced in Section 2.5 (see Figure 1) and we test the proposed hypothesis. We do not propose ourselves to test the reference model, but rather use it as a basis for testing the relationships between the variables and therefore the proposed hypothesis.

At first, a Regression Analysis (specifically Multinomial Logistic Regression) was chosen as a statistical method to test this study's hypothesis. However, data did not fulfil one of the test assumptions, the one that states that there should be no multicollinearity. After performing Pearson's chi-square independence tests, we confirmed that independent variables were highly correlated with one another.

Given that, Statistical Hypothesis Testing was chosen to further test the relationship between the variables. Since we are dealing with non-normally distributed variables, our data do not meet the assumptions of parametric statistics, so we opted for a non-parametric test. The Kruskal–Wallis rank test using SPSS software was the first choice because we are comparing more than two groups (Marôco, 2014). Still, the Jonckheere trend test is more suitable because this rank-based non-parametric test can be used for ordinal data in order to determine if there is a statistically significant trend between an ordinal independent variable and a continuous or ordinal dependent variable (Field, 2009). So, authors also apply the Jonckheere-Terpstra test using SPSS software. The statistical tests results (SPSS outputs) are given in Appendix 3. Following is the statistical analysis and the hypothesis validation.

Table 5: Kruskal–Wallis and Jonckheere-Terpstra tests statistics

Ind. Variable	Dep. Variable: Frequency of Internet use for…	Hypothesis	Test statistics – Kruskal-Wallis			Test statistics – Jonckheere-Terpstra		
			Chi-square (χ^2)	Asymp. Sig.	Decision	Test Statistic (T_{JT})	Asymp. Sig.	Decision
Export ratio	Marketing and promotion	H1a	5,292	0,152	Retain H0	6942,5	0,341	Retain H0
	Communicate	H2a	11,826	0,008	Reject H0	9048,5	0,001	Reject H0
	Online customer service	H3a	6,700	0,082	Retain H0	8385,0	0,038	Reject H0
	Develop business network	H4a	2,911	0,406	Retain H0	8116,0	0,096	Retain H0
	Collect international business information	H5a	2,278	0,517	Retain H0	8168,0	0,202	Retain H0
	International competition analysis	H6a	1,881	0,597	Retain H0	8016,5	0,196	Retain H0
	Buy foreign products/services	H7a	2,206	0,531	Retain H0	7526,0	0,744	Retain H0
	Sell products/services internationally	H8a	19,544	0,000	Reject H0	9349,0	0,000	Reject H0
	Crowdsourcing	H9a	3,957	0,266	Retain H0	7591,5	0,362	Retain H0
Export diversity	Marketing and promotion	H1b	6,822	0,033	Reject H0	4086,0	0,009	Reject H0
	Communicate	H2b	1,953	0,377	Retain H0	3804,5	0,179	Retain H0
	Online customer service	H3b	5,825	0,054	Reject H0	4125,5	0,015	Reject H0
	Develop business network	H4b	4,195	0,123	Retain H0	3724,0	0,215	Retain H0
	Collect international business information	H5b	10,305	0,06	Retain H0	4422,0	0,001	Reject H0
	International competition analysis	H6b	20,100	0,000	Reject H0	4587,0	0,000	Reject H0
	Buy foreign products/services	H7b	4,946	0,084	Retain H0	3821,5	0,073	Retain H0
	Sell products/services internationally	H8b	20,238	0,000	Reject H0	4791,0	0,000	Reject H0
	Crowdsourcing	H9b	10,325	0,06	Retain H0	3531,0	0,309	Retain H0

Source: own elaboration

H1 - The greater the use of the Internet for marketing and promotional purposes, the greater the firms' export performance.

Regarding H1a, a Jonckheere-Terpstra test for ordered alternatives shows that there is not a statistically significant trend in the use of Internet for marketing and promotion purposes with a greater firms' export ratio.

However, in relation to H1b, a Jonckheere-Terpstra test shows that there is a statistically significant trend of higher frequencies of Internet use for marketing and promotion purposes with higher export diversity, $T_{JT} = 4086{,}0$, $p = 0{,}009$ ($<0{,}05$).

This means that although online marketing and promotion has no impact on firms' export ratio, it has a positive impact on the number of export markets served, which is consistent with the results of Mathews and Healey (2008), more specifically, with the idea that Internet's marketing and communication capabilities promote international market expansion.

H2 - The greater the use of the Internet for communication, the greater the firms' export performance.

Regarding H2a, a Jonckheere-Terpstra test shows that there is a statistically significant trend of higher frequencies of Internet use for communication with higher export ratio, $T_{JT} = 9048{,}5$, $p = 0{,}001$ ($<0{,}05$).

In contrast, with regard to H2b, a Jonckheere-Terpstra test shows no statistically significant trend in the use of Internet for communicating with a greater export diversity.

In line with Lu and Julian (2007), these results show that using the Internet as a communication medium positively influences firms' export performance. However, this happens in terms of export intensity but not export diversity.

H3 - The greater the use of the Internet for online customer service, the greater the firms' export performance.

Regarding H3a, a Jonckheere trend test shows a statistically significant trend of higher frequencies of Internet use for online customer service with higher export ratio, $T_{JT} = 8385{,}0$, $p = 0{,}038$ ($<0{,}05$).

Accordingly, with regard to H3b, the same test shows a statistically significant trend of higher frequencies of Internet use for online customer service with higher export diversity, $T_{JT} = 4125{,}5$, $p = 0{,}015$ ($<0{,}05$).

So, we can see that providing online customer service affects both export intensity and diversity. This can be explained, on one hand, by the fact that the Internet provides firms with the ability to deliver a customized service to potential customers and, on the other hand, by the fact that the existing customers' satisfaction with customer support can translate into a positive e-word-of-mouth (e-WOM) and generate new international business (Mathews and Healey, 2008).

H4 - The greater the use of the Internet for business network development, the greater the firms' export performance.

