

# THE IMPORTANCE OF THE SKILLS IN BUSINESS DIGITALIZATION FOR THE INTERNATIONALIZATION STRATEGY – EVIDENCE FOR PORTUGUESE FIRMS

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## Abstract

To meet the requirements of both national and international competition firms need to engage in a continuous innovation process and constantly restructure their operations. Firms must find new ways to develop a competitive advantage, which entails searching for and acquiring new skills, resources and competences. Traditional theories of internationalization focused mainly on multinational firms, giving less importance to entrepreneurs with their small businesses. However, the development of the business world has been breaking all boundaries with the increasing internationalization of firms, not dependent on their size, activity sector or geographical area of origin. It is also widely acknowledged that organizations have suffered a large evolution at the technological level where the traditional barriers of information and knowledge transferring have been progressively eliminated. Digital transformation (DT), in business practice can enable significant competitive advantage. DT can also be seen as a deep and accelerating transformation with regard to processes, activities, competences and models, in order to take advantage of the changes and opportunities offered by the inclusion of digital technologies into an organization.

In the literature of business internationalization, a large number of scientific studies focus on the determinants of internationalization and more specifically, on their relationship with the success / failure of internationalization. However, few of them analyze the entrepreneur's perspective. Therefore, this work aims to present a study focused on the entrepreneur's perception about the internationalization process of his company, more specifically, about the factors that enhanced the company entry into foreign markets as well as the constraints found in this process. In this project, through an empirical study from a sample of 195 Portuguese International firms, we intend to confirm if the integration of technological innovations in business practice can enable significant competitive advantage including in business internationalization.

Keywords: Skills, Business Digitalization, Internationalization, Digital Transformation.

## 1 INTRODUCTION

The ability to internationalize has become a competitive necessity for many firms, and one that allows for survival and growth in the era of globalization [1]. The process of internationalization in small and medium-sized enterprises (SMEs) is a developing process and requires a new set of skills (marketing, orientation towards new markets, among others) [2]. In this context, digitalization is transforming the range of opportunities, offering new perspectives of internationalization [3].

Digitalization, as a relatively recent phenomenon, has gained a lot of adherence and is completely changing customer behaviour and expectations and has therefore implicitly forced the reinvention of business to create and maintain customers. Digitalization, according to [4] is a significant part of the possibly greatest global trend, Industry 4.0, and threatens to completely transform organizations and business models today.

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advantage. DT can also be seen as a deep and accelerating transformation with regard to processes, activities, competences and models, in order to take advantage of the changes and opportunities offered by the inclusion of digital technologies into an organization.

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Data collected from the 195 valid responses (Portuguese international firms) were treated by IBM SPSS Statistics 24.0 software. The statistical analyses used for the data analysis were Descriptive Analysis (frequency analysis, descriptive statistics and graphical representations), Inferential Analysis and Reliability Analysis (Cronbach's alpha).

The paper is structured as follows. Section 2 critically examines digitalization, internationalization, digital transformation and digital business transformation concepts, and the relationship between them. Section 3 presents the state of the art. Section 4 presents the research methodology. Section 5 summarizes the results and discussion of the research and finally, section 6 presents the study conclusion and 7 presents the study limitations and future work.

## **2 BACKGROUND**

### **2.1 Digitalization**

Digitalization within a business context can be defined as a concept of operations that become more automatic and digital. All data is transferred to computer systems and becomes more accessible. Thus, the development of automation enabled by robotics and artificial intelligence brings the promise of higher levels of productivity and also better efficiency, security and convenience [5], as well as, according to [6] transform the world of work, creating new types of digital or virtual work.

This digitalization, according to [4] is transforming entrepreneurship in two ways. The first transformation is the inconstant location of entrepreneurial opportunities in the economy and the second is the transformation of entrepreneurial practices themselves. The same author uses the term "digital disruption" to describe the transformational impact produced by digital technologies and infrastructures on the way business, economy and society operate. This digital disruption creates opportunities for SMEs to grow and internationalize, or if they do not follow the trend of digitalization there is a risk that they will fall behind their competitors, which could eventually lead to their closure, as happened for example with Kodak.