Regarding H4a and H4b, a Jonckheere-Terpstra test shows no statistically significant trend toward greater use of the Internet for business network development being related to greater export diversity or ratio.

These results are surprising given that the literature points out that the development of network relationships is one of the most important advantages of the business use of the Internet (e.g. Hamill, 1997; Lu and Julian, 2007; Prashantham, 2005).

H5 - The greater the use of the Internet for international business information, the greater the firms' export performance.

Regarding H5a, a Jonckheere-Terpstra test shows that there is not a statistically significant trend in the use of Internet for international business information collection with a greater export ratio.

Nonetheless, with regard to H5b, a Jonckheere-Terpstra test shows that there is a statistically significant trend of higher frequencies of Internet use for international business information with higher export diversity, $T_{JT} = 4422{,}0$, $p = 0{,}001$ ($<0{,}05$).

Although collecting business-related information through the Internet does not impacts firms' export growth, it does impact firms' export diversity. This was somehow expected given that the easy, inexpensive access to information minimizes the lack of international business experience and facilitates foreign-market entry, promoting

faster international market expansion (Arenius *et al.*, 2005; Glavas and Mathews, 2014; Mathews and Healy, 2008).

H6 - The greater the use of the Internet for international competition analysis, the greater the firms' export performance.

Regarding H6a, a Jonckheere-Terpstra test shows no statistically significant trend in the use of the Internet for international competition analysis with greater export ratio.

However, with regard to H6b, the same test shows that there is a statistically significant trend of higher frequencies of Internet use for international competition analysis with higher export diversity, $T_{JT} = 4587,0$, $p = 0,000$ ($<0,05$).

These results lead us to think that firms whose strategy is to expand to new international markets are using the Internet for international competition analysis, which is a key activity for competitive intelligence development.

H7 - The greater the use of the Internet for buying foreign products/ services, the greater the firms' export performance.

Regarding H7a and H7b, a Jonckheere-Terpstra test shows no statistically significant trend toward greater use of the Internet for buying foreign products/ services being related to greater export diversity or ratio.

We can conclude that online purchasing does not affect firms' export performance. These results are not surprising given the low usage of the Internet for buying foreign products/ services.

H8 - The greater the use of the Internet for selling products/ services internationally, the greater the firms' export performance.

Regarding H8a, a Jonckheere trend test shows a statistically significant trend of higher frequencies of Internet use for selling products/ services internationally with higher export ratio, $T_{JT} = 9349,0$, $p = 0,000$ ($<0,05$).

With regard to H8b, the same test also shows a statistically significant trend of higher frequencies of Internet use for selling products/ services internationally with higher export diversity, $T_{JT} = 4791,0$, $p = 0,000$ ($<0,05$).

These results confirm our initial expectation that online sales would have a great impact on firms' export performance and are consistent with previous studies (see Bianchi and Mathews, 2015; Gibbs and Kraemer, 2004; Morgan-Thomas and Bridgewater, 2004; Sinkovics *et al.*, 2013). Not only a greater use of the Internet is related to greater export intensity, but it also increases the number of export markets.

H9 - The greater the use of the Internet for crowdsourcing activities, the greater the firms' export performance.

Regarding H9a and H9b, a Jonckheere-Terpstra test shows no statistically significant trend toward greater use of the Internet for crowdsourcing activities being related to greater export diversity or ratio. These results are not surprising since they are consistent with the low frequency of Internet use for crowdsourcing. It can therefore be concluded from these statistics that crowdsourcing does not impact firms' export performance.

4.3. Qualitative Analysis

This section covers the multiple case studies description and analysis according to a qualitative methodology. The theoretical sample of six case studies comprises firms with low- and high-export performance and different intensities of Internet and Web 2.0 tools use, as can be seen by Table 6 and the descriptions below.

Table 6: Case-study firms' business profile

Firm	Business area	Establishment year	First year exports	Export ratio (2015)	Export markets	Turnover (2015)	Description of firms	Interviewee
Rogério Mendes Marques, Unip. Lda.	Services	2013	2013	10%	2	€6.000	Quality, environmental and safety consultancy	Rogério Marques (founder and manager)

Miguel Neiva & Associados, Lda. (ColorADD)	Digital goods	2013	2013	10%	12	€80.000	Color identification system licensing	Miguel Neiva (creator and managing partner)
Hobbysector, Unip. Lda.	Physical goods	2012	2012	40%	20	€70.000	Hobby model products commercialization	Pedro Raposo (founder and manager)
Unykvis, Lda.	Services	2012	2012	70%	10	---	Digital communication agency	Ignacio Correia (founder and managing partner)
Green Flavours, Unip. Lda.	Physical goods	2013	2013	95%	3	€50.000	Fruits production and commercialization	António Luzio (founder and manager)
Directdialogue, Unip. Lda. (Devotion)	Physical goods	2013	2014	96%	7	€60.000	Olive oil production and commercialization	João Olaio (founder and manager)

Source: own elaboration

Case 1: Rogério Mendes Marques, Unipessoal Lda.

Rogério Mendes Marques, Unip. Lda. is a micro-company dedicated to providing consultancy services in the areas of environment, safety and quality. Founded in 2013, the firm started exporting in the same year, recommended to foreign firms by founder's colleagues. With a low export intensity and diversity, this firm's export strategy is based on founder's personal and business network, not on firm's Internet presence. The founder and manager of the firm recognizes the importance of having an online presence (the firm has a business website and social media accounts only in Portuguese language) and indicates that he uses the Internet for communication purposes, information collection and online banking, claiming: "*Right now, I would not know how to work without the Internet*". However, he does not consider that the Internet provides his firm with new export market opportunities, neither improves export performance.

Case 2: Miguel Neiva & Associados, Lda. (ColorADD)

Miguel Neiva & Associados, Lda. is an entrepreneurial firm responsible for a color identification system for colorblind people (ColorADD). The firm started licensing its innovative system to foreign organizations in the first year of establishment. Although the firm has a low export intensity, it has a considerable number of export markets. The firm's creator and managing partner stresses that the Internet has a transversal role on firm's export activities and lists several Internet business functions, emphasizing two key aspects: the Internet as a promotional tool to make the project known to a wide international audience (via the firm's website, social media, blogs and news media) and the Internet as a transactional channel (about 80% of international business operations originate from the Internet). Also, ColorADD is investing and developing an international expansion strategy based on the Internet because, according to the interviewee, "*Our project is for the whole world and we take it to the world through the Internet*".

Case 3: Hobbysector, Unipessoal Lda.

Hobbysector, Unip. Lda. is an online hobby model shop focused on international commerce, reason why the firm started exporting in the first year of establishment and has a considerable export intensity and diversification. This is an online-based firm with its own e-commerce website in two languages (Portuguese and English), with no physical presence. In this way, its founder and manager emphasizes the importance of the Internet as a transactional channel and its ability to reach a bigger population with fewer costs than if he had a local store, saying: "*Without the Internet, we would never be able to sell to France, Kuwait, etc.*" In addition, the firm uses the Internet for communicating with suppliers and clients, for providing pre- and after-sales support, as well as for finding business-related information, collecting knowledge about international markets and prospecting for new international business opportunities.

Case 4: Unykvis, Lda.

Established in 2012, Unykvis, Lda. is a digital communication agency heavily focused on international markets. The set of business activities for which the firm uses Internet tools includes its services promotion, online transactions, outsourcing (via online outsourcing platforms), hiring employees, providing employees with online training

courses, information collection mainly from blogs and social media platforms, communication and co-work with clients, partners and external entities from multiple countries (via e-mail, Skype, chats, web conferences and other cloud tools). On this last point, the manager refers that, thanks to Web 2.0 technologies, the firm is able to participate in web-based business networks with important multinationals, universities and institutions, acquiring knowledge and creating value for the firm. He also highlights the importance of the mobile technologies within the firm. According to the interviewee, "*The Internet is the heart of Unykvis*" and it is essential for developing new international business opportunities.

Case 5: Green Flavours, Unipessoal Lda.

Green Flavours, Unip. Lda. is a SME that produces and sells fruits mainly for export markets. The firm was established in 2013 and had an international orientation from inception, with high export intensity. The firm's export strategy is based on intermediate distributors that purchase the fruits and resell them to retailers, so it uses the Internet mainly for interacting with distributors and for finding information about international markets and export operations. In this way, the firm's founder and manager states that the Internet helps to overcome export barriers, reducing operational costs and accelerating the workflow. Although the firm does not have a website, it has a Facebook and a LinkedIn account, which the interviewee consider to be more useful because social media provides greater visibility and allows for a better interaction with actual and potential customers, offering new business opportunities. Still, because the founder believes that "(…) *firms that are not well-grounded on the Internet will not succeed*", the firm's strategy is to invest on an e-commerce website in the near future.

Case 6: Directdialogue, Unipessoal Lda. (Devotion)

Founded in 2013, Directdialogue, Unip. Lda. is dedicated to produce and commercialize olive oil mainly for export markets. The firm started exporting under the brand name of Devotion the year after the establishment and today almost all sales are international. Devotion has its own e-commerce website, so it combines own online sales channels with presence on other e-marketplaces and traditional export channels involving intermediaries. In addition to transactional activities, the firm uses Internet tools to create

international brand awareness (through Google AdWords and social media), to grow the business network, to communicate with clients, retailers and other partners (via e-mail, mobile apps and Skype), to collect information, to analyze the competition, to stay up to date with business trends and for online banking and supply chain management. The firm's founder and manager states that the Internet is vital for the business success – "*Our product is the most important aspect, the Internet is the second one because it allows us to take the product where we want*" - and it is the basis of firm's international expansion strategy.

4.4. Discussion

The aim of this research study is to understand how Portuguese entrepreneurial firms use Internet and Web 2.0 technologies to develop export market opportunities. To answer our research question we need to consider two complementing aspects: (1) which digital tools are used and how they are used and (2) their impact on firms' export performance and opportunities.

Regarding Internet business practices, questionnaire results show that participant firms use Internet tools mainly for communication, international business related information search, firms' activities management, online customer service and marketing purposes. On the contrary, Internet technologies are less used for online sales and purchases, for international competition analysis and for crowdsourcing activities.

These results are consistent with Loane *et al*., (2007) and Moen, Endresen and Gavlen (2003) findings and lead us to agree with Sinkovics *et al.* (2013, p. 1), who argues that "the Internet may play a complementary role", i.e., it may be typically used as a support for the existing export activities. Whilst this may be the prevailing scenario, our multi-case analysis provides examples of entrepreneurial firms that completely rely on the Internet for business operations and sales.

In this respect, the literature (Arenius *et al.*, 2005; Loane *et al.*, 2004; Sinkovics *et al.*, 2013) distinguishes two different approaches to international e-business: (1) using the Internet to support and complement traditional export methods and (2) using it as a substitute to the traditional export strategy and an alternative to a physical presence.

Accordingly, our questionnaire results lead us to conclude that the majority of firms use Internet tools for supporting a traditional export strategy, i.e., they use it, for instance,

to communicate, to find international business-related information and to promote the firm, its products and/or services. The case studies methodology provides us with two examples of firms that see the Internet as a facilitator (Rogério Mendes Marques and Green Flavours). Some firms also use the Internet as a complementing sales channel that co-exists with the traditional international sales channels. ColorADD and Devotion are two business cases that use the Internet as an enabler and enhancer of export marketing. Although to a much lesser extent, there are firms that are solely based online and use the Internet as the primary channel for sales and to conduct export marketing operations. Hobbysector and Unykvis are two Internet-based firms that dispense physical presence and use the Internet not only as a business tool but as the key business driver. In face of these findings and based on the literature, authors identify three ways in which exporting firms use the Internet: Internet as a business tool, Internet as a business enhancer and Internet as a business driver.