### **2.2 Internationalization**

In [7] is described internationalization as a "*means that a firm acts in one or several foreign markets and thus develops its activities in an international context*". These authors also explained that internationalization helps firms to have a competitive advantage of doing business abroad. This competitive advantage appears with the advent of globalization and the knowledge economy, allowing the establishment of strategies that increase the capacity of internationalization of firms, especially SMEs. However, SMEs are generally limited in their resources and international experience. Internationalization is one of the most important sources for the growth of the company and to improve its performance. For example, in the past, there was a clustering of internationalization in large organisations, but the internationalization strategy of SMEs started to increase when digital technologies allowed them easy access to other types of markets. These technologies increased the speed of internationalization and created global recognition of opportunities, as evidenced by trends in the use of these means to promote, reach and communicate with various partners. Thus, the ability to internationalize has become a competitive necessity for many firms, allowing their survival and growth under conditions of globalization and in the middle of the knowledge economy.

## 2.3 Digital Transformation

In recent years, digital transformation (DT) has become a major trend in both industry and the public sector in many countries [8]. DT determines the transition to the mass use of digital technologies in the various sectors of the economy and society, which improve or replace traditional products and services. According to the World Economic Forum [9], TD offers enormous potential for innovation, moves several trillion dollars, applies to many industries (logistics, health, automotive industry) and social trends (science, government, etc.). The digital transformation of society not only significantly changes industrial and economic structures, but also introduces new perspectives in all kinds of businesses and in the various areas of society (public and private). According to [8] the main axes of the influence of DT on the evolution of social and economic systems are: (i) to increase mobility in meeting consumers' needs, allowing to overcome territorial restrictions and the dependency on the location of service providers; (ii) to have the possibility to collect, store and process large volumes of data, which leads to a reduction of transaction costs in decision making and in the conclusion of transactions; (iii) proliferation of network effects, which alter profit generation chains and ground new business models; (iv) to change the system of relations between consumers and service providers for the involvement of consumers in the process of creating value for the consumer himself.

## 2.4 Digital business transformation

The digital transformation of the business, according to [10], is the application of technology to build new business models, processes, software and systems that result in higher profits, greater competitive advantage and greater efficiency. Firms achieve this goal by transforming business processes and models, enhancing the efficiency and innovation of the workforce and customizing the experiences of customers / citizens. Among firms where cloud, mobile, social and big data technologies (key pillars of TD) are critical parts of their infrastructure, these technologies are already profitable, on average, had higher revenues and achieved a higher market valuation than competitors, without an appropriate view of usage aligned with their strategy. As with any emerging technology, however, there are significant challenges associated with cloud, mobile, social and big data initiatives. The main risks that prevent its wider adoption are data security issues, legal issues, lack of interoperability with existing IT systems and lack of control, which can somehow, in the initial phase, delay the digital transformation of the business and, as a consequence, slow down the internationalization of the business.

## 3 STATE OF THE ART

Firms' internationalization and its research is of increasing importance today. Internationalization has become, more than a matter of choice, a matter of survival in a changing world. According to [11], international business has for a long time been dominated by large firms with smaller firms tending to remain local or, at most, regional. The traditional theories of internationalization thus focused mainly on multinational and not on smaller firms. However, the development of business and new technologies has been breaking all frontiers, with the increasing internationalization of firms regardless of their size, activity sector or geographical origin [12]

Several researchers in recent years have focused on the characteristics of behaviours that allow SMEs to increase their processes of internationalization, as well as their international performance despite the apparent lack of resources when compared to large firms ([13] [14] [15] [16] [17]).

Thus, empirical evidence can provide important insights on the internationalization of new business, showing how younger and smaller firms are able to compensate for their lack of international experience, through learning based on previous experience of the management team and through business digitalization [7].

Nowadays, firms have to find new ways to develop competitive advantages what implies the acquirer of new skills, resources and capabilities [18]. In many cases firms can gain access to these resources, including market-specific knowledge, through alternative forms of management and with the help of new technologies [7]. On the other hand, the evolution of e-commerce has redefined the nature of international business for many SMEs [19]. By facilitating the direct connection between the company and a foreign client, new technologies provide possibilities of access and service to foreign markets, impacting the number of those involved in the export operations [20].

This approach captures the fact that with the introduction of the internet, competing with MNEs, small and medium-sized businesses (SMEs) also started to engage in international activities — frequently

immediately after their foundation. These International Entrepreneurship (IE) approaches focus on internal factors, capabilities, and networks of a company as reasons for such behaviour ([21] [22]). Therefore, there is a growing need to understand internationalization in the context of SMEs as much as it existed in the context of large multinationals. Knowing how, when and why firms become international have become an important research topic in the field of Internationalization. For [23], in the intention of internationalization of small and medium-sized enterprises (SMEs) two pillars should be considered: the increasing globalization of markets ([24] [25] [26] [27]) and the rapid advances in technology, especially at the level of everything that can be traded online [19]. Digitalization fundamentally changes business practices, challenges the competitive advantages of well-established businesses, and provides opportunities to new businesses [28].

The characteristics of the digital market promote the internationalization of smaller and younger firms despite their limited budget for internationalizing early and on a wide scale. Notably, traditional theories (e.g., internalization theory, the eclectic paradigm adding ownership and location-specific advantages, or the internationalization process model also known as Uppsala stages), were developed on the basis of observations in large MNEs, often more than 40 years ago.

Digitalization, on the other hand, could be described as a new “*game changer*” in the internationalization of SMEs worldwide. Digitalization offers new opportunities in foreign markets while at the same time increasing competition in the home market. To achieve a competitive advantage, a firm must be aware of changes in a market utilizing digital tools, and be capable of responding to those changes through digitalization [29]. This requires learning and dynamic capabilities. [30] also stress the need for further research about the usefulness of digitalization for decision-making purposes. Digitalization is instrumental in facilitating earlier and faster internationalization through digitalized knowledge, network creation, and decision-making processes [31].

According to the Uppsala internationalization process model, firms use an establishment chain to develop to new foreign markets [32]. An establishment chain in form of a market development process can be described as a series of four steps: i) market evaluation and selection phase; ii) market preparation; iii) market entry; and iv) market growth and development [33]. Due to the large amount of existing data and a steady stream of new data due to a fast-changing and complex environment, the basic assumption of the study of [33] is that the preparation of decisions and decision-making processes in international market development would benefit from digitalization, thereby reducing the evaluation and selection workflow from three tasks to just one task and increasing the limited number of analyzed countries to the whole population.

However, and oddly enough, in the research of [29], digitalization had no effect on the performance of internationalized firms. Nevertheless, the effect was significant with firms operating in their domestic markets. The finding is intriguing because as recent literature argues, digitalization is sought to be a new way of reaching foreign markets. It could be that the tools of digitalization are more difficult to utilize fully in the context of a foreign culture. With firms operating in their domestic markets, digitalization had a significant effect on firm performance. It seems that operating in a more familiar market makes it to exploit the positive effects of digitalization. The dynamic capabilities (DC) concept suggests that digitalization is a potential asset but one requiring a firm to be able to adjust its processes so as to utilize this resource effectively in a dynamic business environment. These findings suggest that firms require heightened levels of this ability when operating in foreign markets [29].

## **4 RESEARCH METHODOLOGY**

Regarding research methodology, the main concern is the use of a scientific method, in order to carry out an organized research and to have a strict control of the use of theoretical observations and knowledge. Thus, this section presents the procedures used in data collection, which constitute the basis of the research / study presented.

The research carried out used the quantitative methodology, which can be generically defined as a method of social research that uses statistical techniques for the collection and analysis of data. The quantitative methodology is thus, with the collection of data on motivations of concrete groups, in the understanding and interpretation of certain behaviours, opinions and expectations of a concrete group of individuals. This approach aims essentially to find relationships between variables, to make descriptions using the statistical treatment of collected data, to test theories and to draw conclusions [34]. The selection of the quantitative methodology is justified by the need to collect the opinions and

attitudes of the respondents, i.e. the study was descriptive in nature, and the data collection was carried out with the use of a questionnaire.

The use of questionnaires requires special care, since it is not enough to collect the answers on the issues of interest, it is also important to perform a statistical analysis for the validation of the results. Aspects such as sample size, questionnaire formulation, data analysis, among others, are important and should be considered in research [35]. The questionnaire was firstly evaluated by four experts before being submitted.

The aim of this study is to find evidence of the importance of integration of technological innovations in business practice in international business strategy. We will also try to understand more effectively the relevance of integrating these technological innovations through the discrimination of 10 different technological categories and make sure we understand the importance of each one in the business internationalization strategy. They are: m E-commerce, Cloud solutions, Big data, IoT sensors, 3D Printing, Virtual reality/Augmented reality (VR/AR), Robotics/automation, Agile tools, Business Intelligence (BI) and Artificial Intelligence (AI).