This research results also indicate that Web 2.0 tools use is still not much significant, which was somehow expected given the novelty of the phenomenon. Most studies on the adoption of Web 2.0 technologies consist of case studies because practices such as crowdsourcing, co-creation and open innovation are not widespread and only a few entrepreneurial firms are taking advantage of the potential benefits of leveraging external resources to create internal value. The multi-case study approach reveals an example of a firm (Unykvis) that works with web-based networks to cooperate with other firms, organizations and external experts, uses crowdsourcing (wikis, blogs, forums, social media, etc.) to gather knowledge and find problem solving ideas and relies on online platforms to co-work with clients and partners to develop new, customized solutions.

Despite the fact that low usage was found in terms of the Web 2.0 tools mentioned above, the sample firms seem to be much more open to the related phenomenon social media. The results indicate that entrepreneurs are aware of the potential power of social networks and use it to a great extent (mainly Facebook, LinkedIn and Twitter). The evidence from the multiple case studies confirms these findings and offers the example of a firm (Green Flavours) that replaces the traditional business website by a Facebook business page because its manager considers the social networking website more open and interactive, providing his firm with higher visibility.

From the questionnaire we can also conclude that mobile devices (specifically smartphones and tablets) are already much used within our sample, according to Kaplan and Haenlein (2010) previsions. Most of the interviewed entrepreneurs also emphasize the importance of mobile technologies and apps for conducting international business operations.

With respect to the impact of e-business activities on firms' export marketing, we consider empirical evidence and the entrepreneurs' perception. The empirical evidence was obtained by testing the hypothesis drawn from the reference model and allows us to draw some conclusions.

First, in line with Arenius *et al.* (2005) proposition, our results show that the use of the Internet can affect firm's export performance both in terms of export intensity and diversity. However, the multiple Internet business functions affect export intensity and export diversity in different ways, as described below. These findings are in line with the work of Preece *et al.* (1999), more specifically with the conclusion that international intensity and diversity were differently affected by a number of variables drawn from International Entrepreneurship (IE) theory.

Regarding e-communication practices, using Internet tools for marketing and promotion activities seems to have a positive effect on firms' export performance (H1) in terms of export diversity but it does not affects the export intensity. Using the Internet as a communication medium, in turn, positively influences firms' export intensity (H2). While providing online customer service affects both export intensity and diversity (H3), using the Internet for business network development does not seem to have any impact on firms' export performance (H4), which is surprising given that the development of network relationships has been considered one of the main benefits of the Internet for business (Prashantham, 2005).

With regard to e-business intelligence, collecting business-related information through the Internet does not impact firms' export intensity but it does impact firms' export diversity (H5). Likewise, hypothesis-testing show that using the Internet for international competition analysis seems to enhance export diversification (H6). From this we can deduce that firms with an international market expansion strategy are using the Internet for competitive intelligence development.

When it comes to e-commerce and e-collaboration, hypothesis testing indicate that online purchasing does not affect firms' export performance (H7). On the other hand, results provide support for H8 which indicates that online sales have a great impact on firms' export performance (both through export intensity and diversity). Finally, using the Internet for crowdsourcing activities does not impact the firms' export performance (H9).

It is interesting to observe that only two Internet business functions are associated to greater export intensity and diversity at the same time: online sales and customer service. Selling products/ services internationally was expected to be the Internet business function with greater impact on firms' export performance since e-commerce provides a direct channel to export markets and enables firms to reach more potential customers from various foreign markets, as suggested in previous studies (e.g. Bianchi and Mathews, 2015; Gibbs and Kraemer, 2004; Morgan-Thomas and Bridgewater, 2004; Sinkovics *et al.*, 2013). Regarding online customer service, this Internet business activity is closely linked to online sales, so its relationship with firms' export performance is not surprising. Moreover, while pre-sales service can help to capture potential customers, after-sales service can help to retain customers and to promote a positive e-WOM and generate new international business (Mathews and Healey, 2008).

Knowing that the sample firms use the Internet more in terms of e-communication and e-business intelligence than in terms of e-commerce and e-collaboration, it is interesting to note that one of the business functions for which they use Internet less frequently is the one that has greater impact on firms' export performance: selling products/ services internationally.

These results support, in part, the initial proposition that the extent that e-business is assimilated by the SME can significantly affect its export performance because firms that adopt e-commerce practices (which already encompass e-communication and e-business intelligence practices) are expected to have greater export performance. However, we must note that e-collaboration does not impact firms' export performance, which contradicts the proposition. Moreover, e-communication and e-business intelligence by itself also have a positive effect on firms' export performance (even though at a lesser extent).

This lead us to agree with Loane *et al.* (2004) and Mathews and Healey (2008), who argue that either by improving the communication or by enabling online sales, the Internet

is essential for developing international business opportunities. Still, using the Internet as a business enhancer and a business driver has a greater impact on firms' export performance.

Both questionnaire responses and interviews offer insights into the entrepreneurs' perceived benefits of e-business practices adoption. Overall, respondents consider that using the Internet technologies facilitates and enhances many international business activities, specifically in terms of communication, information collection, development of international awareness and access to more potential foreign customers. While five out of six firms from the case studies indicate that the Internet enhances firms' export performance, the questionnaire respondents seem to be less convinced about the positive effect of the Internet on firms' export sales and the number of foreign markets served. The great majority of entrepreneurs agree that the Internet helps to overcome export barriers and offers new international business opportunities.

Additionally, given that this research study emphasizes the role and the perception of the entrepreneurs and they are considered key promoters of Internet-based internationalization (Berry and Brock, 2004), we find it interesting to examine how their demographic characteristics affect e-business practices adoption. The results show that Males and Females equally use Internet tools for business purposes. Likewise, it seems that neither the entrepreneurs' age, neither the fact that they have lived in any country other than Portugal or not affect the patterns of Internet business use. Nonetheless, we observe differences in terms of Internet use within different education levels and results show that the adoption of a number of Internet business activities increases with the entrepreneurs' level of education.

In the scope of the "internetization" theory (Etemad *et al.*, 2010), our results align with those of previous studies that conclude that committing resources to e-business is vital for any SME that intends to engage in internationalization. These results are also consistent with recent literature that argue that the Uppsala model no longer explains firms' internationalization process. IE, as a holistic and dynamic approach, is found to be appropriate to study the firms' internationalization in this digital business environment.

5. Conclusion

This research was aimed at studying the role of the Internet and the Web 2.0 in the internationalization of SMEs in the Portuguese context. Specifically, it was our goal to understand how Portuguese entrepreneurial firms use these new technologies to develop export market opportunities.

The literature on Internet-enabled internationalization highlights the facilitating effect of the Internet on SMEs international activities and some studies suggest that using the Internet can enhance export market growth and international expansion, but scholars agree that further empirical research is needed to better understand how this occurs (Bianchi and Mathews, 2015). Aiming to address this gap, we employed a mixed-method research design which involved a questionnaire for collecting data from a sample of 204 exporting firms and multi-case studies with a sub-sample of six firms.

By doing so, we were able to identify three different approaches to using the Internet for international business purposes: (1) Internet as a business tool, which means using Internet tools for supporting existing export activities; (2) Internet as a business enhancer, i.e., complementing online and physical export sales channels in order to enhance export performance; (3) Internet as a business driver, when firms operate almost exclusively online, dispensing physical presence and embracing the marketspace as the primary sales channel. The identification of these patterns of Internet use supporting export activities can provide a valuable contribution to the literature by addressing how firms use the Internet for export-related activities.

In our sample, firms use the Internet mainly as a business tool to communicate with clients and partners, to search for international business information, to manage firms' activities and for promotional purposes. Therefore, this research confirms the results of previous studies (Sinkovics *et al.*, 2013) which suggest that the Internet may play a complementary role in firms' export activities.

With regard to the impact of the Internet use on export marketing, testing the relationships hypothesized in the reference model allowed us to conclude that performing online sales is the Internet activity with greater impact on firms' export intensity and diversity. Hence, we are led to conclude that using the Internet as a business enhancer or driver has a greater impact on firms' export performance.

In practice, this means that the majority of Portuguese entrepreneurial firms can benefit more from the Internet than they actually do. Our findings are consistent with those of previous studies (Mathews and Healey, 2008) which suggest that the Internet provides firms with new export market opportunities, as well as with the ability to develop them in a flexible and speedily manner. Still, the positive impact can be more significant if firms use the Internet not only as a supportive tool but as a complement to traditional export channels because that is expected to enhance their export performance. With regard to the use of Web 2.0 technologies, although entrepreneurial firms are adopting social media as a marketing tool to a great extent, low usage was found in terms of crowdsourcing. Given that, entrepreneurs and managers are encouraged to invest in e-commerce and to explore the potential of Web 2.0 to leverage external resources to overcome the lack of resources and knowledge and to create value for the firm.

As to policy recommendations, we stress the positive relation found between education and Internet business capabilities, which emphasizes the importance of promoting education and the development of ICT skills. Furthermore, we find it important to improve awareness of the potential benefits of Web 2.0 tools and to encourage the adoption of e-collaboration practices among businesses.

This study contributes to the literature on internationalization by demonstrating that, as a result of its transforming effects on international operations, the Internet has become a major factor driving the emergence of INVs. In this regard, our research confirms that the Uppsala Model no longer explains firms' internationalization process and corroborates previous studies that suggested the International Entrepreneurship theory as an appropriate approach to Internet-enabled internationalization. Moreover, our research study provides empirical support for the "internetization" theory (Etemad *et al.*, 2010), confirming that e-business has become an integral part of international business and a necessary condition for export market opportunities development.

A limitation of this research study is that it does not consider the external context, neither some aspects at the firm level such as the existence of human and financial resources, product/ service characteristics or the international experience or knowledge that also influence firms' export performance and opportunity development. So, it would be interesting to replicate this study, taking environmental and firm-specific factors into

consideration. Future researches should also investigate the factors that influence the adoption of Web 2.0 technologies among internationalizing firms.

The fast evolution of Internet and Web 2.0 technologies require academic researchers to always be up-to-date with the phenomenon and its implications for international business. Hence, empirical researches like the present one are important in order to obtain an overview of the state of adoption of e-business practices, to study its impact on international business performance and to provide theoretical and practical contributions and recommendations.

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7. Appendixes

Appendix 1 - Exploratory Interview Outline

"The use of Internet and Web 2.0 technologies to develop export market opportunities in Portuguese SMEs"

Master's Dissertation in International Business

Ana Bárbara Matos, under supervision of Prof. Dr. Nuno Moutinho

January 2016

Portuguese Entrepreneurs Interview Outline

This interview is part of a research study for a master's dissertation and aims to collect information on Portuguese entrepreneurs' use of the Internet and its impact on firms' international activities.

Your answers will be used for research purposes only. Thank you for participating.

Interviewee's business:

Interviewee name:

Age level:

Date:

Place:

Beginning time of interview:

End time of interview:

Entrepreneur

1. Could you tell me about your education? What is your highest education degree? What was your field of study?
2. Have you ever lived in a country outside of Portugal? What did you do while you were living in that country?

Entrepreneurship

3. When did you set up your business? What is the business area? In which stage is your business now?
4. What challenges do you face in your business? How do you overcome those challenges?

Internationalization

5. Engaging in international business and doing exports was a goal since your firm's inception or the opportunity arose?
6. Why do you want to operate in international markets?
7. When did you start operating in international markets?
8. How did your enter your first international market?
9. What challenges do you face in international business? How do you overcome those challenges?
10. How important is your personal and business network for international business? Could you give me some examples?