The quantitative study was based on an online questionnaire with 33 questions (Q1-Q33). For the present study only these 4 questions (Q28, Q29, Q32 and Q33) are relevant. In particular:

- Age of the respondent (Q32) with the categories: up to 40, 41-54 and 55 or more years;
- Respondent Qualifications (Q33) with categories: Basic/High school, Bachelor/Degree and Master/PhD;
- Degree of relevance assigned to business scanning (Q28) in a 5-level Likert scale from 1- nothing relevant to 5-extremely relevant;
- Degree of relevance of 10 technology categories (Q29) in a 5-level Likert scale from 1- nothing relevant to 5-extremely relevant and two more options "Term unknown" and "Not applicable".

The questionnaire has been online for approximately 150 days and 195 valid responses were received (Portuguese international firms). Data collected were treated by using the IBM SPSS Statistics 24.0 software. The statistical analyses used for the data analysis in our study were Descriptive Analysis (frequency analysis, descriptive measures and graphical representations), Inferential Analysis and Reliability Analysis (Cronbach's alpha) [36].

## 5 ANALYSIS AND RESULTS DISCUSSION

The study sample consists of 195 Portuguese International firms in different areas and with different dimensions (small, medium and large firms). Most respondents, 51%, have bachelor or degree, 30% master or PhD and 19% basic or high school. Of these, 46% have ages between 41 and 54 years, 34% up to 40 and 20% aged 55 and over.

To cross age groups with qualifications we used Chi-square test. Since all conditions of applicability of the test were validated, we conclude that (Table 1) this two characteristics are associated ( $p\text{-value} = 0.027 < 0.05$ ).

Table 1 – A Results of Chi-Square test.

	Value	df	Asymptotic Significance (2-sided)
<b>Pearson Chi-square</b>	10,993 <sup>a</sup>	4	,027
<b>Likelihood Ratio</b>	10,539	4	,032
<b>Linear-by-Linear Association</b>	8,287	1	,004
<b>N of Valid Cases</b>	194		

<sup>a</sup> 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,44.

In addition, since Spearman correlation coefficient (suitable for variables on an ordinal scale) is negative ( $r_s = -0.41$ ), we can also conclude that the lower the ages, the higher the educational level. The relationship between ages and qualifications is further represented in Figure 1.

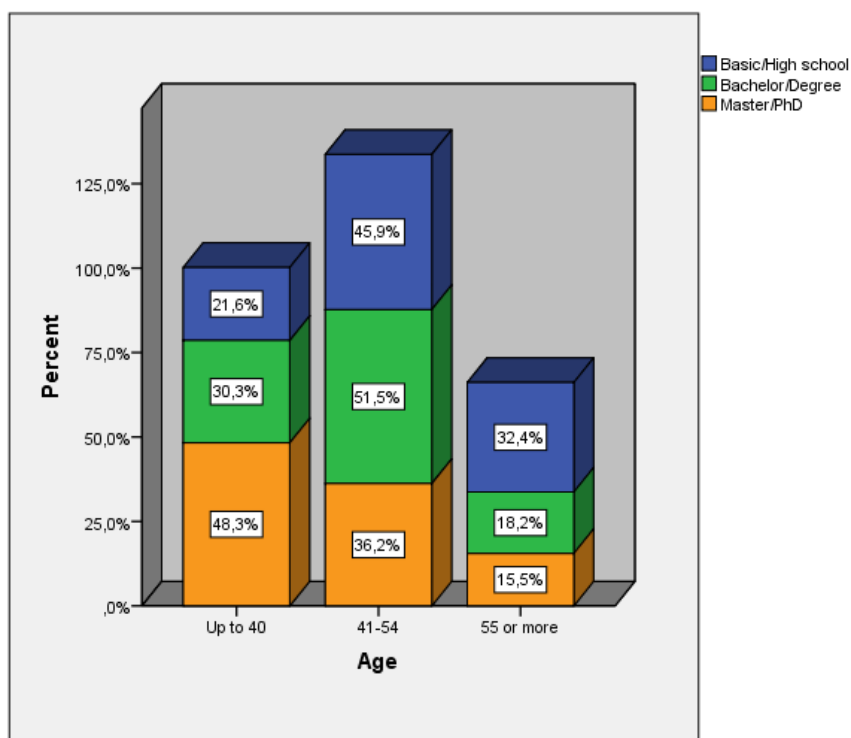


Figure 1- Relation between age and qualifications.