Internet and Web 2.0

11. Do you think the Internet was helpful in creating and developing your business?
12. Do you think the Internet is important in doing international business and exporting? What is its effect on your firm's performance?
13. Could you give me some examples illustrating the usefulness of the Internet? Do you…?
    a) Sell products and/ or services;
    b) Research relevant information for the firm;
    c) Manage firm's activities;
    d) Marketing and communication;
    e) Develop a relationship with the clients;
    f) Interact with partners and develop business network;
    g) Receive feedback from the clients, suppliers and partners;

Thank you for the interview. Can we contact you again if we would need more information?

Do you have any comments?

Appendix 2 - Questionnaire Design

Sections/ Questions	Indicators / Items	Sources
This questionnaire is part of a research study for a master's dissertation of School of Economics and Management of the University of Porto. Its aim is to collect information on Portuguese entrepreneurial firms' use of the Internet and its role on their export activities, so it is targeted to firms' entrepreneurs.		
There is no right or wrong answer to any of the questions. Please tell us the answer that best describes your situation. Your answers will be kept confidential. Thank you for participating.		
A) Business profile		
The following questions aim to characterize your business.		
1. Business name:	[Open question]	---
2. Business location (region):	North	NUTS II - Nomenclature of Territorial Units for Statistics
	Centre	
	Lisbon	
	Alentejo	
	Algarve	
	Azores	
	Madeira	
3. Foundation year:	[Open question]	---
4. Business area:	Agriculture, farming of animals, hunting and forestry	CAE Rev.3 - Portuguese Classification of Economic Activities (3rd Revision) (adapted)
	Mining and quarrying	
	Manufacturing	
	Electricity, gas, steam, cold and hot water and cold air	
	Water collection, treatment and distribution; sewerage, waste management and remediation activities	
	Construction	

	Wholesale and retail trade; repair of motor vehicles and motorcycles	
	Transportation and storage	
	Accommodation and food service activities	
	Information and communication activities	
	Financial and insurance activities	
	Real estate activities	
	Consultancy, scientific and technical activities	
	Administrative and support service activities	
	Education	
	Human health and social work activities	
	Arts, entertainment, sports and recreation activities	
	Other service activities	
5. What is the most important factor for your business to be an effective competitor?	Lower price	Derived from a questionnaire developed for the Roots&Wings project
	Superior quality of the products or services	
	Marketing and communication	
	Serving a market niche missed by others	
	A superior location	
	Innovative ways of distributing	
	More contemporary, attractive products	
	New or advanced technology	
	Technical or scientific expertise	
	Market knowledge	
	Presence on platforms with a broad reach	
	Other: _____	
B) Export activities		
The following questions aim to collect information on your firm's export activities.		
6. Speed to first export market:	1 year or less	Loane, 2006 (adapted)
	2–4 years	
	More than 4 years	
7. Export ratio:	1–10%	Loane, 2006
	11–50%	
	51–90%	
	91–100%	
8. Export markets:	Less than 5	Loane, 2006

	6–25 markets	
	More than 26	
9. Please, indicate the level of agreement with each sentence: [1-5 Likert scale: strongly disagree, disagree, no opinion, agree, strongly agree]	My firm's export sales have been increasing.	Bianchi and Mathews, 2015 (adapted)
	My social and business networks have an important role in my firm's export marketing.	
C) Internet use		
The next set of questions refers to how you use the Internet tools for business purposes and their importance for your business.		
10. When you work from home or other places, do you use ICT to remotely access resources from the office?	Yes	Derived from a questionnaire developed for the Roots&Wings project
	No	
	I don't work from home	
11. Used devices:	Personal computer	Based on the exploratory interviews
	Smartphone	
	Tablet	
	Other: _____	
12. How frequent do you use the Internet for the following activities? [1-4 scale: daily or more often, a few times a week, a few times a month, less often]	Advertising, marketing, and promotion	Based on items from various studies on Internet-generated internationalization (Berry and Brock, 2004; Brock and Zhou, 2005; Loane, 2006; Lituachy and Rail, 2000)
	Building professional business networks or communities	
	Finding international business related information	
	International competition analysis	
	Finding information about international suppliers, distributors, partners, etc.	
	Buying foreign products or services	
	Selling products or services internationally	
	Online customer service	
	Communicating (with employees, suppliers, distributors, etc.)	
	Manage team and coordinate company international activities	
	Crowdsourcing (ex.: wikis, blogs, collaborative software, etc.)	
	Product/ service development	
13. Does your business have the following?	A website	Based on items from various studies on Internet-generated internationalization (Brock and Zhou, 2005; Mostafa, Wheeler and Jones, 2005) and on Web 2.0 literature
	Email	
	A blog	
	Facebook presence	
	Twitter presence	
	LinkedIn presence	

	Presence on other social media platforms	
	A mobile app	
	E-commerce	
	Reviews and rating widgets	
14. The following questions refer to the contributions of the Internet to your company. Please, indicate the level of agreement with each sentence. [1-5 Likert scale: strongly disagree, disagree, no opinion, agree, strongly agree]	It makes it easier to overcome problems associated with a lack of knowledge about foreign markets	Derived from the literature on Internet-generated internationalization (Berry and Brock, 2004; Sinkovics, Sinkovics and Jean, 2013; Bennett, 1997; Bianchi and Mathews, 2015)
	Using it to market our products and services internationally lowers our overall marketing cost	
	It helps us to reach more potential foreign customers	
	It helps me to develop my international business network	
	It generates international awareness of the business	
	It allows partners and clients participation in product/ service development process	
	It helps us to manage my firm's international value chain	
	It offers new international business opportunities	
15. The following questions refer to the effect of the Internet on export marketing. Please, indicate the level of agreement with each sentence. [1-5 Likert scale: strongly disagree, disagree, no opinion, agree, strongly agree]	It has an important role on foreign market selection	Derived from the literature on Internet-generated internationalization (Berry and Brock, 2004; Sinkovics, Sinkovics and Jean, 2013)
	It helps us to reduce the financial costs associated with exporting	
	It has significantly improved export sales	
	It has significantly improved export profits	
	It has significantly improved the number of foreign markets served	
	It has significantly improved overall performance	
	It helps to overcome export barriers	
	It is an alternative to a physical presence	
16.Will you devote more resources to your online business in the future?	Yes	Sinkovics, Sinkovics and Jean, 2014 (adapted)
	No	
	I don't know	
D) Last questions		
Finally, a few questions that will allow us to compare the survey participants to the overall characteristics of the population.		---
17. Sex:	Male	---
	Female	

18. Year of birth:	[Open question]	
19. Level of education:	Primary education	---
	Secondary education	
	Higher education	
20. What is your position in your business?	[Open question]	---
21. Other than Portugal, have you ever lived in any other countries for six months or more?	Yes	---
	No	
Thank you for taking the time to answer this questionnaire!		

Appendix 3 - Statistical Results

A) Multivariate Analysis

Independent Variable	Dependent Variable	Chi-Square (Sig.)	Cramer's V Test (Value)
Business location	Frequency of Internet use - Marketing and communication	.742	.136
	Frequency of Internet use - Professional business networks	.364	.164
	Frequency of Internet use - International business information	.025	.212
	Frequency of Internet use - International competition analysis	.231	.175
	Frequency of Internet use - Finding information about partners	.377	.163
	Frequency of Internet use - Buying foreign products/ services	.298	.170
	Frequency of Internet use - Selling products/ services internationally	.033	.209
	Frequency of Internet use - Online customer service	.757	.135
	Frequency of Internet use - Communicating	.453	.156
	Frequency of Internet use - Manage team and coordinate company	.821	.130
	Frequency of Internet use - Crowdsourcing	.121	.190
	Frequency of Internet use - Product/ service development	.020	.217

Business area	Frequency of Internet use - Marketing and communication	.000	.378
	Frequency of Internet use - Professional business networks	.305	.285
	Frequency of Internet use - International business information	.831	.242
	Frequency of Internet use - International competition analysis	.026	.328
	Frequency of Internet use - Finding information about partners	.065	.315
	Frequency of Internet use - Buying foreign products/ services	.251	.291
	Frequency of Internet use - Selling products/ services internationally	.708	.255
	Frequency of Internet use - Online customer service	.177	.298
	Frequency of Internet use - Communicating	.558	.265
	Frequency of Internet use - Manage team and coordinate company	.220	.296
	Frequency of Internet use - Crowdsourcing	.710	.257
	Frequency of Internet use - Product/ service development	.184	.298
Factor for business success	Frequency of Internet use - Marketing and communication	.116	.277
	Frequency of Internet use - Professional business networks	.837	.214
	Frequency of Internet use - International business information	.548	.237
	Frequency of Internet use - International competition analysis	.229	.263
	Frequency of Internet use - Finding information about partners	.681	.228
	Frequency of Internet use - Buying foreign products/ services	.030	.298
	Frequency of Internet use - Selling products/ services internationally	.115	.271
	Frequency of Internet use - Online customer service	.277	.259
	Frequency of Internet use - Communicating	.048	.289
	Frequency of Internet use - Manage team and coordinate company	.104	.271
	Frequency of Internet use - Crowdsourcing	.001	.331
	Frequency of Internet use - Product/ service development	.101	.280

Sex	Frequency of Internet use - Marketing and communication	.026	.214
	Frequency of Internet use - Professional business networks	.063	.848
	Frequency of Internet use - International business information	.002	.268
	Frequency of Internet use - International competition analysis	.187	.154
	Frequency of Internet use - Finding information about partners	.107	.510
	Frequency of Internet use - Buying foreign products/ services	.897	.055
	Frequency of Internet use - Selling products/ services internationally	.061	.191
	Frequency of Internet use - Online customer service	.545	.103
	Frequency of Internet use - Communicating	.136	.165
	Frequency of Internet use - Manage team and coordinate company	.795	.072
	Frequency of Internet use - Crowdsourcing	.353	.128
	Frequency of Internet use - Product/ service development	.438	.116
	Use ICT when working outside the office	.817	.045
Lived in any other country	Frequency of Internet use - Marketing and communication	.063	.213
	Frequency of Internet use - Professional business networks	.841	.064
	Frequency of Internet use - International business information	.613	.095
	Frequency of Internet use - International competition analysis	.275	.138
	Frequency of Internet use - Finding information about partners	.814	.069
	Frequency of Internet use - Buying foreign products/ services	.810	.069
	Frequency of Internet use - Selling products/ services internationally	.835	.065
	Frequency of Internet use - Online customer service	.499	.108
	Frequency of Internet use - Communicating	.151	.162
	Frequency of Internet use - Manage team and coordinate company	.389	.243

	Frequency of Internet use - Crowdsourcing	.350	.129
	Frequency of Internet use - Product/ service development	.339	.131
	Use ICT when working outside the office	.435	.090

Independent Variable	Dependent Variable	Chi-Square (Sig.)	Goodman and Kruskal's Gamma (Value)
Age	Frequency of Internet use - Marketing and communication	.356	.113
	Frequency of Internet use - Professional business networks	.283	-.130
	Frequency of Internet use - International business information	.989	-.006
	Frequency of Internet use - International competition analysis	.504	-.078
	Frequency of Internet use - Finding information about partners	.480	-.067
	Frequency of Internet use - Buying foreign products/ services	.879	-.072
	Frequency of Internet use - Selling products/ services internationally	.898	-.110
	Frequency of Internet use - Online customer service	.619	.059
	Frequency of Internet use - Communicating	.226	-.096
	Frequency of Internet use - Manage team and coordinate company	.948	-.038
	Frequency of Internet use - Crowdsourcing	.796	-.050
	Frequency of Internet use - Product/ service development	.458	-.101
	Use ICT when working outside the office	.133	.132
Level of education	Frequency of Internet use - Marketing and communication	.177	.098
	Frequency of Internet use - Professional business networks	.268	.201
	Frequency of Internet use - International business information	.105	.297
	Frequency of Internet use - International competition analysis	.790	.107
	Frequency of Internet use - Finding information about partners	.889	-.065