Table 2 is presented in order to evaluate the degree of relevance assigned to the digitalization of business (Q28) in the context of the internationalization strategy. As can be ascertained, regardless of the technological solutions adopted, the respondents consider that the digitalization of businesses within the scope of the internationalization strategy is always relevant, very relevant or extremely relevant. Furthermore, 67.7% of the respondents consider digitalization to be very or extremely relevant and only 8.7% consider it to be nothing or little relevant at all.

Table 2 – Frequencies of the five degrees of relevance.

		Frequency	Percent	Cumulative Percent
Valid	Nothing relevant	6	3,1	3,1
	Little relevant	11	5,6	8,7
	Relevant	46	23,6	32,3
	Very relevant	69	35,4	67,7
	Extremely relevant	63	32,3	100,0
	<b>Total</b>	195	100,0	

Next, we will analyze in detail the degree of relevance assigned to the various technology categories (Q29) considered in the study: E-commerce, Cloud solutions, Big data, IoT sensors, 3D Printing, Virtual reality/Augmented reality (VR/AR), Robotics/automation, Agile tools, Business Intelligence (BI) and Artificial Intelligence (AI).

To do so, we consider it more appropriate to use simultaneously, as a localization measure (which evaluates which technological categories have more relevance) the mean and the median of each one of the categories. Thus, we conclude (Table 3) that E-commerce is the most relevant technological category of all ("very relevant"). Next, we find the Agile tools, BI and Cloud solutions categories as relevant. Note also that the less relevant categories for the internationalization process of companies are 3D Printing, VR/AR and AI.

Table 3 –Descriptive statistics for the 10 technological categories.

	<i>E-commerce</i>	<i>Cloud solutions</i>	<i>Big data</i>	<i>IoT sensors</i>	<i>3D Printing</i>	<i>VR AR</i>	<i>Robotics Automation</i>	<i>Agile tools</i>	<i>BI</i>	<i>AI</i>
<b>n Valid</b>	179	177	153	148	154	154	164	177	171	156
<b>Missing</b>	16	18	42	47	41	41	31	18	24	39
<b>Mean</b>	3,56	3,10	2,76	2,59	2,19	2,25	2,63	3,35	3,35	2,54
<b>Standard Deviation</b>	1,35	1,35	1,22	1,28	1,19	1,28	1,40	1,30	1,35	1,39
<b>Median</b>	4,00	3,00	3,00	2,00	2,00	2,00	2,00	3,00	3,00	2,00

It is also important to highlight the significant results obtained, for these technological categories, regarding the "Term unknown" and "Not applicable" options. Thus, we can conclude that at most only 2% of the companies chose the "Term unknown" option in almost all categories (except for the IoT/Sensors- 6.7% and Big data-8.2% categories).

Regarding the "Not applicable" option, we can emphasize the much higher percentage (about 20%) of firms that mark this option in the categories 3D Printing, Virtual reality/Augmented reality and AI. Furthermore, we can also see that these are the technological categories that, when applicable to business, present the lowest degrees of relevance for the firm's internationalization process.

## 6 CONCLUSIONS

As one would expect, according to the literature review carried out, Portuguese entrepreneurs also place great value on the digitalization of business when considered in the framework of their company's internationalization strategy. About 67.7% of entrepreneurs consider digitalization as very important or extremely important. To achieve the goals of this work, we also relate this relevance of Business Digitization with 10 different technological categories, from E-commerce, Cloud solutions, Big data, IoT sensors, 3D Printing, Virtual reality/Augmented reality (VR/AR), Robotics/automation, Agile tools, Business Intelligence (BI) and Artificial Intelligence (AI). We concluded that E-commerce is the most relevant technology category. We can therefore conclude that digital skills, especially in its most complex categories, are not yet fully explored by Portuguese entrepreneurs.

Thus, Digital Transformation can be said to be still in its initial phase of introduction into the Portuguese business sector, with regard, of course, to its adoption within the business internationalization strategy.

## 7 LIMITATIONS AND FUTURE WORK

This is still a work in its initial phase and from this point on we will try to find out the causes of these difficulties in adopting the most complex and advanced categories of digital transformation. We will also try to classify the sample into sectors of economic activity to find some relation between the different activities and the degree of digital transformation achieved.

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