	Frequency of Internet use - Buying foreign products/ services	.155	-.017
	Frequency of Internet use - Selling products/ services internationally	.028	.305
	Frequency of Internet use - Online customer service	.630	.223
	Frequency of Internet use - Communicating	.531	.187
	Frequency of Internet use - Manage team and coordinate company	.074	.263
	Frequency of Internet use - Crowdsourcing	.154	.074
	Frequency of Internet use - Product/ service development	.149	.232
	Use ICT when working outside the office	.000	.241

B) Hypothesis Testing – SPSS Output

Test Statistics[a,b]

	How frequent do you use the Internet for - Marketing and communication	How frequent do you use the Internet for - Communicating	How frequent do you use the Internet for - Professional business networks	How frequent do you use the Internet for - Online customer service	How frequent do you use the Internet for - International business information	How frequent do you use the Internet for - International competition analysis	How frequent do you use the Internet for - Buying foreign products/ services	How frequent do you use the Internet for - Selling products/ services internationally	How frequent do you use the Internet for - Crowdsourcing
Chi-Square	5,292	11,826	6,700	2,911	2,278	1,881	2,206	19,544	3,957
df	3	3	3	3	3	3	3	3	3
Asymp. Sig.	,152	,008	,082	,406	,517	,597	,531	,000	,266

a. Kruskal Wallis Test

b. Grouping Variable: Export ratio

Test Statistics[a,b]

	How frequent do you use the Internet for - Marketing and communication	How frequent do you use the Internet for - Communicating	How frequent do you use the Internet for - Professional business networks	How frequent do you use the Internet for - Online customer service	How frequent do you use the Internet for - International business information	How frequent do you use the Internet for - International competition analysis	How frequent do you use the Internet for - Buying foreign products/ services	How frequent do you use the Internet for - Selling products/ services internationally	How frequent do you use the Internet for - Crowdsourcing
Chi-Square	6,822	1,953	5,825	4,195	10,305	20,100	4,946	20,238	10,325
df	2	2	2	2	2	2	2	2	2
Asymp. Sig.	,033	,377	,054	,123	,006	,000	,084	,000	,006

a. Kruskal Wallis Test

b. Grouping Variable: Export markets

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of How frequent do you use the Internet for - Marketing and communication is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,341	Retain the null hypothesis.
2	The distribution of How frequent do you use the Internet for - Communicating is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,001	Reject the null hypothesis.
3	The distribution of How frequent do you use the Internet for - Professional business networks is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,038	Reject the null hypothesis.
4	The distribution of How frequent do you use the Internet for - Online customer service is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,096	Retain the null hypothesis.
5	The distribution of How frequent do you use the Internet for - International business information is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,202	Retain the null hypothesis.
6	The distribution of How frequent do you use the Internet for - International competition analysis is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,196	Retain the null hypothesis.
7	The distribution of How frequent do you use the Internet for - Buying foreign products/ services is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,744	Retain the null hypothesis.
8	The distribution of How frequent do you use the Internet for - Selling products/ services internationally is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,000	Reject the null hypothesis.
9	The distribution of How frequent do you use the Internet for - Crowdsourcing is the same across categories of Export ratio.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,326	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of How frequent do you use the Internet for - Marketing and communication is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,009	Reject the null hypothesis.
2	The distribution of How frequent do you use the Internet for - Communicating is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,179	Retain the null hypothesis.
3	The distribution of How frequent do you use the Internet for - Professional business networks is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,015	Reject the null hypothesis.
4	The distribution of How frequent do you use the Internet for - Online customer service is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,215	Retain the null hypothesis.
5	The distribution of How frequent do you use the Internet for - International business information is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,001	Reject the null hypothesis.
6	The distribution of How frequent do you use the Internet for - International competition analysis is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,000	Reject the null hypothesis.
7	The distribution of How frequent do you use the Internet for - Buying foreign products/ services is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,073	Retain the null hypothesis.
8	The distribution of How frequent do you use the Internet for - Selling products/ services internationally is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,000	Reject the null hypothesis.
9	The distribution of How frequent do you use the Internet for - Crowdsourcing is the same across categories of Export markets.	Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives	,309	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Appendix 4 - Case Studies Interview Outline

"The use of Internet and Web 2.0 technologies to develop export market opportunities in Portuguese SMEs"

Master's Dissertation in International Business

Ana Bárbara Matos, under supervision of Prof. Dr. Nuno Moutinho

July 2016

Portuguese Entrepreneurs Interview Outline

This interview is part of a research study for a master's dissertation and aims to collect information on Portuguese entrepreneurs' use of the Internet and its impact on firms' export activities.

Your answers will be used for research purposes only. Thank you for participating.

Interviewee's business:

Interviewee name:

Date:

Beginning time of interview:

End time of interview:

Firm's profile:

a) Business area:
b) Founding partners:
c) Establishment year:
d) First year of exports:
e) Turnover (2015):
f) Export ratio (2015):
g) Export markets (2015):

Export activities

1) Engaging in international business and doing exports was a goal since your firm's inception or the opportunity arose? Why/ how?

Internet and Web 2.0

2) Do you think the Internet is important in doing international business and export activities? Could you give me some examples illustrating the usefulness of the Internet?
3) How does it facilitate the export process?
4) What are the most important Internet business activities for your firm's export activities? Why?
5) What is the impact of the Internet on your firm's export activities and performance?
6) Do you think the Internet has a complementary or a main role on your business? Why?

Entrepreneur

7) How do your personal characteristics and professional career affect your firm's international management?

Thank you for the interview. Can we contact you again if we would need more information?
Do you have any comments?